



On the Hudson River, a place to discover eels, hogchokers and the value of estuaries

Connecticut seeking its own research reserve on the southeastern coast

By Bill Leukhardt



Every coastal New England state but one has a NERR — a National Estuarine Research Reserve.

Connecticut is the one. (Vermont isn't eligible — no seacoast or tidal lake.)

The Nutmeg State is one of two saltwater coastal states in the country without one. Louisiana is the other.

But the outcome of a pending application with the National Oceanic and Atmospheric Administration could change that. Connecticut hopes to create a NERR out of five areas along the southeastern coast. It would be the 30th one nationwide if approved.

Still, despite hearings, meetings and news reports about a Connecticut NERR, most state residents know little about the reserve.

A visit to New York's Hudson River National Estuarine Research Reserve helps explain what a NERR is. While every NERR is unique, learning how an existing one is being used for education, research and conservation provides a window into understanding what a NERR could mean for Connecticut.

All 29 are the result of a federal program started in 1972 to protect, preserve and learn more about estuaries, crucial to the survival of fish, birds, invertebrates, plants and anything else in the ecosystems of coastal regions.

Florida and California have the most NERR sites — three in each state. There are freshwater ones in Ohio and Wisconsin on the Great Lakes, bodies of

water so large they have tides and are wreathed with lighthouses to guide shipping traffic in dangerous storms.

Puerto Rico has one on its south shore. In all, there are 1.3 million acres of estuarine land and water within boundaries of the 29 reserves.

The Hudson NERR was created in 1982. The reserve includes 5,000 acres of tidal habitats in four sites — Piermont Marsh, Iona Island, Tivoli Bays and Stockport Flats/Nutten Hook. There is an environmental center at Norrie Point in Staatsburg, north of Hyde Park.

"The Hudson River National Estuarine Research Reserve promotes education, research, training and stewardship to understand and protect the many resources of the Hudson River estuary," Stephanie Mossey of the N.Y. Department of Conservation said in an email.

"The four component sites represent some of the largest areas of tidal wetlands found along the Hudson River estuary," Mossey wrote. "They also represent an interesting gradient of salinity from the brackish waters of Piermont to the freshwater but still tidal area of Stockport and Nutten Hook."

The N.Y. state agency is the partner with NOAA in the Hudson Reserve. In Connecticut, the state's Department of Energy and Environmental Protection and UConn would partner and have that role.

The Hudson NERR mission includes education, research that includes citizen-scientists and schools, as well as training and stewardship.

A NERR does not seize private land, does not impose new federal rules and regulations or ban

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— Hudson NERR Education Coordinator Chris Bowser



Left, students from Poughkeepsie High School examine eels from Fallkill Creek, a tributary of the Hudson, as part of the Eel Project. Photo: Chris Bowser

state-permitted activities. Connecticut DEEP has made those points clear in meetings about the state's reserve application.

"Technical know-how is shared with engineers, planners, decision-makers and others so communities have the best tools possible to conserve and utilize their estuaries," Mossey said. "The NERR doesn't change how we use the river but it does remind us of vital areas that support the estuary in so many ways."

One key reserve goal is public education on what an estuary is and how important these are to nature and people. This includes school programs, citizen research, canoe and kayak trips on the Hudson, hikes along the shore and sample netting of river life.

Data collected by citizens and students are part of the Hudson Reserve scientific findings. They're used in national studies of coastal habitats, water quality and climate change.

Stuart Findlay, senior environmental scientist at the non-profit Cary Institute of Ecosystem Studies in nearby Millbrook, N.Y., said the Hudson Reserve research is helpful.

Getting similar data from a reserve in Connecticut will add more insight into changing conditions in the country's coastal shores and wetlands, said Findlay. He's studied the Hudson for 34 years and says estuaries are crucial resources.

"Two-thirds of the fish and shellfish caught in the U.S. depend on estuaries for their survival," the National Estuarine Reserve Research Association says about the key role of estuaries and wetlands.

Education, partnerships with schools, citizen involvement and public programs are tools the Hudson reserve uses to make people aware of the river's ecological importance and the need to preserve it, Hudson NERR Education Coordinator Chris Bowser said.

"People love to interact with the water. The big hit with everyone 5 to 85 is when

they use nets and the nets come up with whatever they've caught," Bowser said one recent sunny Friday outside the reserve's Norrie Point Environmental Center.



Students from Poughkeepsie High School and staff of the Hudson NERR wade into Falkill Creek as part of the Eel Project, now in its 12th year. Photo: Chris Bowser

Glass eels are a crowd pleaser. So are the river oddities — seahorses, oyster toadfish and the "perennial favorite" hogchoker. (The latter is a small flat "trash fish" that settlers often fed to pigs, which had trouble swallowing the fish because of their sharp, rough scales.) Non-native species such as Chinese mitten crabs, soft-shell turtles and weatherfish (a fish-like leech) are interesting surprises, he said.

The Hudson is high school science teacher Lee Magadini's favorite classroom, even though it is 43 miles from the Berkshire Waldorf High School in Stockbridge, Mass., where she teaches.

On the Hudson, her students put on hip waders and cast seine nets for the tiny glass eels migrating 1,500 miles from the Sargasso Sea to the Hudson where they will grow before returning to the Sargasso to spawn.

