NOR'EASTER

A Newsletter of the Northeast Aquatic Plant Management Society

Volume 20, No. 1

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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.

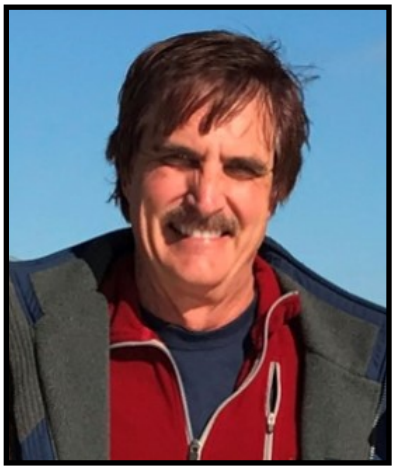
Mission Statement, adopted January 9, 2019.

Cover Photo: Forest Lakes (NJ)—Richard Schaars

President's Message
Greg Bugbee

Greetings all! I hope the past year has treated you well. I want to focus my message on the upcoming 23rd NEAPMS Conference, as many of the same issues regarding its planning reflect the same decisions we face in our personal and business lives. In September, a group of us met at the Hyannis Resort and Conference Center to plan our annual meeting and a return to an in-person format. The venue was roomier than we were used to, which would allow for greater social distancing. It was more than adequate. After a tour of the facilities, we got down to the nitty-gritty of program planning. We agreed the focus should be on aquatic plant management topics that would be eligible for recertification because last year's virtual format offered no credits.

As we worked through potential topics, speakers, etc., it became apparent there were still serious questions on what the COVID 19 landscape would look like in January. Vaccinations are extremely helpful but not the complete answer. Would the employers of attendees and speakers restrict attendance, or attendees be reluctant to come? Would cancelations be a severe disrupter? Should we require masks and/or proof of vaccination? If so, how would it be enforced? Would an uptick accompany our mid-January dates in cases, or would the pandemic have passed? Returning to virtual format for the second straight year offered its own set of problems. The planning committee felt strongly that in-person formats are far better at allowing us to get to know each other, share information, and collaborate for the betterment of our profession. Our exhibitors rely on in-person interactions to showcase their products and services, and they are essential supporters of our Society. We left the Hyannis meetings thinking that an in-person conference was still the best path forward but that masking would be required. We then took a poll of our membership to determine if a mask mandate would impact attendance. The results showed that a small number were not willing to attend with a masking requirement. Others wanted a vaccination requirement before they would attend. The Board of Directors considered the uncertainty and challenges of implementing an in-person meeting and decided that the virtual option would provide the most accessible and dependable option for all of our members.



Improvements in technology and our knowledge of how to use it should allow us to offer recertification credits and improved member, student, and exhibitor interactions. Although the conference program has not been finalized at the time of this writing, there should be some exciting presentations such as the unveiling of the new edition of "A Manual of Aquatic and Wetland Plants of Northeastern North America" by Barre Hellquist and a talk on "Eagle Killer, Living on hydrilla: Investigating the Combined Risk of Invasive Submerged Plants and Toxic Epiphytic Cyanobacteria" by Susan Wilde.

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Meg Modley (2018)
Will Stevenson (2019)
Bin Zhu (2020)

"Improvements in technology and our knowledge of how to use it should allow us to offer recertification credits and improved member, student, and exhibitor interactions."

As my Presidency ends, I will be turning over the office to Cathy McGlynn. I'm sure she will do an excellent job. I guess I may be remembered as the only NEAPMS virtual President. If that means there will be no more pandemics or similar disruptions, that's fine with me. As I pass the torch, I thank the numerous individuals who made my term a breeze. First, our secretary Meg Modley who replaced the legendary Amy Smagula with such conscientious grace and the other members of the Board who offer such valuable insight. Second, all the individuals who plan our conference, particularly Chris Doyle and Glenn Sullivan. Our conferences are second to none due to the dedication and professionalism of these individuals.

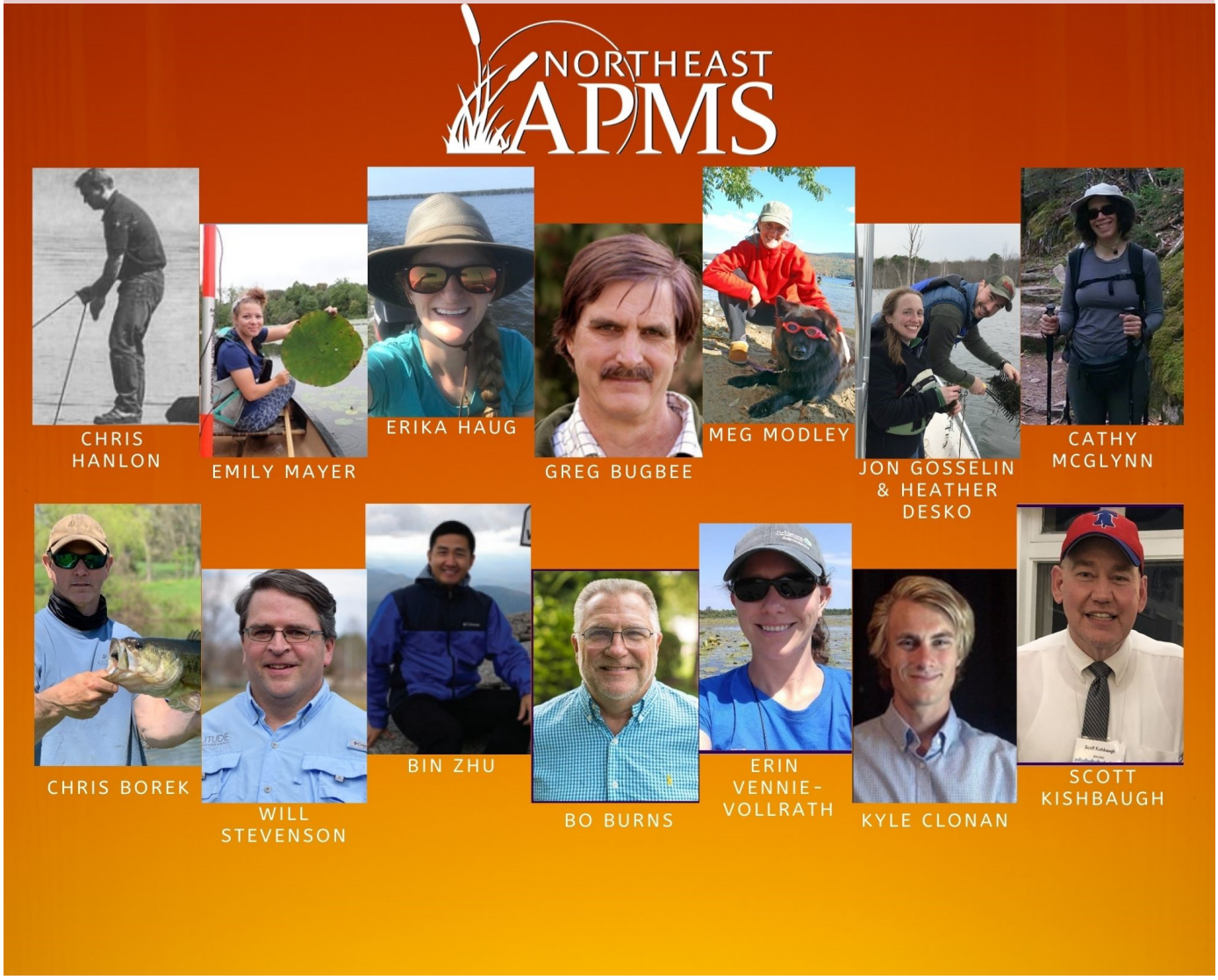
NEAPMS is in good hands, financially strong, with an influx of talented young members. We are poised to do great things in the future.

