

# Interstate Waters



September 2019

## Aquatic Invaders

*Keeping Non-Native Species at Bay*

Also:

**River Lessons**

**Storm Recovery**

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Established by an act of Congress in 1947, the New England Interstate Water Pollution Control Commission is a not-for-profit interstate agency that meets the water-related needs of our member states: Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. The NEIWPCC Commissioners from each member state are appointed by their state governors.

## Interstate Waters

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## From the Executive Director

# A Community of Problem Solvers

**J**ULY 31, 1947. ON THAT DAY, SEVENTY-TWO YEARS ago, Congress and the New England states established the New England Interstate Water Pollution Control Commission to abate water pollution and promote the water resource interests of New York and New England. Lofty goals, impossible to attain without ongoing commitments to leadership, education, collaboration, and service.



The Commission serves as a community of problem solvers advancing clean water in the Northeast, in service to our states: Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. Much of the work we conduct centers around our place-based activities and the over six hundred partners we work with in places like the Long Island Sound, Lake Champlain, the Hudson River and its estuary, and the Narragansett and Peconic Bays.

Other NEIWPCC commitments run to collaboration with our state partners advancing concerns through our nineteen issue-oriented workgroups, social media efforts and communications, and nearly three hundred days of training per year. Since the last issue of *Interstate Waters*, the NEIWPCC staff has hosted five regional conferences and workshops.

We have initiated a new effort to update our brand messaging and visual identity. We conducted research with our partners and other stakeholders to better understand current perceptions of our team and our work. Our goal is to fully capture what NEIWPCC is now, where we collectively want to be in the future, and how we will get there.

While it is early in the process to assume what our brand will be, I feel strongly that NEIWPCC's vision for "clean and sustainable water in the Northeast by fostering knowledge, public awareness, and interstate cooperation" will play a key role. My expectation is that our values of leadership, education, collaboration, and service will be critical components of where we head in the future.

As summer turns to fall and 2019 to 2020, I look forward to our continued progress abating water pollution and promoting the water resource concerns in the Northeast.

Sincerely,

Susan Sullivan

NEIWPCC Executive Director

# States Urge Science, Funding, Consultation

## New: Federal Budget

The Commission wrote to the entire northeast congressional delegation in April to oppose funding cuts proposed by President Trump to important water programs.

The administration proposed the following changes in its 2020 budget:

- A 25% cut to the EPA's budget;
- A 12% reduction in the clean-water and drinking-water state revolving funds. These funds have been instrumental in building water infrastructure since the late 1980s;
- A reduction by one third of funds provided to states and tribes under Section 106 of the Clean Water Act. States use these funds to help develop standards, set pollution reduction loads, issue permits, confirm compliance, monitor results, and report on successes;
- Zero funding of Clean Water Act Section 319 grants. This program funds restoration efforts for water bodies impaired by nonpoint source pollution;
- Zero funding for key regional programs, including the Lake Champlain Basin Program, the Long Island Sound Study, the Peconic Estuary Program, and the Narragansett Bay Estuary Program.

The Commission opposes these cuts.

## New: Environmental Review

The Commission warned the EPA in May against a plan to accelerate state review of discharge permits because the proposal would run roughshod over state permitting and could subject states to lawsuits.

The agency has not listened so far.

On August 12, the EPA proposed a rule in **Docket No. EPA-HQ-OW-2019-0405** to restrict further the time states have to certify or deny permits, and the grounds on which states may make these decisions.

The rule would govern state review of projects under section 401 of the Clean Water Act, which bars the EPA and other federal agencies from permitting discharges unless a state or tribe certifies that the discharge would comply with existing water-quality requirements.

In the proposed rule, an application could start the permitting "clock" before the reviewing state has all the information it requires. Currently, states may ask applicants to provide the information first. Also,



the rule would block states from considering water-quality impacts that are not within the scope of the Clean Water Act as redefined by the EPA.

Comments on the proposed rule will be open for sixty days from the day the rule is published in the Federal Register.

In NEIWPCC's May 24 comments, which the EPA requested at an informal pre-proposal stage, the Commission generally blamed any permitting delays on "actions or inactions of project proponents, such as incomplete applications or changes to plans without appropriate communication with states."

The outcomes of accelerated proceedings, whether certifications or denials, are likely to be based on an incomplete record and consideration of facts. These incomplete state decisions would thus be ripe for litigation.

State government would be the defendant in those cases, which would develop in court the factual record missed during the curtailed state proceedings.

In her May 24 letter to EPA Administrator Andrew Wheeler, NEIWPCC Executive Director Susan Sullivan said that the NEIWPCC states "categorically reject any regulatory changes intended to streamline environmental permitting without truly comprehensive and effective state-federal consultations."

"States have a unique understanding of waters within their jurisdiction and are best positioned to provide that input," she wrote.

The EPA initiated the new rulemaking in response to **Executive Order 13868**, which

is largely about streamlining rules for the siting of energy facilities.

## Ongoing: Clean Water Rule

The seven NEIWPCC states "sternly object" to a proposed federal rule that would curtail federal jurisdiction over many water resources, including most of the nation's wetlands.

In comments in **Docket No. EPA-HQ-OW-2018-0149**, NEIWPCC also flagged provisions of the proposed rule that would introduce uncertainty, infringe on state practices, and complicate the process of determining whether a water body is jurisdictional.

Meanwhile, the Supreme Court has agreed to hear a case that could reframe the entire question of jurisdiction.

At stake is the definition of the term "waters of the U.S.," the water resources subject to federal regulation under the Clean Water Act. Last winter the EPA proposed restricting jurisdiction to wetlands and water bodies with a surface connection to navigable waters.

This rule would exclude most of the nation's wetlands, all groundwater, seasonal water bodies, and some ditches, artificially irrigated areas such as rice paddies, storm-water-control features, wetlands converted to croplands before 1986, and other water resources.

## The States Respond

In April, the EPA and U.S. Army Corps of Engineers denied a request by NEIWPCC and others to extend the comment period on the complex proposal, which takes up sixty-six pages of the tightly spaced Federal Register.

Comments on the pending proposal were open for sixty days. By contrast, the agencies extended comments on the current (2015) rule twice, allowing them for more than half a year.

The Commission has submitted written comments in many of the rulemakings and informal consultations that the Trump administration has initiated in its push to shrink federal jurisdiction over water resources. The Commission's comments emphasize the role that science should play in setting policy.

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**C**ONGRATULATIONS TO **Janine Burke-Wells**, a NEIWPCC commissioner for Rhode Island. She is the new executive director of the **North East Biosolids and Residuals Association**.

**Jennifer Lichtensteiger**, an environmental analyst in the Commission's **Wastewater and Onsite Systems Division**, was elected to the **Massachusetts Water Pollution Control Association's** Board of Directors for a three-year term beginning July 1.

**Victoria O'Neill**, who is the **Long Island Sound Study's** habitat restoration and stewardship coordinator, recently completed the Center for Creative Leadership's Leadership Development Program. O'Neill is also a co-author of the **U.S. Geological Survey's** "Hurricane Sandy Impacts on Coastal Wetland Resistance," published in April.

Two NEIWPCC "regulars" from Massachusetts, active contributors to Commission workgroups, have been promoted. **Laura Blake** became director of the Commonwealth's **Watershed Planning Program** in May and will continue to participate in multiple workgroups. **Lisa Rhodes**, a nineteen-year veteran of the state's **Wetlands Program**, is the new **Boston Wetlands Program** chief. Congratulations! 💧

## AQUATIC BIOLOGISTS

Save the date for the  
2020 Northeast Aquatic  
Biologists Conference.