This eel project is very popular with all students who cast nets into the Hudson, Bowser said. The eel is his favorite river creature. Mark Angevine, a science teacher at nearby Poughkeepsie High School, is so interested in eels he uses Eel Man Two as his online nickname. Bowser is Eel Man One.

A Vassar College student got so enamored with eels after volunteering with the Hudson River Eel Project to count eels at the Crum Elbow Creek eel ladder

that she wrote a comic book about eels and eel conservation. A large copy of Bella Dalton-Frenkl's "The Crum Elbow Eel Ladder" is displayed in the Norrie Point Center. (Crum Elbow is a creek that flows through Hyde Park into the Hudson.)

While Magadini and her students enjoy learning about eels, their river exploration also extends to water chemistry and other species that depend on the river. Her students check the tidal river water for salinity, dissolved oxygen and collect other valuable data in an outdoor classroom that has bald eagles overhead and shortnose sturgeon, oyster toadfish and other fishy treasures swimming below.

"We've been coming here for 16 years," Magadini said one recent Friday when she stopped in the Norrie Point office of the reserve in Staatsburg to get materials for this year's lesson plans.

"This is a fabulous center. Students love this day," she said.

In a nearby room that day, 16 junior and senior students from a Poughkeepsie school were busy talking about their day's work — netting river creatures, hiking by the shore to study wetlands, viewing birds with Norrie Point telescopes and entering water sample results from their research.

Some sat next to aquariums choked with invasive plants including water celery. A display on a nearby wall explains that tides rise and fall about 3 to 5 feet twice a day along 153 miles from Manhattan to Troy. Another tells how the Hudson is often muddy because it gets up to 1.5 million tons of sediment yearly from tributaries, mostly the Mohawk River upstate, and that 79 tributaries flow into the Hudson along its length from Troy to Manhattan.

"I can give my students a wonderful introduction into chemistry and they can do interesting, important research," Magadini said. "We have

16 years of data from our school's trips here and we can see how river conditions might be changing. It's fascinating. They make a connection of their work here to research."

Every year, 10,000 students and teachers from New York, New Jersey, Massachusetts and Connecticut use Hudson reserve education programs, according to the N.Y. conservation department.

The biggest single event is the annual Day in the Life of the Hudson program in October, which draws 6,000 students at 90 river sites, Bowser said.

Findlay, the Cary Institute scientist, said Hudson NERR work research is "valuable, excellent long-term monitoring at key locations that are preserved and protected. They have solid water quality, turbidity, plant, sea level data. They pick up new things, information that helps us all."

Findlay said the NERR emphasis on public participation and citizen science prepares "the next generation to judge information."

Nationwide, NEER data help provide a snapshot of the country's coastal estuaries and on the Great Lakes.

Findlay likened the value of the NERR data to a researcher focused on just one part of an organism who steps back to learn about the rest of his subject's body.

"You might know about the right leg but it's good to know what's going on in

the left one," he said.

The findings of the Hudson reserve, combined with research of many other groups monitoring the Hudson, provide lawmakers and policymakers with new information to improve regulations and conservation policy.

The hope is that this work will help preserve the river. The reality is that it has, Bowser said.

"We all work to protect the river," he said.

Mark MacCormack of Stockport had no idea what a NERR is or its role in the cleanup of the Hudson, which was dirtier when he swam in it and roamed its shores in his youth.

He noticed the river's improvement when he came back to Stockport recently from Texas where he'd moved years ago for work. He was interviewed near a small pavilion in Stockport Flats, just downriver from the NERR, watching his sons early on a warm, late summer afternoon.



Connecticut's NERR plan:

The Connecticut site would extend from Old Lyme to Mystic – from the lower Connecticut River including Lord Cove and Great Island wildlife management areas and submerged areas at the mouth of the river, to submerged areas of the Thames and Mystic rivers, to Bluff Point and Haley Farm state parks in Groton.

Connecticut's application to NOAA includes a site selection report submitted in January 2019, prepared through a two-year effort by a team led by DEEP, the University of Connecticut and Connecticut Sea Grant. The site selection was approved by the NOAA administrator on Sept. 27, 2019. The next steps include an environmental impact study and the drafting of a management plan, leading to the full designation, expected in two to three years.

To learn more about the proposed Connecticut NERR, visit: www.ct.gov/deep/NERR

To view a map of the proposed CT NERR sites, visit: <https://seagrant.uconn.edu/wp-content/uploads/sites/1985/2018/11/NERRmap.jpg>

To learn more about the Hudson River NERR, visit: <https://www.dec.ny.gov/lands/4915.html>

To learn more about the National Estuarine Research Reserve System, visit: <https://coast.noaa.gov/nerrs/>

An egret and two herons were wading in shallow water, hunting for food.

"When I was a kid, the bald eagle was endangered," he said. "You hardly ever saw one. You come down now and you can see them on that peninsula out there."

He pointed to a small island close to shore, not far from the Hudson reserve's Stockport kayak and canoe put-in.

"It's definitely a lot cleaner now."

Left, the Tivoli Bays reserve shoreline, one of four sites that are part of the Hudson River NERR, is seen looking west from a riverbank hill. Photo: Chris Bowser

Above, an egret wades through the marshes at Bluff Point State Park in Groton, proposed to be part of the Connecticut NERR. Photo: Nancy Balcom

How big is the Hudson River Estuary? To find out and see more photos, visit <https://seagrant.uconn.edu/?p=5626>