Thank you all for a great year, even with the pandemic!

I look forward to seeing you in 2023, if not sooner!

Greg Bugbee

Your 2021 NEAPMS Board of Directors



State Update: New Jersey

Heather Desko, Senior Watershed Protection Specialist, New Jersey Water Supply Authority

Hydrilla

- The Delaware & Raritan Canal project (New Jersey Water Supply Authority) has continued its fifth year of hydrilla control via injected herbicides. No hydrilla (rooted or floating) has been found throughout the treatment season. The pilot hydrilla management program has resumed at the Manasquan Reservoir after the 2020 hiatus.
- The Boat Steward Program resumed at Manasquan Reservoir and inspected over 832 boats. This year also marked the first year of a Boat Steward Program at Spruce Run Reservoir. The stewards inspected 887 boats for "hitchhiking" invasive species fragments, intercepting 27 boats at Spruce Run Reservoir with fragments, 21 of which were invasive species, including Eurasian Watermilfoil, curly-leaf pondweed, and mudmat.
- This year, hydrilla was confirmed at D.O.D. Lake in Salem County and Newton Lake in Camden County.

CyanoHABs:

- The New Jersey Department of Environmental Protection held a Harmful Algal Bloom (HAB) summit in March 2021 to share information, updates, and progress related to HAB science, monitoring, response, management, treatment, and communication. Summit materials are available here: https://www.nj.gov/dep/hab/summit.html

Other Invasive Aquatic Plants and Animals:

- *Ludwigia peploides* was confirmed at Newton Lake in Camden County. Water hyacinth (*Eichhornia crassipes*) (pictured on the right) was confirmed at Lake Fishigan in Ocean County.
- The Musconetcong Watershed Association sampled six new sites on the Musconetcong for the invasive New Zealand Mudsnail (NZM) upstream of the known infestation sites. A certified lab conducted a macroinvertebrate analysis, which confirmed that three of the six sites had NZMs. It is most likely that the snails are being transported upstream by anglers and other recreation users along the river. For more information: https://www.musconetcong.org/single-post/the-invasive-new-zealand-mudsnail-found-at-new-location

STATE UPDATE: NEW YORK

Cathy McGlynn, NYSDEC

Prevention/Education and Outreach

- The watercraft inspection steward program conducted 229,879 inspections with 11,379 detections of aquatic invasive species (AIS) in 2021.

Monitoring

- Comprehensive Point Intercept Surveys were conducted on Mohawk River (from Waterford to Delta Lake). More than 800 acres of water chestnut (*Trapa natans*) have been delineated in the eastern third of the river and no hydrilla (*Hydrilla verticillata*) was found. The 2021 aquatic plant survey of select sites along the southern extent of the Hudson River was completed. No hydrilla was detected during these surveys. Recently reported populations of water hyacinth (*Eichhornia crassipes*) and water lettuce (*Pistia stratiotes*) have been observed in the Buffalo area.
- Two northern snakehead (*Channa argus*) were confirmed caught in the Bashakill Wildlife Management Area in late August/early September. The area has been e-fished and eDNA samples were collected in collaboration with USFWS. In the Delaware River, near Narrowsburg, one northern snakehead was caught.

Control and Management

- Hydrilla was confirmed and treated in the City of North Tonawanda marina along the Niagara River.
- Additional hydrilla was found both north and south of treatment area in the portion of Cayuga Lake near Aurora.
- Hydrilla control projects continue in the Croton River in Westchester County, Spencer Pond and Kuhlman Pond in Tioga County, Green and Hickory Lakes and Erie Canal/Tonawanda Creek in Erie/Niagara County, and at multiple locations in Cayuga Lake in Cayuga and Tompkins counties.
- A 0.97 acre area in the Peconic River was treated to control floating water primrose (*Ludwigia peploides)*. Research to test efficacy of florpyrauxifen-benzyl and imazamox on European frogbit (*Hydrocharis morsus-ranae*) was conducted by SePRO and University of Hartford to allow for a future permit application for off-label use of imazamox on European frogbit. Data from the pilot treatment and lab tests will be used to inform a five-year management effort beginning in 2022.

Research

- DEC performed research on estimating water chestnut biomass based on coverage values and acreage. The estimates can be used to standardize results of removal efforts across the state.

State Update: Pennsylvania

Nick Decker, Resource Manager, Department of Conservation and Natural Resources

- Center for Rural Pennsylvania held a public hearing on invasive species in August 2021 that included several specific references to invasive aquatic plant plants. https://www.rural.palegislature.us/publications_public_hearing_invasive_species.html.

- Pennsylvania Invasive Species Council created a call-in number to report invasive species in Pennsylvania, including aquatic plants: 1-833-INVASIV. This enhances existing options to report aquatic invasive plants in Pennsylvania provided online by the Pennsylvania Fish & Boat Commission.

- The Pennsylvania Controlled Plant and Noxious Weed Committee was presented information to inform the possible inclusion and classification of Eurasian watermilfoil (*Myriophyllum spicatum*) in the Pennsylvania controlled plant and noxious weed list. A determination for the possible approval of this plant for inclusion and classification in the Pennsylvania controlled plant and noxious weed list is expected to occur in November 2021.

- Invasive plant introductions were first documented in 2021 within popular public access lakes include *Hydrocharis morsus-ranae* in Pymatuning Reservoir (Crawford County), *Cabomba caroliniana* in Moon Lake (Luzerne County), *Myriophyllum heterophyllum* in Gouldsboro Lake (Monroe/Wayne County), and *Hydrilla verticillata* in Kahle Lake (Clarion/Venango county).

Figure 1. Desiccating European Frog-bit hand-pulled at Pymatuning Reservoir (Photo courtesy of: Sara Stahlman, Pennsylvania Sea Grant).

State Update: New Hampshire

Amy P. Smagula, Limnologist/Exotic Species Program Coordinator

A Few Species of Concern

Hottonia palustris:

A new submersed aquatic plant was documented in New Hampshire in May 2021 that was not on our radar or the state's prohibited plant list. The leaves look somewhat milfoil-like in that they are feather-like and arranged around the main stem. At first, I thought it was a big mermaid weed (*Proserpinaca*), but the leaves were not quite right, and the plant was in flower with pale purple flowers above the water's surface. After some investigation and reaching out to our state's Natural Heritage Program and Dr. Barre Hellquist, we confirmed the plant was *Hottonia palustris*, commonly referred to as water violet.

Flowers of *Hottonia palustris.* Picture provided by Dr. Barre Hellquist.

Hottonia palustris is a plant from Europe/Asia and is common in the water garden and aquarium trade, sold through many online retailers out of Canada (Figure 1). It is only documented in three locations in the United States to date, in Maine and Connecticut, so it is not a common species that we see in our day-to-day work. It is unclear how the plant ended up in NH and two separate lakes in the state.