**March 4–6, 2020,  
in Newport, Rhode Island**



## Heather Radcliffe Is New Water Resources Leader

*Division Director Is NEIWPCC Veteran*



**H**EATHER RADCLIFFE, WHO JOINED NEIWPCC IN 2012, is the new leader of the Commission's Water Resource Protection Division.

Radcliffe was promoted to division director in June, after serving the Commission in a variety of leadership roles, including acting division director in 2017. She continues to serve as staff attorney.

As division director, Radcliffe provides leadership for initiatives in such areas as water supply, nonpoint-source pollution, climate change, research, and quality assurance. She also serves as the Lowell project officer for the Lake Champlain Basin Program, overseeing funding for efforts across Vermont, New York, and

the Province of Quebec.

Radcliffe was the recipient of NEIWPCC's Annual Achievement Award in 2019. She received an Environmental Merit Award from EPA Region 1 in 2015.

She holds J.D. and Master of Environmental Law and Policy degrees from Vermont Law School and is licensed to practice law in Massachusetts and Vermont.

### The Docket

*continued from page 3*

In the pending docket, NEIWPCC is critical of a proposal to rely on maps from the U.S. Geological Survey and other sources to determine jurisdiction, rather than on "a verifiable, field-based method, as is current state practice."

The Commission told the federal agencies that although maps and aerial photographs can be useful, "they are not available in all areas" and in any case "will not consistently illustrate the necessary vegetation, hydrology, and soil conditions for those streams with questionable jurisdiction." Moreover, conditions change.

### Next Steps

Comments have closed in the two dockets that the Trump administration initiated to repeal and replace the much-litigated Clean Water Rule adopted in 2015. The 2015 rule is currently in effect in about half of the states as a result of a patchwork of court orders in cases that are pending appeal.

The number of states in which the 2015 rule is in effect could change, in response to petitions from states.

In the other states, an ad-hoc, and less-certain, way of enforcing a similar standard applies. That process dates back to the George W. Bush administration.

The repeal rule, **Docket No. EPA-HQ-OW-2017-0203**, would revert the entire country to the ad-hoc standard, but the new rule would radically change the scope of federal jurisdiction.

Either or both of these rules would take effect after the EPA and Corps issues them, unless delayed by more lawsuits. The agencies could issue final rules in either docket at any time.

The tangle may only be resolved by the Supreme Court, which has agreed to hear a related case (*County of Maui, Hawaii v. Hawaii Wildlife Fund*) in its next term. At issue is a decision by the Ninth Circuit Court of Appeals to treat injection wells as regulated point sources if they introduce into groundwater pollutants that are traceable to the ocean.

The appeals court would require a permit for these injection wells under the Clean Water Act even though the pollutants are not discharged directly to a jurisdictional water. The case may allow the Supreme Court to broadly redefine the scope of CWA jurisdiction.

A detailed account of the legal roots of the issue, "The Meaning of 'Waters': A Divided Supreme Court Creates a Legal Thicket," was published in the March, 2018, issue of *Interstate Waters*. 💧

# Pollution, Regulation, and Collaboration

**F**ROM CLIMATE CHANGE TO QUALITY assurance, states are preparing for new pollutants, policies, and challenges. In Commission workgroups and other forums, staff members from state agencies and the EPA share information, ideas, and priorities. All meetings were at the Commission's Lowell office.

## Pollution

A snowplow crashed into a gas pump in Belgrade, Maine, during a mid-March snowstorm in 2018, spilling some 1,900 gallons of gasoline. The protective equipment designed to stop leaks in such an event failed, even though the service station had a history of compliance with tanks regulations. In such cases, a rapid response is critical.

On June 12 of this year, staff members from Maine's Department of Environmental Protection told the **Underground Storage Tanks Workgroup** how they plugged the leak and, later, investigated the equipment failure and removed hundreds of tons of contaminated soil and snow.

Workgroup members also reviewed NEIWPCC's schedule of upcoming training webinars for UST inspectors.

On June 13, the **Emerging Contaminants Workgroup** heard from Brandon Kernen (N.H. Department of Environmental Services) and Scott Stoner (N.Y. Department of Environmental Conservation) about how state environmental regulators can respond better when new pollutants emerge. Kernen and Stoner are members of a national committee on emerging contaminants. The group comprises professionals from the Association of Clean Water Administrators (ACWA) and the Association of State Drinking Water Administrators. It developed recommendations for addressing emerging contaminants in a report that highlights ways to improve risk communication, coordination between the states, and evaluation and response procedures. The full report is available on ACWA's website.

As state environmental agencies seek a better understanding of the extent of PFAS pollution, the Commission's **Residuals Workgroup** continues to grapple with the possibility of contamination from sew-



Kennebec County Sheriff's Office

*A 2018 collision in Belgrade, Maine, spilled 1,900 gallons of fuel.*

age biosolids used as fertilizer. On a May 3 call, Maine and New Hampshire officials described new requirements in their states to test biosolids for PFAS. Workgroup members from Vermont also described their agency's statewide sampling plan aimed at understanding better the PFAS levels in wastewater residuals. The Vermont plan will generally support the development of water-quality criteria.

## Regulation

Quality citizen science, and documentation of process, were two of the topics discussed at the New England EPA's **Quality Assurance Roundtable** on May 9. The group comprises state-agency personnel from NEIWPCC's member states, staff members from EPA Region 1, and the Commission's quality assurance program manager.

At the May meeting, personnel from New Hampshire's Department of Environmental Services described an agency-wide effort to inventory standard operating procedures (SOPs). The initiative's goal is to have formal, up-to-date SOPs for all of the department's processes.

Also at the meeting, EPA staff members

described a handbook for citizen-science organizations that details how to use and document quality-assurance measures. The agency published the handbook in March of 2019.

The roundtable typically convenes twice a year, once by conference call and once in person, and members take turns hosting the in-person meeting. NEIWPCC last hosted the group in 2015.

On May 21, members of the **National Pollutant Discharge Elimination System (NPDES) Workgroup** discussed recent directives from EPA headquarters to expedite and increase consistency in permitting across the states. The EPA has consolidated its application forms, is encouraging more electronic filing, and is teaching its NPDES staff to employ management techniques that the EPA believes will improve communication and speed permit writing. EPA Region 1 aims to get rid of its permitting backlog by 2022 and bring processing time down to six months. Region 1 is directly in charge of the NPDES programs for Massachusetts and New Hampshire.

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# Learning and Travelling on the River that Flows Both Ways

*The Hudson's Estuarine Research Reserve*



BY PETER ZAYKOSKI

**T**HE OCEAN TIDES TRAVEL UP THE Hudson River for 152 miles before striking the foot of the Federal Dam in Troy, New York. The tidal portion of the river is so long that low tide at the river's mouth comes and goes before high tide reaches the dam in Troy.

The tides do not drive salt water as far as Troy. The extent of salt water is governed mainly by the volume of fresh water flow-

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*Peter Zaykoski is an environmental analyst in the Commission's Water Resource Protection Division. Above, Heather Gierloff, the manager of the Hudson River National Estuarine Research Reserve, visits the site of the Governor Mario M. Cuomo Bridge in 2016 to inspect construction and deconstruction. The new bridge replaced the Tappan Zee Bridge in 2017; both are visible in the background.*

ing down the river. Usually the salt water makes it up river to somewhere between Yonkers and Newburgh, and occasionally as far north as Poughkeepsie.