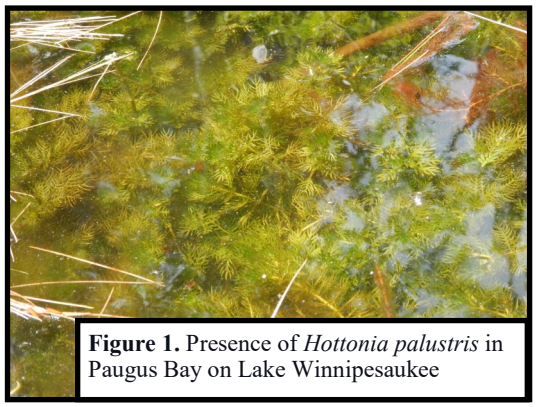


Figure 1. Presence of *Hottonia palustris* in Paugus Bay on Lake Winnipesaukee

The plant was discovered in two locations in Paugus Bay on Lake Winnipesaukee (the state's largest lake), both small coves (Pickerel Cove and Langley Cove), and in Jay's Marina on Lake Winnisquam (fourth-largest lake in the state). The plant was hand-harvested in Jay's Marina and Langley Cove, as both populations were small clusters of stems. However, the infestation in Pickerel Cove was more widespread, and it was chemically treated as part of a treatment to target variable milfoil in the cove.

Hand harvesting provided good control for the two small-scale infestations, but we did see abundant regrowth of the plant in late summer, where the herbicide treatment was performed (the herbicide did control the plant for the short term). What is more concerning, the plant appears to be amphibious, rooting in mud mats and growing as an emergent, so targeting growth on muddy shorelines will need to be factored into any aquatic application performed for management.

Picture provided by Dr. Barre Hellquist. Presence of *Hottonia palustris*

Based on personal communications with Dr. Hellquist and observations in New Hampshire, the plant fragments easily and could become a widespread problem in waterbodies and spread through transient recreational activities. We are monitoring for it and spreading the word through volunteers to be on the lookout for it, and also spreading the news regionally and beyond, through NEAPMS and other regional groups. New Hampshire Natural Heritage Bureau botanists have deemed *Hottonia palustris* to be an invasive plant species in NH, allowing us to target the plant for management.

Naiads

Najas minor and *Najas guadalupensis* are showing up in multiple waterbodies across the state, and both are relatively abundant in the waterbodies they infest.

State Update: New Hampshire (continued)

Najas guadalupensis is not a state-listed invasive, but *Najas minor* is listed. Both plants are quick to colonize sites, and both are difficult to control and appear to be prolific seed producers. While some sites have been managed with aquatic herbicides, infestations do continue to spread in affected waterbodies, so more work needs to be done to dial in effective control actions to prevent further spread while effectively controlling existing populations with good efficacy (the plants are controlled well with herbicides, but the seed stock is the problem).

New Out of State Boater Decal Program

In 2019, the New Hampshire Legislature passed a bill to enact an out-of-state boater decal program, whereby vessels registered in states other than New Hampshire must show a New Hampshire out-of-state boater decal. The decals cost $20 and can be purchased online. The decals are good through one boating season and expire on December 31 of each year.

It took some time to build the program and select an online vendor to host the purchase platform, but the program finally went live on June 2, 2021. Decals can only be purchased online, there are no in-state vendors selling decals. Decals can be purchased at https://nhdes.usedirect.com/NewHampshireWeb/. We anticipated 2021, and probably 2022, to be gear-up years, where much education and outreach are needed to inform New Hampshire visitors that decals are required, and enforcement actions will commence after that point. Enforcement will be done by any police officer, but most likely by the state's Marine Patrol officers. Proceeds from decals are directed to support aquatic invasive plant management efforts in New Hampshire. Revenues are indeterminate at this time and will become more apparent after a couple of years of the program being in effect.

STATE UPDATE: NEW HAMPSHIRE (CONTINUED)

Regional Collaborations

New Hampshire and Vermont aquatic biologists have been partnering for survey days along the Connecticut River to identify any areas of hydrilla growth. To date, no hydrilla has been documented, but with infestations in Massachusetts and Connecticut, we are in the early detection mode in the northern reaches of the river.

Please direct any questions about the above information to Amy Smagula at Amy.Smagula@des.nh.gov.

Check Out NEAPMS on YouTube: @NEAPMS

Test your Knowledge:

Can you name all the invasive species in this photo?

Answer will be revealed on page 27.

State Update: Connecticut

Greg Bugbee
Department of Environmental Science, Connecticut Agricultural Experiment Station


Keeney Cove, Hartford CT

Hydrilla in the Connecticut River continues to be a significant concern. Connecticut Agricultural Experiment Station (CAES) surveys have documented over 1000 acres with many coves and tributaries nearly entirely engulfed (see above photo of Keeney Cove). Genetic testing has determined the CT River hydrilla is a unique biotype. Abundant turions and lack of tubers are key features. Overwintering appears to be facilitated by both turions and fragments. In 2021, the Connecticut Department of Energy and Environmental Protection (CT DEEP) increased boat launch monitoring on the river to help reduce spread. CAES tested the feasibility of utilizing benthic barriers at a marina along the river's mainstem with positive results. Funding for spread prevention, management, and research is currently limited, but efforts to procure funds at the state and federal levels are in progress. Hydrilla (not the CT River biotype) has been found in several drinking water reservoirs in the southwest portion of the state, and water chestnut continues to spread. CAES has found what is believed to be swollen bladderwort (*Utricularia inflata*) in eight lakes. Confirmation via genetic testing is underway. CT DEEP announced the recipients of the inaugural round of grant funding through the Aquatic Invasive Species Grant Program in May; $360,000 was allocated to 21 projects to reduce the impacts of aquatic invasive species on inland waters. Unfortunately, unforeseen issues have prevented the funds from being released. Requests for proposals for the 2022 funds are expected this fall.

What is the purpose of the Words of Wisdom column? - An expert shares their journey of how they got into the lake management industry and provides advice to students/ young professionals entering the limnology field.

Past Student Directors
Kara Foley (2019)
Emily Mayer (2020)
Kyle Clonan (2021)

"You don't need to know exactly what you want to do before and immediately after you graduate. "

Cathy McGlynn and her team work together on the Peconic River hand-pulling *Ludwigia peploides.*

Words of Wisdom From: Cathy McGlynn

Catherine McGlynn, NYSDEC Aquatic Invasive Species Coordinator

When Emily asked me to provide some words of wisdom for young professionals embarking on their careers, I realized that time has flown and I am now mid-career and thinking about what projects I would like to complete and what foundation I would like to put in place before someone else steps into my role. It took me a long time to figure out what I wanted to be when I grew up and in some ways I'm still figuring that out but here are some thoughts (in no particular order) for students and recent graduates to mull over:

- **You don't have to follow the straight and narrow.** You don't need to know exactly what you want to do before and immediately after you graduate. Sometimes you'll try some jobs out and they may not be for you. That's okay. All jobs provide valuable experience and skills even if that knowledge is only what you don't enjoy doing or how not to treat people when you're a supervisor. Do overs work. So said the person with a Ph.D. in Ecology and B.A. in English literature.

- **Take some chances and stretch yourself.** Does something interest you, but you've never done it before? Find a mentor and be willing to learn or do your research and take the leap. You won't always know what you're capable of until you try. Make it a point to keep learning and evolving. You may end up having a career that you never imagined and that would be amazing! I took a leap by moving to Chicago for a job and ended up with skills that allowed me to apply for my dream job in New York.

- **Surround yourself with people who are kind, professional, and care about what they do and strive to be one of those people.** For students, your advisor can be your gateway to a smooth transition into the professional world. Choose wisely. Professionally speaking, it is wonderful to work with a team of highly competent and kind people who have a common vision. You will spend many hours of your life at work - make sure that much of that time is enjoyable. I am very fortunate in this regard.

- **Spend time taking stock and checking in.** You may be a few years into your career, but it is useful to take a step back now and then to review all that you've learned and done and consider your next move. Maybe you'll find you have much to celebrate. Maybe you'll find you need to switch things up. Or maybe both. It's all good. I am finding that I look forward to the expansion of our NYS AIS Team, having a bit more time for research, and being President of NEAPMS next year.

State Update: Maine

John McPhedran, Maine Department of Environmental Protection

New to Maine: Parrot Feather

A landowner's report of lush growth in her Liberty, Maine pond turned out to be parrot feather (*Myriophyllum aquaticum*). This is the first known documentation of this plant in Maine. The landowner had already conducted several removal efforts by the time the plant was reported to DEP. A plan for further control in 2022 is in the works.

Clean Drain Dry Campaign

Maine's DEP and Department of Inland Fisheries and Wildlife formed a stakeholder group to consider and recommend measures to improve invasive aquatic species spread prevention in Maine. Stakeholders include representatives of Trout Unlimited, The Nature Conservancy Maine Chapter, Maine BASS Federation, Lake Stewards of Maine, marine trade groups and representatives of regional and local lake associations. The initial meeting occurred in May and the group will renew discussions in November.

Courtesy Boat Inspection (CBI) Program

Greater than 80,000 inspections have been entered to date for the 2021 season with several thousand still to be entered. The vast majority are entered using the Survey123 app either by the boat inspector during the inspection or later by the local CBI Program coordinator. Preliminary data show 29 saves in 2021, i.e., removal of invasive aquatic plants from boats or right before or after launching. Four of these saves were on boats entering an uninfested waterbody and included the following: Eurasian water-milfoil (*Myriophyllum spicatum*; 2 saves), brittle naiad (*Najas minor*) and Cabomba (*Cabomba caroliniana*). The boaters were previously on out-of-state lakes in CT, VT, NH and RI respectively.

Maine DEP awarded $264,000 in grants in 2021 to local and regional lake associations to organize and conduct inspections for boats entering and leaving lakes and rivers.

Infestation highlights

Maine DEP conducts rapid response to incipient infestations with potential for eradication while local lake groups manage established infestations with the help of DEP grants. DEP's effort to eradicate Eurasian water-milfoil (EWM) from south-central Maine's Cobbosseecontee Lake suffered a setback when 2021 plant surveys showed that EWM was more widespread than previously thought. DEP again hired SOLitude Lake Management to apply herbicide (ProcellaCOR) in 2021. DEP's dive team pulled plants from areas discovered later in the 2021 season. A combination of herbicide and diver removal will continue in 2022, and DEP will continue to work with local and regional associations to respond to this infestation, including determining if eradication remains feasible.

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:

Emily Mayer
(neapmseditor@gmail.com)

DEP continued manual removal of an incipient infestation of variable water-milfoil (*Myriophyllum heterophyllum*) in Androscoggin Lake (central Maine) in coordination with the 30-Mile River Watershed Association which conducted a lake-wide survey with staff and volunteer surveyors. This invasive plant appears to still be isolated to one cove of this lake but a late-season lake-wide algal bloom prevented completion of plant removal in 2021.

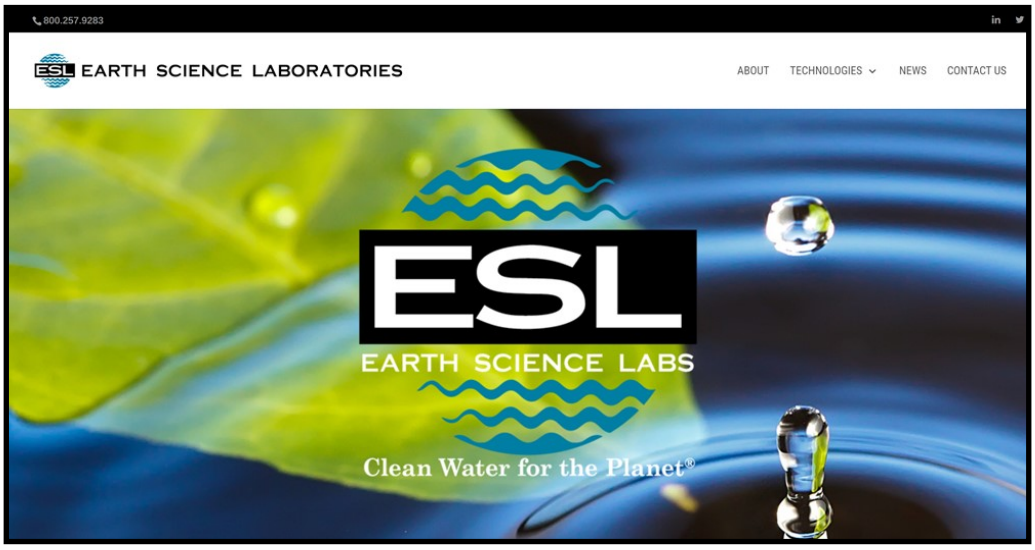
Local and regional lake associations continued tireless work to survey for and manage established infestations in Maine, supported in part by $450,000 in grants from DEP. One example is the relatively remote Big Lake in eastern Maine. As reported in our 2020 update, the planned 2020 lake-wide survey of the lake by Lake Stewards of Maine (LSM) staff and volunteers was derailed by the pandemic. Regular virtual meetings over the last year organized by LSM brought together volunteer surveyors, Big Lake residents, local organizations and state agency staff. The result was a lake-wide survey of 10,000+ acre Big Lake and identification of additional areas for management.

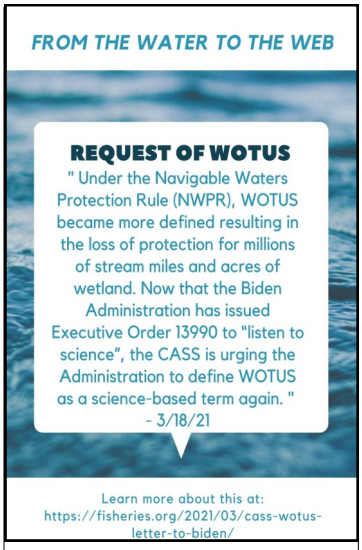
Volunteer surveyors in Lake Arrowhead (Limerick and Waterboro), which already hosts two invasive aquatic plants, confirmed the growth of *Utricularia inflata* (swollen bladderwort). This plant is known from just one other lake in Maine. It is not on Maine's list of invasive aquatic plants but will be proposed for addition to the list in Maine Legislature's next regular session (2022-23). Maine DEP has not yet determined to what extent this plant can or will be managed.

Environmental DNA (eDNA) Regional Project

The northeast regional group working to develop an eDNA sampling program for invasive mollusk species in northeastern lakes continued to define sampling protocols. The group partnered with USGS to compare eDNA methods to traditional plankton tows in detecting low density populations of zebra mussel. Preliminary results indicate the eDNA methods to be more sensitive. Work has also begun with USGS to develop a Strategic Management response to eDNA results.

For more information, please check DEP's website http://www.maine.gov/dep/water/invasives/ or email milfoil@maine.gov.