This disparity in the reach between the two oceanic influences, tides and salinity, results in conditions that create globally rare habitats, including freshwater tidal marshes.

The "river that flows both ways" is a river of gradients: in tides, in salinity, in habitats, and in human population. The river is thus an excellent and singular place to study changes across those gradients driven by climate change. The Hudson River National Estuarine Research Reserve (HRNERR) does just that.

The Research Reserve comprises four component research sites, spread across nearly one hundred miles of the estuary. The sites, south to north, are as follows:

- Piermont Marsh, near the Mario Cuomo

Bridge (once the Tappan Zee), at river mile 25 (counted from the Battery in lower Manhattan);

- Iona Island, river mile 45, just downriver of Bear Mountain;
- The Tivoli Bays, river mile 100, near Bard College;
- Stockport Flats, river mile 120, just north of Hudson.

The Research Reserve's headquarters are located at the Norrie Point Environmental Center in Mills-Norrie State Park.

The Research Reserve also serves to educate the public and coastal management professionals through its programming, drawing on the many opportunities available throughout the Hudson Valley.

Also, HRNERR belongs to a national network of research reserves in the United States. Through that connection, the data and information that the Research Reserve develops have national significance.

## The Lower Estuary

Traveling north from the mouth of the Hudson in New York City for twenty-five miles brings us to a place where the river widens. There we come to Piermont Marsh. Just south of the western landing of the Cuomo Bridge, the marsh is the southernmost component site of the Reserve.

Here we might find Chris Mitchell, HRNERR research assistant and NEIWPCC employee, measuring sediment accretion on the surface of the marsh.

Sediment accretion causes marshes to grow vertically, increasing elevation. Six surface-elevation tables (SETs), installed last December, will help the HRNERR staff assess the influence of sea level rise on the marsh and whether the marsh elevation will keep up with the water level or whether the marsh is in jeopardy of drowning.

This and other monitoring efforts at this location supports the Piermont Marsh site's role as a National Estuarine Research Reserve System (NERRS) sentinel site. Information from sentinel sites across the national network allows researchers to compare the impacts of climate change across a range of conditions and to gain insight into management measures and mitigation techniques.

Back on the water, as we head north, tall cliffs on the western shore loom over the water. They provide a rare visual indication of the watershed boundary. Here, in the southern reach of the river, the watershed is narrow and its borders are close to the river. As we follow the river north, the rock face to the west recedes and the watershed widens.

To the east, the watershed's edge extends to the border of New York and raggedly mirrors it, meandering back and forth into Connecticut, Massachusetts, and Vermont until it abuts the Lake Champlain watershed. To the west, portions of the Catskills drain into the Hudson. Further north, the Mohawk River, which draws off New York's central valley, feeds into the Hudson just north of Troy. The Hudson begins in the Adirondacks at Lake Tear of the Clouds on Mount Marcy. The river drains most of the southeastern third of the Adirondack Park.

The river narrows and we round a sharp bend as we enter the Hudson Highlands. Just ahead, along the western shore, is Iona Island, the second component site of HRNERR. Stewardship of this site, which is part

of Bear Mountain State Park, protects important habitat for bald eagles and other birds. The expansive marsh connects the upland portion of Iona Island with the western shore of the river.

In the marsh, we come upon Jim Herrington, another NEIWPCC employee who is an education specialist for HRNERR. He is leading a group of canoers who are exploring and learning about the marsh. The canoe program is one of a suite of educational opportunities offered by the Research Reserve that engage children, college students, and the public.

## Norrie Point

We head north, through the aqueous mountain pass. We sail beyond West Point and then Poughkeepsie. Just before the river jogs slightly to the west, we find Norrie

Point Environmental Center, on the east bank overlooking the water. Inside, we meet Heather Gierloff, who took over as the HRNERR manager from long-time steward Betsy Blair last year.

Gierloff navigates the complicated network of state and federal entities that administer project funding and manage facilities and component sites. The Research Reserve works intimately with partners, contributing to and building on the ecosystem of connected institutions that share similar or complementary missions, such as NOAA and the Hudson River Estuary Program. A few doors down from Gierloff's office, we meet Ann-Marie Caprioli, HRNERR program coordinator and NEIWPCC staff member, who supports management of the Research Reserve. She is running the numbers on HRNERR's budget for next year.

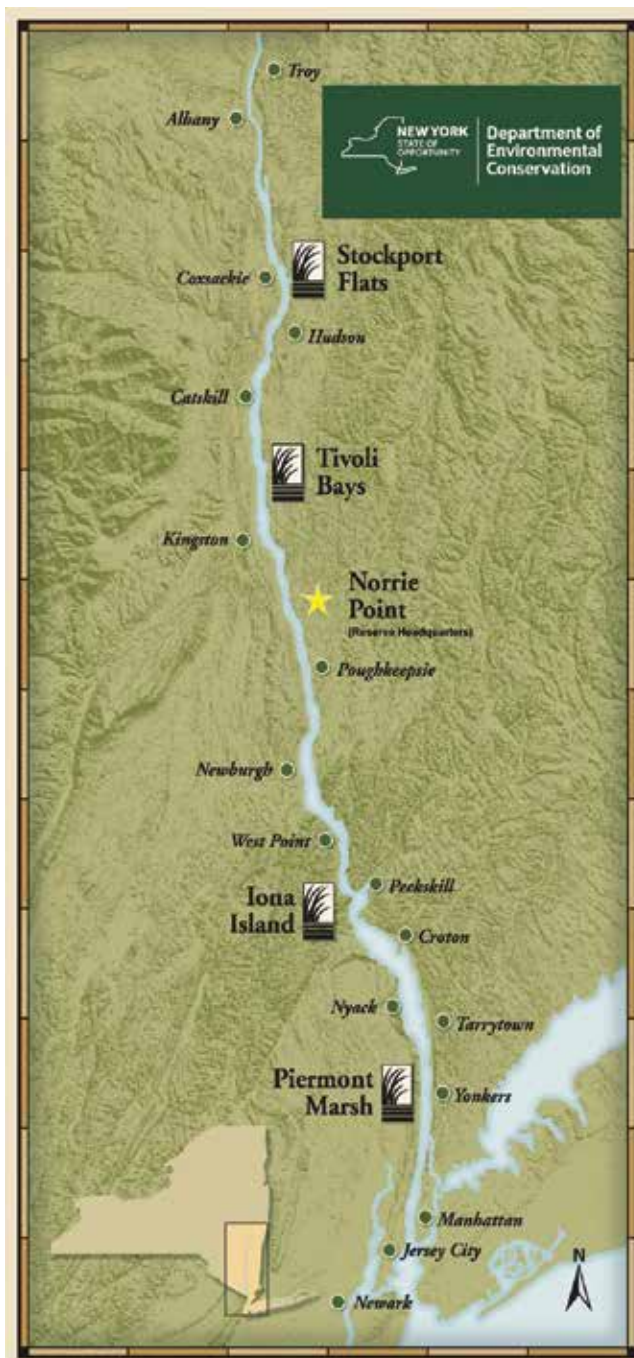
In the lobby, we find Sarah Fernald, a NEIWPCC staff member who is HRNERR's research coordinator. Educational materials surround us. There is a table-sized topographical model of the river's watershed, a six-foot-long sculpture of a striped bass made out of marine debris, and many tanks hosting native fish species.