Check Out NEAPMS on Instagram: @northeast.apms

State Update: Rhode Island

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

Progress on Regulations

In March 2021, the Rhode Island Department of Environmental Management, Division of Fish and Wildlife hosted a public workshop (video: https://www.youtube.com/watch?v=VzjtLruaJdg) on draft regulations to limit the sale of freshwater invasive plants. During the workshop DEM presented the proposed list of prohibited plants along with details on the draft regulations which are available here: http://www.dem.ri.gov/programs/benviron/water/pn/pn-draft-rulemaking-invasive-plants-250-RICR-60-00-11.pdf. This list of 48 species includes some species that are not yet documented in RI, in order to prevent species that could be invasive and promote more consistent regulations in the region by including plants prohibited by other states. The Department continues to work on a guidance document to address frequently asked questions about the regulations and any questions, comments, or feedback on the regulations should be sent to the Deputy Chief of Freshwater & Diadromous Fisheries (christine.dudley@dem.ri.gov).

Monitoring Results: New Lakes on the Invasives List as *Trapa natans* distribution expands

RIDEM staff monitored for invasive plants at 24 unique locations (lakes/ponds/rivers), via canoe or kayak during the 2021 summer field season. In addition, staff received over 60 calls from the public concerned about their lakes. The combination of these efforts resulted in 3 new sites added to the list of lakes, ponds and rivers in RI with an aquatic invasive plant population, bringing the new state total to 108 lakes documented with one (or more) invasive plant, and an additional 28 river segments. The 3 new locations added all have the same invasive, *Trapa natans* (water chestnut): Omega Pond, East Providence, Spectacle Pond, Lincoln, and the lower end of the Ten Mile River (Segment B in East Providence). The prevalence of water chestnut appears to be increasing, as observations have almost tripled in the past five years (Figure 1). In order to help thwart new populations, the Office of Water Resources developed a flyer (http://www.dem.ri.gov/programs/benviron/water/quality/surfwq/pdfs/invasive-spot-water-chestnut.pdf) to post online, and send to local lake residents as an outreach effort encouraging removal any isolated, pioneering plants.

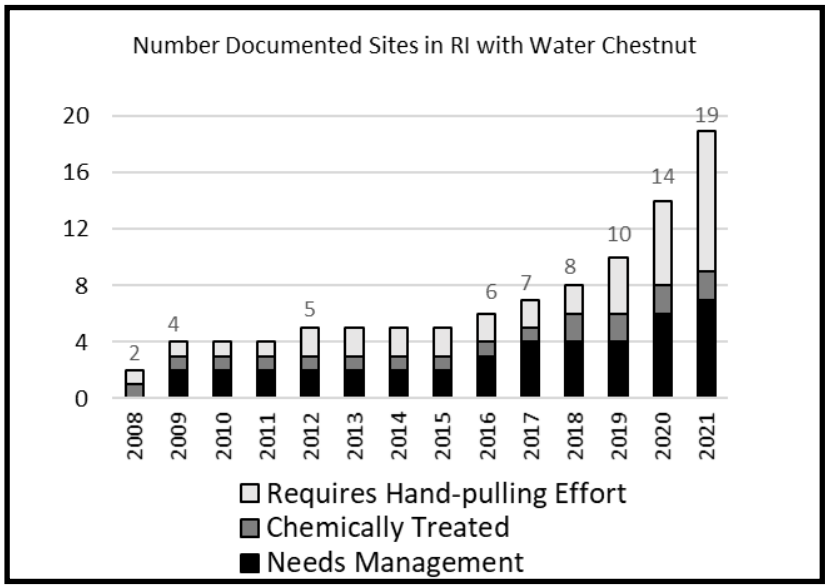


Figure 1. Number of Documented Sites in RI with Water Chestnut.

For the most recent AIS distribution map and list of 136 lakes or river segments (with one or more invasive plant) including which invasive plants are present at each locale, see: http://www.dem.ri.gov/programs/benviron/water/wetlands/pdfs/invasive.pdf).

"[..]bringing the new state total to 108 lakes documented with one (or more) invasive plant, [..]"

Water Chestnut present in fish ladder at Turner Reservoir.

State Update: Rhode Island (Continued)

RIDEM (AIS) monitoring activities are supported in part with federal funding provided by the US Environmental Protection Agency under Section 106 of the Clean Water Act and in coordination with the Rhode Island Coastal

Management Efforts

This year RIDEM reached out directly to local watershed and kayaking groups to expand outreach focused on water chestnut by hosting a number of online presentations in the spring. Three volunteer groups stepped up to attempt some community water chestnut pulls at Central Pond (East Providence), Turner Reservoir (East Providence), and the Ten Mile River (Pawtucket), while rain prevented events on the lower Blackstone River. In addition, RIDEM was able to hand pull water chestnut at 8 of the 19 populations this summer. Luckily the populations at most of these locations are small enough that they can be managed by 2-4 interns hand-pulling plants during 2 visits annually to each pond. Annual efforts to pull at Sylvestre Pond since 2015 appear to be especially effective, as only one rosette was found in 2020, and no plants were found over two visits this summer. In total, approximately 20 days were spent culling plants, but it reduced the amount of time available for monitoring other lakes. Although monitoring efforts are funded by federal sources, there continues to be no state resources dedicated to control or prevention activities, as in many New England states.

Hand-pulled Water Chestnut from Turner Reservoir.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Welcome to Gather.Town

Chris Doyle, Naiad Consultants

There are many benefits to hosting and attending a virtual scientific conference, such as increased global participation, increased inclusivity, reduced costs (both hosting and attending), and no need for travel. In 2020, many scientific and professional societies were forced to pivot to virtual gatherings to share industry and scientific updates due to the global pandemic. But with that came several challenges and growing pains (Meyer et al., 2020). And although traditional oral presentations work reasonably well on virtual platforms such as Zoom, WebEx, or Microsoft Teams, many components of an in-person conference can't be so easily replicated. These include social and networking interactions, poster sessions, and sponsorship opportunities. And the latter are of great importance to sustain the financial health of a society.

When the NEAPMS Board voted in October to once again pivot to a virtual conference in 2022, among lingering concerns about the COVID pandemic, there was an understanding of the shortcomings that virtual conferences present. Therefore, the NEAPMS BOD agreed to utilize a new virtual platform, called Gather.Town, for the middle day of its 2022 conference, featuring its poster session, student/early career panel, and an exhibitor reception.

Gather.Town is a web-conferencing software similar to Zoom or GoTo Webinar, but with the added component of seeing the virtual "room" you and others are occupying (figure 1). In Gather.Town you have the ability of moving your pixelated avatar (think Mario Bros.) to interact with other participants based on your locations in the room, just like at a real conference center. Users easily start and end side conversations and chats, or return to a main speaker just as at a real-world conference or other gathering. Rather than being moved to a Zoom breakout room, in Gather.Town, you can simply walk your online-self to tables and chairs, sit down, and start a conversation in a private or public location. Many of the features familiar in other platforms (such as chat, cameras, muting) are available in Gather.Town. Imagine wandering the virtual halls of the NEAPMS conference center and (virtually) bumping into old friends and colleagues and engaging in networking and good-natured banter!

Figure 1. The virtual conference center created for NEAPMS 2022.