As the research coordinator, Fernald collaborates frequently with her peers from other reserves in the national system and with researchers from the region, nation, and globe.

One of the advantages of being part of a national network of reserves is the abundance of opportunities to share knowledge with others working on coastal science. Fernald, for example, is currently working on a NOAA Catalyst project with partners from the mid-Atlantic region to learn about thin-layer placement, the application of dredged sediment on top of marshes to supplement their natural growth.

Sea levels may rise faster than the capacity of some marshes to grow vertically from sediment accretion. This project will help the Research Reserve staff understand and assess the potential of thin-layer placement as a tool to protect marshes by augmenting vertical growth.

In another NOAA Catalyst project, the HRNERR staff is working with their counterparts at reserves in Maine, Oregon, Florida, and New Hampshire to understand how to use environmental DNA (eDNA) to monitor coastal ecosystems. This technique measures the presence of DNA from



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# One Boat at a Time

*Vigilance, Outreach, and Care Slow the Spread of Non-Native Species*



BY MEG MODLEY AND ANNA MEYER

**M**ATTHEW GORTON LOVES TO FISH, and he wants to help ensure that future generations of anglers can enjoy the same thrill of the chase.

But in Gorton's favorite lakes, populations of native fish are at risk of being disrupted.

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*Meg Modley and Anna Meyer are NEIWPC environmental analysts. Modley is the Lake Champlain Basin Program's aquatic invasive species management coordinator. Above, a new boat launch steward practices decontaminating a boat with high-pressure hot water.*

The spiny waterflea and the fishhook waterflea, both tiny crustaceans, are invasive, non-native species that boaters can inadvertently spread from one lake to another, leading to disastrous effects.

The invasive waterfleas compete with native fish and other species for food, causing population shifts that can ripple up a food chain. Masses of waterfleas also get caught on anglers' fishing gear, making it hard to reel in a catch.

Gorton became a boat launch steward with the Lake Champlain Basin Program this summer to teach boaters about invasive species and to help them take steps to prevent the spread of these threats to fish habitat.

## Species Far from Home

When the Lake Champlain Basin Program (LCBP) started its boat-launch-steward initiative in 2007, neither the fishhook nor spiny waterflea were in Lake Champlain. Both were in Lake Ontario. Native to Eurasia, the species were introduced to the Great Lakes in ballast water in the 1980s—like most of the aquatic invasive species in Lake Champlain.

Scientists have confirmed fifty-one non-native species established in Lake Champlain. Of those, around a dozen are considered invasive. These species cause ecological harm, economic harm, or adverse effects on human health. Scientists are continuing to learn more about which





LCBP

species are harmful to the Champlain ecosystem.

Water bodies connected to Lake Champlain by rivers and canals are the source of most invasives in the lake. The Great Lakes have 187 non-native species, compared to Lake Champlain's 51. The Hudson and St. Lawrence rivers have 122 and 87 respectively.

On top of causing dire ecological consequences, aquatic invasive species can also have severe economic impacts and impair human use of water bodies. For example, zebra mussels clog water intake pipes. Clearing the pipes and keeping them clear over time is costly for municipalities. The sharp mussels can also cut the feet

of swimmers in infested waters.

In addition to the invasive species already identified in the lake, many more are "on the doorstep" of Lake Champlain. Quagga mussel, round goby, hydrilla, and starry stonewort found in other water bodies present the greatest threat to the lake. Asian clam has already been found in other water bodies in the Lake Champlain Basin, including Lake George in New York and Lake Bomoseen in Vermont.

### Threats Visible and Invisible

Gorton is working at the Vermont Fish and Wildlife Department's John Guilmette Access Area on South Hero Island. It's a busy day on the launch, which is used mostly by recreational anglers in motor boats.

With a degree in wildlife and fisheries biology, he is at ease asking boaters if they know about invasive species and offering some key facts if they don't. He also asks important questions—such as where a watercraft was last used and if the owner took any measures to prevent the spread of invasive species—that will help program managers focus future efforts.

Aquatic plants are fairly easy to see and remove from boats and equipment by hand. The trickier part of a courtesy boat inspection offered by the stewards is finding any residual water that may be lurking in the bilge area, in the motor, livewell, or other compartments. Early-life-stage specimens of such species as the zebra mussel and the spiny and fishhook waterfleas are not visible to the naked eye and can survive in small amounts of water.

### Voracious Crustaceans

The most recent invasives identified in the lake, fishhook and spiny waterfleas, are particularly troublesome because of how they reproduce. Both can reproduce asexually by parthenogenesis. During the summer season, females grow clones in brood sacks. Thus, relatively few individuals are able to establish new populations.

As the weather turns colder toward the end of the summer, fishhook and spiny waterfleas produce microscopic overwintering eggs, which can remain dormant for long periods of time, even under dry conditions.

The spiny waterflea was first detected at just two of fifteen long-term monitoring stations around the lake in late August of 2014. By late October, the species had spread

**On top of having dire ecological consequences, aquatic invasive species can also have severe economic impacts and impair human use of water bodies.**

throughout the lake, sometimes at densities exceeding twenty-five individuals per cubic meter.

Densities decreased in the following years, but researchers attribute a decline in the abundance of several planktonic species to predation by the spiny waterflea.

Routine monitoring first revealed the presence of the fishhook waterflea in August of 2018. Like the spiny waterflea, the fishhook waterflea eats other zooplankton, competing with native fish for a critical food source.

By October of 2018, fishhook had become widespread throughout the lake. At the time, Dr. Tim Mihuc of the Lake Champlain Research Institute called the invasion "a major change in the Lake Champlain food web."

This summer, boat launch stewards have reported that many anglers are returning to the launches with gelatinous clusters of thousands of fishhook waterfleas fouling their lines.

### Boat Launch Stewards

Matt Gorton is one of ten Lake Champlain Basin Program stewards this year, and one of the dozens that have worked the launches on Lake Champlain since the steward program began in 2007.

In the eleven years between 2007 and 2017, stewards surveyed more than 95,000 boats, finding aquatic invasive species on 5 percent of those boats. The data show that stewards remove many more organisms from boats and trailers leaving Lake Champlain than from those entering it.

In 2018, boats traveled from 132 different water bodies in the two weeks prior to their launch in Lake Champlain, and would move on to visit one of 187 other water bodies. These numbers indicate the potential ease and speed of the spread of invasive species by boats transported by trailers.

This information is critically important in regional efforts to control the spread of aquatic invasive species. For many pristine inland water bodies in Vermont, Quebec, and the Adirondacks, watercraft that last visited Lake Champlain are a great risk.

The LCBP works closely with partners in the northeast, including state agencies, Paul Smith's College Adirondack Watershed Institute, and the Adirondack Park Invasive Plant Program. Data collected from these programs are used to identify hot

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## Invasive Species

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spots of invasive species, focus management efforts, and place additional stewards and decontamination stations.

In 2017, the LCBP's steward program expanded to Quebec, making the spread-prevention effort international. The program also has recently stepped up its efforts with the establishment of decontamination stations at several launches in Vermont and New York. There, stewards treat high-risk boats with a high pressure, hot water wash and an engine or compartment flush.