But where Gather.Town really shines is Poster Sessions. Last year, our poster session was not well received by presenters and attendees, as it was difficult to present and display a poster at the same time for the slam session, and break-out rooms were difficult to navigate. In Gather.Town, we will have a slam session in a Keynote Room where the presenter can address the whole room, before the session moving to a dedicated room with the posters on display (Figure 2). Here, a poster presenter will stand in front of their poster, and can engage with attendees that approach, while viewing the poster at the same time. Poster interactivity includes zooming in on parts of the poster, and a highlight tool usable by both the presenter and

Welcome to Gather.Town (CONTINUED)

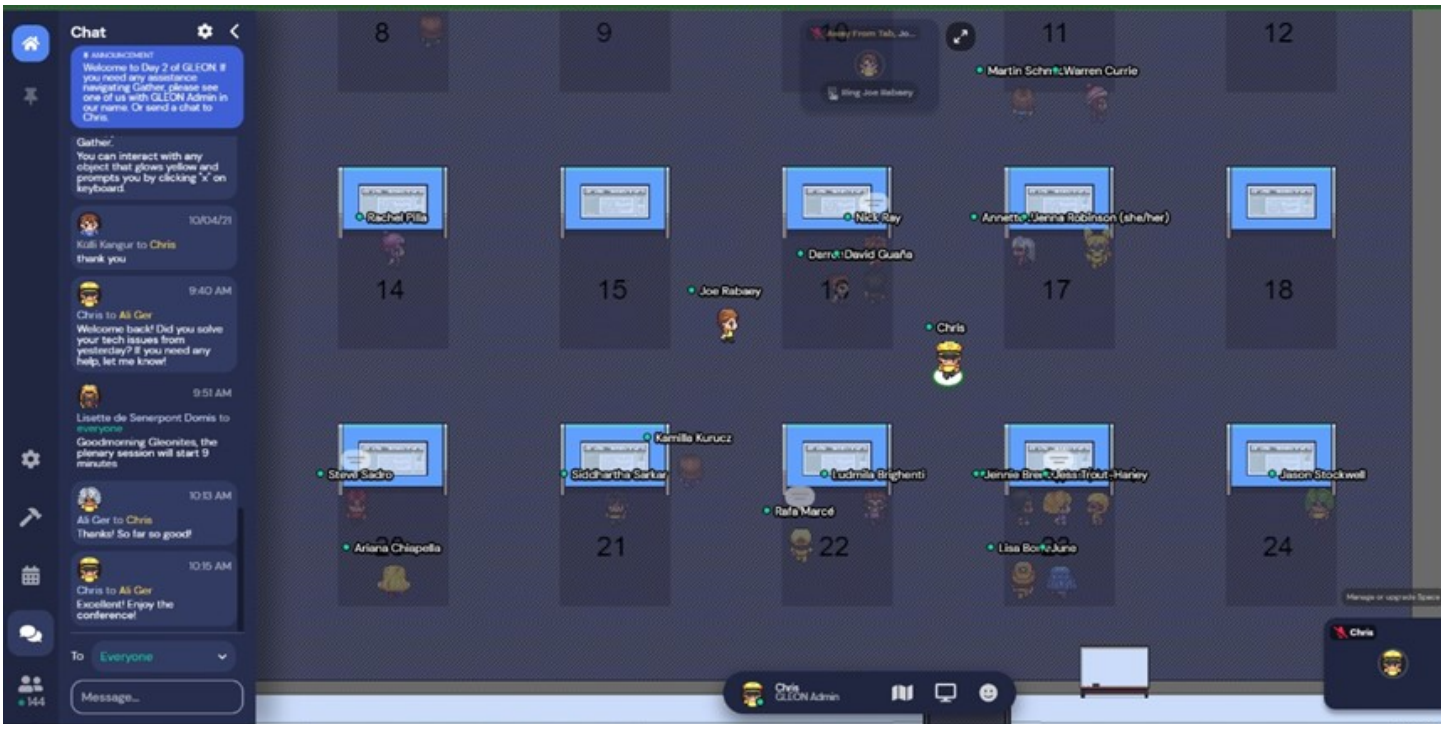

Figure 2. The poster session during the GLEON 2021 virtual conference.

In 2020, Sponsors and Exhibitors did not get much value from supporting virtual conferences, NEAPMS included. By using Gather.Town, we plan to have an Exhibitor Room (Figure 3). Sponsors and exhibitors will be assigned a booth, just like a traditional in-person conference. During the day, and specifically during the Exhibitor Reception, exhibitors will be encouraged to stand by their booth and interact with attendees that approach in real time. We can install a website link to the booth (if compatible with the Gather.Town platform), attach logos, or announcements to the booth that attendees can interact with throughout the day or when exhibitors are not present.

Is it the same as a real in-person conference?

No. But is it an improvement over 2020? Yes! We understand that trying something new can be daunting. But we will provide more information on how to use Gather.Town in the upcoming weeks. And we plan to host a few sessions for poster presenters and exhibitors to get into the platform before the conference to find their way around, and "play" with the Gather.Town features. We hope you can join us for our Wednesday January 12th program. Please come and visit our sponsors and exhibitors to get industry updates first hand. Or just wander the halls and bump into old friends!

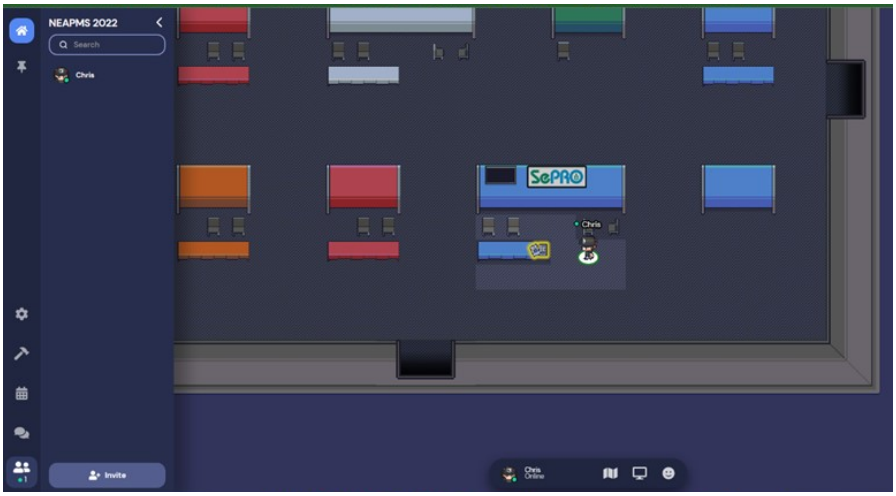

Figure 3. A sample virtual Exhibitor Booth

Reference: Meyer, M.F. et al., 2020. *Virtual Growing Pains: Initial Lessons Learned from Organizing Virtual Workshops, Summits, Conferences, and Networking Events during a Global Pandemic*. ASLO, February 2021.

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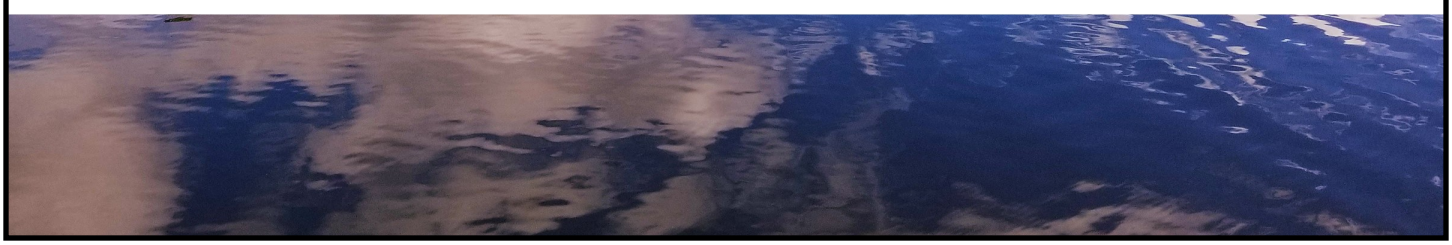


STATE UPDATE: Vermont

Kimberly Jensen, Vermont Department of Environmental Conservation

Vermont DEC hired four seasonal technicians, an ECO AmeriCorp member, and a University of Vermont intern to assist with the Aquatic Invasive Species Program in lieu of replacing one full-time position lost in 2019. With the additional pressures for outdoor recreation in Vermont during the Covid-19 Pandemic, the help was appreciated to restore most of the statutory activities and responsibilities for the State program. VTDEC provided grant awards for sixty-two Aquatic Nuisance Control projects throughout the State.