### What Now?

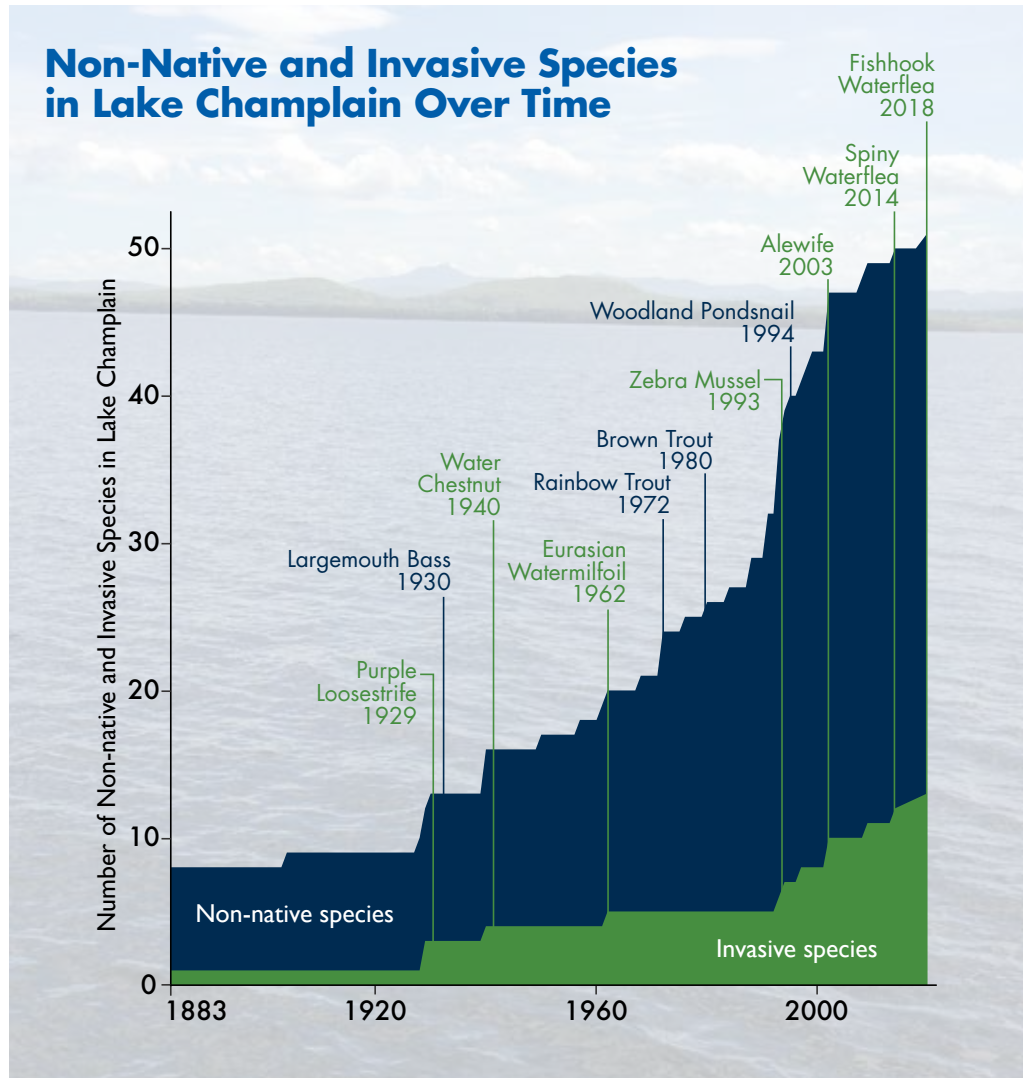
Early detection is critical. That's where the steward programs come in. In 2018, LCBP stewards intercepted 609 instances of invasive species that might otherwise have been moved between water bodies. In one case, stewards found the quagga mussel—one of the greatest threats to the lake—on a boat about to launch in Shelburne Bay.

Some invasive species can be managed. Yearly mechanical and hand harvesting of water chestnut from Lake Champlain has reduced the area of infestation significantly over the last twenty years.

However, because the spiny and fishhook waterfleas' overwintering eggs are microscopic and resistant to drying, there are

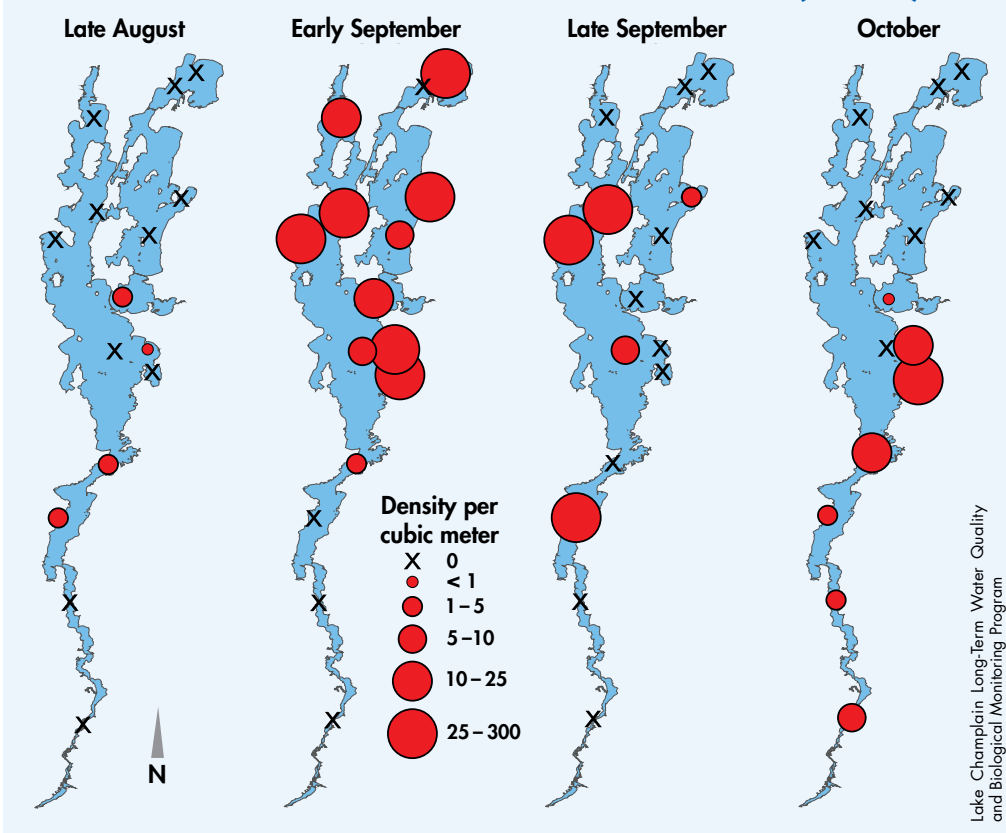
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## Non-Native and Invasive Species in Lake Champlain Over Time



LCBP

## Fishhook Waterflea: Initial Invasion (2018)



Lake Champlain Long-Term Water Quality and Biological Monitoring Program

Above: Scientists have confirmed fifty-one non-native species established in Lake Champlain. Of those, some one dozen are invasive, causing ecological harm, economic harm, or adverse effects on human health. The graph adds species according to the years when first reported. Some years are estimated based on available records.