VT Public Access Greeter Programs
Municipal and Lake Associations hosted thirty VT Public Access Greeter Programs throughout the State with training provided by VTDEC through online opportunities. In 2020, watercraft inspections rose 40%, and interceptions rose 60% from the prior year, and the trend is expected to continue with the influx of newcomers in Vermont.

Early Detection Rapid Response Activities and Events
VTDEC responded to several early detections from reports of potential new introductions of invasive species in Vermont waterbodies. After surveying and investigating these reports, VTDEC found five new locations (or waterbodies) of invasive species to add to the Vermont Infested Waterbodies List. Only one small population of *Najas minor* may be eradicated from a lake. The four other locations will be monitored and surveyed annually to determine the full effect of the infestations of *Myriophyllum spicatum* and *Trapa natans*. VTDEC is pleased to report that no new potential invasive species were reported in Vermont.

The Lake Champlain Basin Program Boat Stewards intercepted a suspicious aquatic macrophyte specimen with the physical characteristics of *Hydrilla* during the Spring season. The robust growth, mostly five-leaved (but some three-leaved) whorls, and finely serrated leaf tip edges, caused a stir amongst the aquatic plant managers, and later another similar specimen was found in Lake Fairlee. Fortunately, DNA analysis confirmed the questionable plant to be a robust *Elodea nuttalli*, a native plant to our region.

LCBP and VTDEC staff continued to support and work with the multi-state collaborative project with Alison Watts (UNH) to develop environmental DNA methods to detect invasive species in New England lakes for asian clam (*Corbicula fluminea*) and/or zebra mussel (*Dreissena polymorpha*) and in conjunction with Adam Sepulveda (USGS) to compare sampling methods with plankton net tow samples.

VTDEC Lakes and Ponds staff completed approximately twenty aquatic macrophyte surveys within the State to monitor native and invasive aquatic species over time. VTDEC continued its partnership with NHDES/CTDEP to survey and monitor the Connecticut River for *Hydrilla* and have found no suspicious specimens.

Past President Meg Modley (left) with daughter Skye (left) with Past President Will Stevenson (right) with son Elliot (middle) at the South Hero, VT boat launch on Lake Champlain. Elliot worked as a Lake Champlain Boat Launch Steward on Lake Champlain during summer 2021.

Aquatic Plant Management Program
VTDEC continued the long-term Lake Champlain Water Chestnut Management Program providing oversight to large-scale mechanical and hand-pulling harvesting operations throughout the Lake with the full contingent of contractors and crews for the season. A new hand-pulling with motorboats operation was initiated to help harvest within the "edge" locations of the mechanically harvested sites, and the operation offered new challenges to consider. The continued use for the Unmanned Aerial Systems (aka Drones) Project, now in its fourth year, will provide a glimpse of how water chestnut mats may shift from one year to the next, and how this may affect the harvesting operations.

Kate Wettergreen conducts sampling.

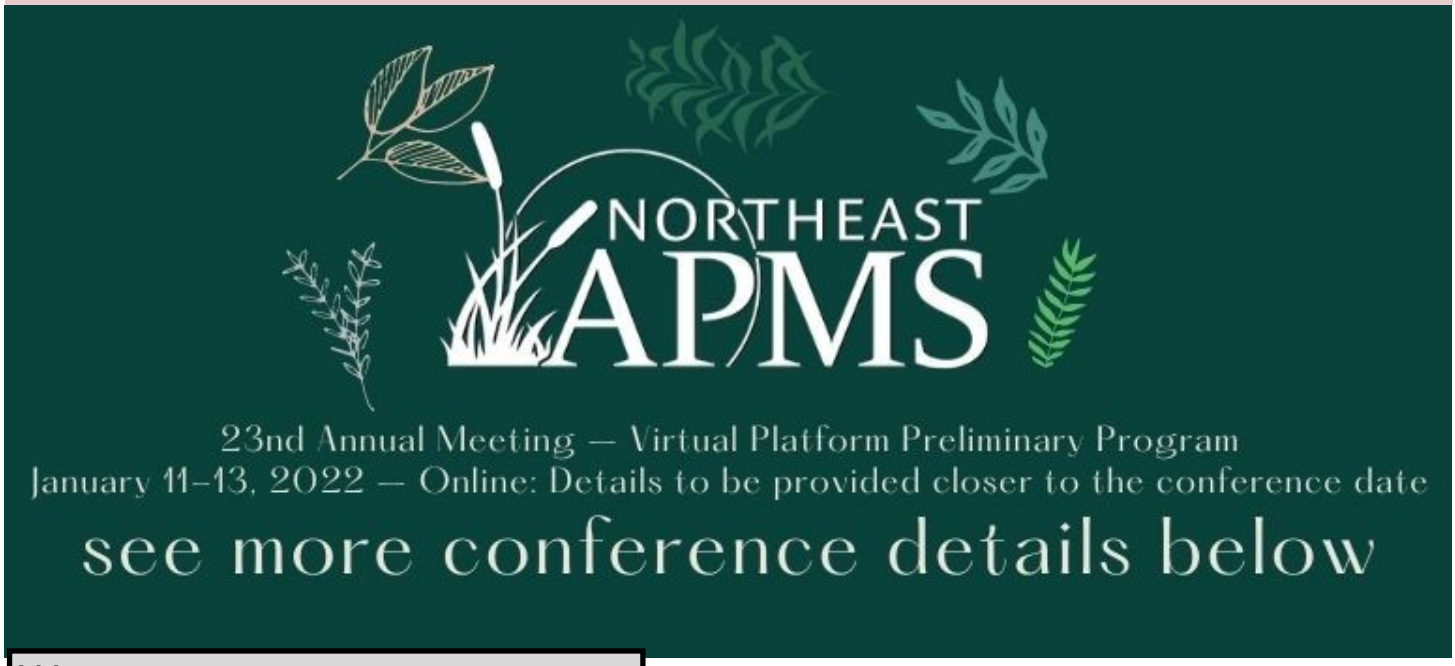
State Update: Vermont (continued)

In the past few years, a few hand-harvested managed sites where low populations were recorded in the past few years experienced dramatic, explosive growths with mat-like conditions causing a few setbacks in the overall hand-pulling crew operations.

Throughout the State, municipalities and lake associations continued local aquatic nuisance control management programs using hand-pulling, bottom barriers; diver operated suction harvesting, and herbicide practices though none have reported any waterbody infestation that has been entirely eradicated.

VTDEC received reports and witnessed large mats or "islands" of floating aquatic plants in Lake Champlain during the mid-summer season, likely caused by erosive forces from the high rain events after drought-like conditions and low water levels in the spring. The VTDEC water chestnut operations managed to harvest the majority of water chestnut floating mats in southern Lake Champlain while shoreline landowners shared their concerns with the State for managing the wrack depositions on private properties.

Announcements



Test your knowledge Answer: Parrot feather, European Frogbit (page 10).