At left: Densities of fishhook waterfleas at fifteen long-term monitoring stations around the lake between August and October of 2018. Scientists first observed the fishhook waterflea in Lake Champlain in August. Sampling periods are semimonthly except for October, which is the entire month.

Researchers collected each sample by pulling, or towing, a plankton net vertically through the water column from just above the sediments to the water surface. Preliminary reports indicate the waterflea population has rebounded this summer.

# After The Storms

**T**HE COMMISSION'S FIVE-YEAR ROLE supporting storm recovery in New York ended last month as the recovery program scales back.

Hurricane Irene skipped along the eastern seaboard in 2011, making landfall eight times before striking Brooklyn, New York, the morning of August 28.

Just two weeks later, Tropical Storm Lee dropped nearly a foot of rain in the Susquehanna River Valley. Binghamton, New York, saw record flooding.

Perhaps the worst blow fell a year later, when New York City bore the impact of Hurricane Sandy at high tide on October 29. NOAA recorded a fourteen-foot storm surge on that date at the Battery in southern Manhattan. The Centers for Disease


Control reported fifty-three New York deaths from the storm, and the state reported tens of billions of dollars in property damage.

After Sandy, New York Governor Andrew Cuomo created the Governor's Office of Storm Recovery (GOSR) to support recovery from all three storms. To respond quickly, New York turned to NEIWPCC to augment the state's environmental inspection team with a workforce that, at peak, grew to ten NEIWPCC employees. The positions were funded by a federal grant.

Most of this staff's work involved reviewing and certifying environmental permits, but some NEIWPCC employees at GOSR performed environmental assessments related to reconstruction. Over

the last three years, for example, one staff member evaluated the potential impact of proposed construction projects on bats and other wildlife.

Between the first employees' start date in October of 2014 and the last employee's final day in August of this year, the Commission employed a total of seventeen scientists and engineers. They worked in Albany, New Paltz, Long Island City, and Stony Brook.

The GOSR program continues to provide support to individuals, businesses, and municipalities as they rebuild from these storms and plan for the extreme weather of the future. 

## Workgroups

*continued from page 5*

The **Wetlands Workgroup** was instrumental in drafting the Commission's response to a Trump administration proposal that would end federal protection of most of the nation's wetlands. Workgroup members discussed the proposal in four phone calls over the course of the winter. Their concerns formed the basis of a six-page letter filed as a comment on behalf of the seven NEIWPCC states on April 12 in Docket No. EPA-HQ-OW-2018-0149. An account of the proposal and the Commission's response is included elsewhere in this magazine ("The Docket," page 3).

## Conservation

Local land conservation projects that protect source water may get funding through the U.S. Farm Bill, which passed into law in December. On April 2, Kira Jacobs of EPA Region 1 described funding opportunities in the law to the **Source Water Protection**

**Workgroup**. Ten percent of funding for the Farm Bill's conservation programs must go to source water protection. Some workgroup members have since met with the USDA's Natural Resources Conservation Service to learn more about how funding will be administered.

## Climate Change

Workgroup members shared their states' approaches to climate-change preparedness during a **Water Resource Adaptation and Climate Change Workgroup** meeting on May 20. Where and how climate change programs fit into state agencies vary. However, all are prioritizing collecting data on the effects of sea level rise, increased storm events, and warming temperatures. States are using those data to provide technical assistance to communities, plan future infrastructure, and protect drinking-water sources.

The EPA is strongly encouraging states to develop climate-change-preparedness

sections in their next five-year nonpoint source management plans. States discussed progress on their plans during the **Nonpoint Source Pollution Workgroup** call on June 26. Except for Vermont's plan, which is not due for a year, the plans are due to the EPA by the end of September. In response to the EPA, states are including more information on coastal resiliency and stormwater infrastructure improvement. States are also including information about funding of hazard mitigation through FEMA and state emergency programs.

## Training

The **Total Maximum Daily Load Workgroup** held a training event on April 9 and 10 for state TMDL staff members. Don Kretchmer, the principal at DK Water Resource Consulting, demonstrated how to use his Lake Loading Response Model to estimate pollutant loading to lakes. Several workgroup members reported that their departments have started using the model. The group plans to offer other workshops and is considering one for the EPA's Water Quality Analysis Simulation Program. WASP can be used to predict water quality changes over several years for different pollution scenarios.

The **Water Quality Standards Workgroup** helped to plan a training session for new state water-quality staff members that NEIWPCC is offering October 9–10. The workshop will address the three core components of a standard: designated uses of water bodies, nutrient criteria, and antidegradation requirements. The training will

## Invasive Species


*continued from page 10*

fewer options for managing them, let alone eliminating them. In these cases, management focuses on containment.

Individuals also can do a lot to minimize the risk of spreading invasives and to protect the lake from non-native species that aren't yet present. Boaters and anglers should follow "Clean, Drain, Dry" practices and inspect tackle, anchor lines, and other gear. Hot water, high pressure disinfection of boats and equipment that are in contact

with water bodies known to contain invasive species is recommended.

The goal of the boat-launch steward program is to foster behavior change so that lake users will take precautions to clean, drain, and dry their equipment whether a steward is there to remind them or not.

Nonetheless, visitors to Lake Champlain before the end of September may meet Matt Gorton or one of his fellow boat launch stewards. They'll be at the busiest launches around the lake, making sure *everyone* knows how to stop aquatic hitchhikers. 

*continued on page 14*

## Hudson River

*continued from page 7*

individual species in water, soil, and air.

The HRNERR staff is exploring whether this technique can gauge the effectiveness of actions taken to restore ecosystem connectivity in the watershed. Removing dams and improperly installed culverts can provide these animals access to habitat that had been out of reach.

### The Upper Estuary

Just around the bend, we spy the Catskill Mountains. This is where Henry Hudson would have seen the range for the first time as he sailed up the river in 1609.

We pass Kingston on the western bank of the river and travel another six miles north to Tivoli Bays, the third HRNERR component site. The two bays vary significantly in their habitat characteristics. Emergent freshwater tidal marsh and swamp dominate the northern bay, while the southern bay is nearly all open water with fringing marshes. A railroad causeway separates most of both bays from the main river channel. The causeway is punctuated by low openings that allow water to flow in and out.

At the mouth of the Saw Kill, in the South Bay, HRNERR Science Educator Sarah Mount, another NEIWPC staff member, works with a group of students from Bard College to count glass eels captured as part of the Hudson River Eel Project. The tiny transparent eel is the juvenile form of the American Eel. Each spring since 2008, the project has monitored the migration of the glass eels as they make their way up Hudson River tributaries.

Adult eels migrate all the way out to the



*Chris Mitchell, a NEIWPC- HRNERR researcher, and Lisa Williams, an intern, measure marsh elevation using a surface elevation table at the Norrie Point tidal marsh.*

Sarah Fenold

Sargasso Sea in the Atlantic Ocean to spawn; baby eels hatch from eggs in the ocean and migrate into freshwater rivers, streams, and lakes to mature and grow. Each year, volunteers assist the effort to count eels, which are caught in cylindrical or cone-shaped fyke nets and released upstream.

The Eel Project has long been an educational resource, and today, the project's new quality assurance project plan will ensure that the data gathered may be used for planning and decision-making.

The North Bay will soon be the province of another NEIWPC staff member

who had not started work as this issue of *Interstate Waters* was going to press. This HRNERR research technician will conduct field activities to support analysis of weather, water-quality, and nutrient conditions at the site.

This effort is part of the NERRS System Wide Monitoring Program, which sets data-collection protocols that are used across the research reserve system. The protocols allow researchers and others to compare and learn from ecosystem characteristics across sites in the national system.

The Turkey Point Tide Station, installed in 2015 by the HRNERR staff, stands just across the river from the South Bay. Data from this site are now included in NOAA's national tidal gauge network. The tide station provides real-time information about water levels in the upper Hudson estuary. The station fills a gap in tidal information for the region and will improve tidal forecasts and measure sea level rise. Thanks to Turkey Point's location, the information from the tide station will also be valuable in understanding the changes in the marsh measured by the SETS in Tivoli Bays.

Leaving the bays, we head towards the most northern of the four component sites, Stockport Flats. We pass the town of Saugerties on the eastern shore and the lighthouse that occupies the point at the mouth of Esopus Creek.

The creek is one of many tributaries to the Hudson River. The tributaries provide

## The National Network

THE HUDSON RIVER NATIONAL ESTUARINE RESEARCH RESERVE IS ONE OF twenty-nine research reserves in the National Estuarine Research Reserve system. The system, created in 1972 by the federal Coastal Zone Management Act, is a cooperative program administered by the National Oceanic Atmospheric Administration and coastal states. HRNERR was established and incorporated into the national system in 1982 largely due to efforts by Hudsonia, a nonprofit environmental research institute.

Each reserve in the system has its own unique history, habitats, and administrative structure. What they share are common focuses and coordinated activities in research, training, education, and stewardship.

### A Future for the Reserve System

Today, in Connecticut, there is an effort to establish what would be Long Island Sound's first national research reserve. The Land and Water Resources Division in the state's Department of Energy and Environmental Protection has nominated for reserve status a site that includes six state-owned properties and a swath of subtidal area near the mouths of the Connecticut and Thames rivers.

critical habitat to migratory species including the eels Mount is counting in Tivoli South Bay. The tributaries bring water, nutrients, sediment, and pollutants from the surrounding landscape into the main river channel.

After traveling for about twenty miles up the river, we reach the Stockport Flats component site. Stretching along five miles of the eastern shore, the site comprises a mixture of features and habitats. Near the northern boundary of the component site, at Ferry Landing, another NEIWPCC staff member is inspecting the condition of the shoreline. He is Dan Miller, the habitat-restoration coordinator for the Hudson River Estuary Program.

The Estuary Program is a companion program to the Reserve. The Research Reserve maintains weather and water-quality monitoring equipment that contributes to the Hudson River Environmental Conditions Observing System, an effort coordinated by the Estuary Program. HRNERR and the Estuary Program team up for the Eel Project every spring and A Day in the Life of the Hudson and Harbor in October. Both are public outreach and citizen-science projects.

As part of HRNERR's Sustainable Shorelines program, Ferry Landing is a demonstration site for nature-based stabilization

## The Hudson River Estuary Program

CREATED IN 1987 BY NEW YORK'S HUDSON RIVER ESTUARY MANAGEMENT ACT, the Hudson River Estuary Program works closely with the Research Reserve. The Estuary Program focuses on improving and restoring the natural features of the Hudson River and its watershed, and on providing public education and access to the resources of the river. The Estuary Program accomplishes its mission through collaborative efforts with many government, institutional, and nonprofit partners, a robust grants program, and a talented and knowledgeable staff, many of whom are NEIWPCC employees.

measures that retain and improve the surrounding habitat and increase public access and recreational opportunities.

Traditional approaches to shoreline management include the use of hardened, geometrically simple designs. These provide little ecological value and can exacerbate erosive forces as waves are reflected, rather than absorbed by the shore. Nature-based shoreline designs mimic natural forms and use natural materials, providing better quality habitat in the shore zone.

Beyond Stockport Flats, there are another twenty or so miles until the end of the estuary at the Federal Dam in Troy. Not far north of the dam, the Mohawk River flows into the Hudson. Beyond that, the path of the river begins its rise up into the Adirondacks. If we turn back now, we can

return to Norrie Point in time to catch the most recent webinar in the Sustainable Shorelines series, hosted by Emilie Hauser, HRNERR's estuary training program coordinator. Hauser is also a member of the NEIWPCC staff.

Back on the Hudson, the future for the Research Reserve looks bright. Although each component site faces local, near-term challenges and global, long-term threats, the ongoing work to gather scientific data and conduct research will inform efforts to mitigate those threats in the future. Through partnership with other reserves in the system and collaboration with the staffs of other agencies and research reserves, HRNERR plays a key role in environmental problem solving on the Hudson and around the nation. 💧



Dan Miller explains the workings of the Sparkill Creek eel ladder in the Piermont Marsh. Miller designed and constructed the ladder, dubbed the "elevator," using materials from a local hardware store. Volunteers use the bucket shown to lift eels over a dam at that site. Also in the photo at right: Sarah Mount.

# Four Join NEIWPC Commission as Leadership Shifts

**T**HE COMMISSION WELCOMES FOUR new Commissioners: Kathleen Baskin, Renée Coleman-Mitchell, Katie Dykes, and Thomas O'Donovan.

Baskin is the assistant commissioner for the Massachusetts Department of Environmental Protection's Bureau of Water Resources. She represents the Department of Environmental Protection Commissioner Martin Suuberg. Baskin is the former director of water policy for the Executive Office of Energy and Environmental Affairs, where she served for 11 years until 2016.

Coleman-Mitchell was appointed as Connecticut's Commissioner of the Department of Health in February. She served the state as section chief of the agency's Community, Family, and Health Equity Section from 2002 to 2016.

Dykes is the new commissioner of Connecticut's Department of Energy and Environmental Protection (DEEP). From 2015 to 2018, she chaired the Connecticut Public Utilities Regulatory Authority; she was deputy commissioner for energy at Connecticut DEEP from 2012 to 2015. She is a former chair of the Board of Directors of the Regional Greenhouse Gas Initiative.


O'Donovan is the director of the Water Division of New Hampshire's Department of Environmental Services. He represents DES Commissioner Robert Scott. O'Donovan brings to the Commission more than three decades of public service and experience as a project manager in the construction industry. Recently, he helped with Hurricane Maria recovery in Puerto Rico.

All of NEIWPC thanks outgoing Commission Chair Douglas Fine, who has accepted the new position of regional deputy director in charge of the Massachusetts Bureau of Air and Waste's Worcester office. Fine had been a member of the Commission since 2014. Mark Klotz of New York will



*Doug Fine and Mark Klotz share a lighter moment during the January 8, 2017, meeting of the Commission's Executive Committee. Fine stepped down as Commission chair in July.*

chair the September Commission Meeting.

The Commission also recognizes outgoing Commissioners Suzanne Blancaflor (Connecticut), Robert Breault (New York), David Deen (Vermont), and James Ehlers (Vermont) for their service to the region. 

## Workgroups

*continued from page 11*

also cover implementing a standard and other important policies. It will be led by experienced state staff members as a regional complement to the EPA's national Water Quality Standards Academy.

Should one size fit all states when it comes to testing operators of water and wastewater plants? Or do local differences in geography, technology, and regulation mean it is better to test environmental professionals differently in Maine than in Arizona?