23rd Annual Meeting – Virtual Platform Preliminary Program

January 11-13, 2022 – Online: Details to be provided closer to the conference date

Tuesday, January 11, 2022

8:30am to 8:45am	***Opening Remarks*** Greg Bugbee, NEAPMS President Connecticut Agricultural Experiment Station
8:45am to 9:15am	***Keynote Speaker*** **(Moderated by Greg Bugbee, Connecticut Agricultural Experiment Station)** Updates to *A Manual of Aquatic and Wetland Plants of Northeastern North America* *C. Barre Hellquist, Ph.D., Massachusetts College of Liberal Arts*
9:15am to 9:45am	***Harmful Algal Blooms*** **(Moderated by Erin Vennie-Vollrath, New York State Department of Environmental Conservation)** The Use of an Autonomous Field-deployed Vacuum Pump Air Sampling Device (ASD) to Trap Airborne anatoxin-A (ATX) in the Form of Aerosolized Particles and/or Picocyanobacteria Containing ATX. *RJ Turcotte, Nantucket Land Council*
9:45am to 10:15am	Recent Chemical Management of *Lyngbya* on Lake Gaston *Erika Haug, Ph.D., North Carolina State University*
10:15am to 10:30am	**BREAK**
10:30am to 11:00am	***Nutrient Loading*** **(Moderated by Heather Desko, New Jersey Water Supply Authority)** Control of Internal Phosphorus Loading in Lakes *Ken Wagner, Ph.D., Water Resource Services*
11:00am to 11:30am	Investigation of Novel Technologies for Nutrient Interception in Aquatic Systems *West Bishop, Ph. D., SePro Corporation*
11:30am to 12:00pm	***Aquatic Invasive Species*** **(Moderated by Meg Modley, Lake Champlain Basin Program)** Hydrilla in the Connecticut River – The Management Conundrum *Greg Bugbee, Connecticut Agricultural Experiment Station*
12:00pm to 12:30pm	Molecular survey for a recently introduced genotype of hydrilla (*Hydrilla verticillata* L.f. Royle) in the United States *Dean Williams, Department of Biology, Texas Christian University*

12:30pm to 1:00pm	A Summary of *Nitellopsis obtusa* (starry stonewort) Management and Control Practices *David Carr, Starry Stonewort Collaborative Project Manager* ***ALL sessions to occur in GoTo Webinar.***

Wednesday, January 12, 2022

12:30pm to 1:00pm	***Welcome to GatherTown*** **(Hosted by Chris Doyle, Naiad Consultants)** *Come explore our Virtual Conference Center*
1:00pm to 2:00pm	***Aquatic Pesticide Safety Training*** **(Moderated by Bo Burns, Alligare)** Aquatic Pesticide Safety Training (for Core Credit Recertification) *Carlton Layne, Aquatic Ecosystem Research Foundation*
2:00pm to 3:00pm	***Exhibitor/Sponsor Reception*** **(Moderated by Glenn Sullivan, SOLitude Lake Management)** *Join us in GatherTown to visit our Virtual Exhibitor Room*
3:00pm to 4:00pm	***Scientific Poster Slam Session*** **(Moderated by Chris Doyle, Naiad Consultants)** *Join us in Gathertown to watch the Poster Slam Session and visit our Virtual Poster Room*
4:00 pm to 5:00pm	***Student/Early Career Panel*** **(Moderated by Kyle Clonan, NEAPMS Student Director)** *Join us in Gathertown to attend a Panel Discussion with special guests geared toward Students and Early Career Professionals* Student Vote to Elect the 2022 Student Director Candidate
	All Sessions in Green to occur in GatherTown

Thursday, January 13, 2022

8:30am to 8:45am	***Opening Remarks*** Cathy McGlynn, NEAPMS President-Elect New York State Department of Environmental Conservation
8:45am to 9:15am	***Keynote Speaker*** ***(Moderated by Cathy McGlynn, New York State Department of Environmental Conservation).*** *Eagle Killer, Living on Hydrilla*: Investigating the Combined Risk of Invasive Submerged Plants and Toxic Epiphytic Cyanobacteria *Susan Wilde, Ph.D., University of Georgia*

	NEAPMS SCHOLARSHIP RECIPIENT'S UPDATES **(Moderated by: Emily Mayer, Lord and Winter)**
9:15am to 9:45am	Detection of *Hydrilla verticillata* eDNA in a lotic system **Dan Weber, SUNY Albany*
9:45am to 10:15am	Gaging Downstream Transport of Cyanobacteria and Cyanotoxins through Continuous Monitoring and Discrete Sampling **Kyle Clonan, Montclair State University*
10:15am to 10:30am	**BREAK**
10:30am to 11:00am	**INDUSTRY UPDATES**
11:00am to 11:30am	**NEAPMS BUSINESS MEETING** Membership Update Treasury Update Board Nominations APMS Update AERF Update
11:30am to 12:00pm	***Aquatic Plant Management*** **(Moderated by: Cathy McGlynn, New York State Department of Environmental Conservation)** Efficacy of Clearcast and ProcellaCOR EC on European Frogbit *Bin Zhu, Ph.D., University of Hartford*
12:00pm to 12:30pm	Overview of Recent Aquatic Plant Monitoring and Management Activities at Chautauqua Lake, New York *Kara Foley, North Carolina State University*
12:30pm to 1:00pm	Forty-years of Water Chestnut Management on Lake Champlain *Kimberly Jensen, Vermont Department of Environmental Conservation*
1:00pm to 1:05pm	**SCHOLARSHIP RAFFLE** **MEETING ADJOURNED**

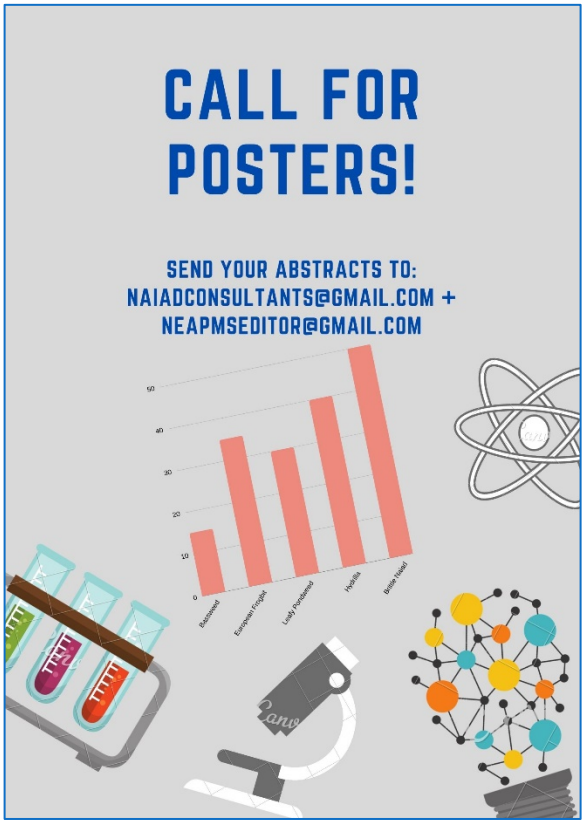
All Sessions to occur in GoTo Webinar

NEAPMS Poster Presentations

Poster: *Monitoring Monoecious Hydrilla in Flowing Water Systems of North Carolina*
*Jens Beets, North Carolina State University

Poster: *Potential Exposure to Cyanotoxins in Splash While Recreating During Cyanobacterial Harmful Algal Blooms*
*Cole Beale, State University of New York, Oneonta

Title: TBD



* Denotes a Student Presentation