These issues took center stage at a meeting of northeast wastewater and drinking-water certification authorities convened by NEIWPC's **Wastewater Certification Workgroup** on July 23. At the meeting, the Association of Boards of Certification (ABC) made the case for a single uniform set of examinations, in terms of standardization, reciprocity, professionalism, and exam quality.

The ABC is an international nonprofit association that develops and provides cer-

tification exams. Five of NEIWPC's seven member states use ABC exams in some form for wastewater certification. Association representatives argued that standardization

- promotes reciprocity so that an operator can move easily from state to state,
- protects water plants legally from claims of negligence in the certification process,
- provides for exams that are themselves well tested across a large user base.

State certification personnel also discussed issues related to locations for computer-based testing and the inclusion of trial exam questions. The ABC uses trial questions to develop new ones.

The **Massachusetts Training Advisory Committee** agreed to add a new advanced math class to the fall training schedule. The decision was made during the group's June 19 meeting, based on feedback from the instructor of the Advanced Operation of Municipal Wastewater Treatment class. The additional one-session math course will aim to close the gap between operators with different skill-levels and will focus on problem

solving using common wastewater treatment formulas. The group also finalized the fall course schedule, which begins in early September. NEIWPC has managed training for Massachusetts since 2005.

## Aquatic Biology

The **Northeast Aquatic Biologists Workgroup** met May 8 to share news before the busy summer monitoring season. The group reflected on the Northeast Aquatic Biologists Conference that took place earlier in the year. The conference included a panel discussion by NEIWPC's **Volunteer Monitoring Workgroup**. The aquatic biologists workgroup has a new co-chair, Katie DeGoosh-DiMarzio. She is a NEIWPC employee who supports Rhode Island DEM's monitoring work. DeGoosh-DiMarzio will help plan the 2020 NAB conference, which will take place next March in Newport, Rhode Island.

## Stormwater

A **Stormwater Workgroup** meeting on March 20 helped to develop topics and *continued on page 15*

# A Boatload of Control



Judy Preston/Connecticut Sea Grant

**S**TEVE GEPHARD, A FISHERIES SCIENTIST at the Connecticut Department of Energy and Environmental Protection, lent boats and staff to the effort to remove invasive water chestnut (*Trapa natans*) from an inlet north of Salmon

Cove in the Connecticut River Estuary on July 29. Gephard is at right.

Also helping were Margot Burns of the Connecticut River Council of Governments and Judy Preston of the Connecticut Sea Grant and Long Island Sound Study.

Left unchecked, this area could easily be filled in and choke important native underwater vegetation that is critical to spawning and resident fish.

According to the online *Invasive Plant Atlas of the United States*,

*Trapa natans* is a rooted, floating plant that invades shallow to deep, fresh water habitats in the northeastern United States. It can grow in 12–15 ft (3.6–4.6 m) of water and forms dense, floating mats, often three layers deep.

The...mats of *Trapa natans* restrict light availability, reduce the oxygen content, and displace other emergent and floating vegetation. It also limits boating, fishing, swimming and other recreational activities. *Trapa natans* is native to Europe and Asia and was first observed in the United States in Massachusetts in the late 1800s.

Small populations of water chestnuts can be controlled by hand pulling before seed formation, typically in July. Large infestations may require the use of mechanical harvesters or aquatic herbicides. 💧

## Workgroups

*continued from page 14*

identify participants for two issue-specific, ad hoc meetings in April, as follows.

On April 5, state and EPA officials met in Lowell to discuss how to balance stormwater pollution reduction with their capacity to issue and enforce permits. EPA Region 1 and some NEIWPCC states have received petitions to use their “residual designation authority” under the Clean Water Act to regulate stormwater pollution to water bodies with total maximum daily loads. Those petitions have called for regulation of private land parcels with paved surfaces. A single petition can trigger hundreds of permits. Officials compared various approaches to exercising their residual designation authority, such as delegating

authority to municipalities or managing extensive stakeholder outreach.

Large-scale solar farms were the focus of a regional conference call on April 29. To receive their stormwater construction general permits, developers of solar farms must submit and implement stormwater management plans to minimize erosion and runoff from clearcutting and construction. However, some contractors are ignoring best practices in violation of their permits, paying fines as a cost of expediting development. State and EPA officials explored such solutions as issuing cease-and-desist orders and incentivizing developers to build on existing impervious surfaces such as roofs or parking lots. The discussion will continue this September at the next Stormwater Workgroup meeting. 💧

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## Events

**September 4**, NEIWPCC webinar:  
*Novel electrochemical water  
treatment technology.*  
[bit.ly/9-4\\_waterwebinar](http://bit.ly/9-4_waterwebinar)

**September 10**, NEIWPCC  
webinar: *UV-LED for Primary  
Disinfection: Discovering ideal  
applications.*  
[bit.ly/neiwpcc\\_waterwebinar](http://bit.ly/neiwpcc_waterwebinar)

**September 12-13**, Saratoga  
Springs, N.Y.: Fall meeting  
of NEIWPCC's governing  
Commission.

**September 14**, Oyster Bay, N.Y.:  
*Estuary Day 2019.* With the  
Long Island Sound Study and  
Peconic Estuary Program staffs.  
[bit.ly/2019estuaryday](http://bit.ly/2019estuaryday)

**September 17-19**, New Orleans,  
La.: LUST Workshop 2019, *Sharing  
Solutions to Advance LUST  
Cleanups.* [bit.ly/LUSTworkshop](http://bit.ly/LUSTworkshop)

**September 21-25**, Chicago,  
Ill.: WEFTEC Annual Technical  
Exhibition and Conference.  
[bit.ly/weftec2019](http://bit.ly/weftec2019)

**September 22-25**, Rockport,  
Me.: New England Water Works  
Association, annual conference.  
[bit.ly/newwa2019](http://bit.ly/newwa2019)

**October 9-10**, Lowell, Mass.:  
Water Quality Standards Training.

**October 30-31**, Washington,  
D.C.: Association of State  
and Territorial Solid Waste  
Management Officials, annual  
meeting. [bit.ly/astswmo2019](http://bit.ly/astswmo2019)

**January 9-10**, Lowell, Mass.:  
Winter meeting of NEIWPCC's  
governing Commission.

**January 14-17**, Mobile, Ala.:  
Association of Boards of  
Certification, "Innovation in  
Certification" annual conference.  
[abccert.org](http://abccert.org)

**January 26-29**, Boston, Mass.:  
New England Water Environment  
Association's annual conference.  
[annualconference.newea.org](http://annualconference.newea.org)

**February 3-5**, New York, N.Y.:  
New York Water Environment  
Association's annual meeting.  
[bit.ly/NYWEA2020](http://bit.ly/NYWEA2020)

**February 4-5**, San Antonio,  
Tex.: Association of Clean  
Water Administrators, 2020  
National Stormwater Roundtable.  
[bit.ly/acwastormwater](http://bit.ly/acwastormwater)

**March 4-6**, Newport,  
R.I.: Northeast Aquatic  
Biologists conference.  
[bit.ly/neiwpcc\\_nab2020](http://bit.ly/neiwpcc_nab2020)

*A single fishhook waterflea (actual size) is typically six to thirteen millimeters in length. On our front cover: A tangle of waterfleas from Lake Champlain, September 2018. The clump, actually just a few centimeters across, includes many fishhook waterfleas, some spiny waterfleas, and fishing line. At left, a fishhook waterflea, highly magnified. Cover photos courtesy of the Lake Champlain Research Institute. Story, page 8.*