

# our natural world

## Taking the measure of marshes



**IN THE FIELD**  
Jennifer Smith

jennifer.smith@newsday.com

**T**hey strode out into the marsh on a steamy summer day, two women lugging a gun case and a stadium bench with plastic footstools duct-taped to either end.

Their destination: a metal rod sticking up in the middle of Bass Creek at Mashomack Preserve, a 2,039-acre complex on Shelter Island owned by the Nature Conservancy.

The steel rod goes about 80 feet down into the marsh. It's one of several benchmarks that the environmental advocacy group, along with state and federal researchers, installed in local wetlands to track the rise, fall and submergence of Long Island's marshes.

"We know that climate change, and in particular sea level rise, is one of the biggest threats to our salt marshes," said Nicole Maher, a wetlands specialist with the conservancy who has collected data from the sites for the past few years.

Maher and others want to know if local wetlands — which grow vertically by accumulating sediment — can keep pace with sea level rise, which many scientists expect will accelerate as the climate warms. By measuring the rate of vertical growth, the research team hopes to learn which marshes are most at risk, why they are failing, and what can be done to help them survive.

At Bass Creek that day, the sun blazed overhead as Maher set the bench down gently on the springy peat. Kathleen Conrad, the group's operations manager, recorded their location in a yellow notebook.

Maher knelt on the aluminum bench and opened the gun case. She removed a metal



Nicole Maher, left, and Kathleen Conrad measure sediment accumulation at Bass Creek on Shelter Island. At left, a cross-section of the marsh.

NEWSDAY PHOTOS / JENNIFER SMITH

But others have shrunk dramatically, marsh grass giving way to open water, and researchers aren't entirely sure why. Prime suspects include contaminated runoff and shoreline development that disrupts sediment flows along the coast.

To track the changes, the research team has set up a network of 11 monitoring stations from Pelham Bay in the Bronx to Accabonac Harbor in East Hampton, though not all the sites are up and running.

Wetlands sustain themselves with sediment deposited by rivers or — as is mostly the case here — carried in on the tide. Cordgrass and other marsh plants help build elevation by trapping sediment particles, which fall to the marsh surface. Below ground, complex root structures anchor the peat, adding volume from beneath. Marshes not hemmed in by bulkheads can also react to flooding by moving landward.

Pollution can weaken wetlands. Preliminary data from a joint project with the federal Environmental Protection Agency show marsh grass tends to grow taller in Jamaica Bay — which is flooded with nitrogen from sewage treatment plants and storm water runoff. But root systems there weren't as sturdy as in plants from more pristine areas. Weak roots are more vulnerable to erosion.

"When these plants are exposed to a high nutrient environment, they don't need to invest as much energy in root growth to satisfy their nutrient needs; and so they don't," according to a 2010 Nature Conservancy report.

To check how much sediment has accumulated on the marsh, researchers have sprinkled a layer of white powder at three spots near each benchmark. Sediment deposited by the tides then piles up on top. Each time researchers return

**Climate change . . . is one of the biggest threats to our salt marshes."**

— Nicole Maher, Nature Conservancy

Long Island's marshes now are recognized for providing vital ecological services. They filter pollution, serve as nurseries for marine life and help blunt the impact of storms.

Bass Creek and marshes like Hubbard Creek in Flanders have remained fairly healthy in recent decades, with little vegetation loss between 1974 and now, according to aerial photographs.

device called a surface elevation table, or SET, and attached it to the steel rod protruding from the peat. Carefully, Maher measured the site's elevation to the millimeter by moving nine fiberglass pins on the SET's horizontal arm down to the marsh surface. Bass Creek has three benchmarks; each gets measured in four different directions.

"I don't want to trample or step on the area where I'm measuring the elevation," Maher said from her perch. "You can see even some footprints from the previous hike out to the marsh — those footprints remain compressed."

It's a reminder of just how fragile these wetlands can be. Once regarded as swampy, mosquito-ridden nuisances,

## WINNERS

Compiled by Michael Ebert

### Jack Bransfield

Bank president



Jack Bransfield of Glen Cove has received the John O'Neill Humanitarian Award from Project GRAD Long Island, a K-12 program that helps disadvantaged students get into college. Bransfield, who was honored for his "deep and sustained commitment to expanding educational opportunity to all students," is president of Roslyn Savings Bank. He is also chairman of Tilles Center for the Performing Arts in Greenvale and the Long Island Arts Alliance.

### Marc Herman

Board of Education president



Marc Herman of Syosset has received the Life Achievement Award from the National Parent-Teacher Association for his devotion to children's education. Herman, a dentist with a practice in Woodbury, has served as president of Syosset Central School District's Board of Education for the past four years. He is also on the faculty at North Shore University Hospital and is a member of The American Academy of Dental Practice Administration, among other organizations.

### Kathy Lindahl

Social worker



Kathy Lindahl of Ridge has received the Friend of Education Award from Phi Delta Kappa's Stony Brook University Chapter for "making a difference in the quality of the educational experience for students." Lindahl has served as a social worker at North Country Road Middle School in Miller Place for the past seven years and is a member of the National Association of Social Workers. She has also worked as a counselor with Eastern Suffolk BOCES and a therapist with the Family Service League.

### Eugenia Mazzara

Supporter



Eugenia Mazzara of Bethpage was recently honored by the Family and Children's Association in Mineola for "her lifetime of giving and support" to its scholarship fund for disadvantaged youth on Long Island. Mazzara, who has supported the association since 1953, spent the past 10 years working for Hicksville-based insurance recruiting firm Pryor Associates until her retirement in June at age 90. She is a member of the American Legion Auxiliary and Bethpage Chamber of Commerce.

**NOMINATE SOMEONE AS A WINNER.** Send e-mail information about the accomplishment or honor to [winners@newsday.com](mailto:winners@newsday.com), or mail to Winners, Newsday, 235 Pinelawn Rd., Melville, NY 11747-4250. Please include a photo; color is preferred. Photos will not be returned.



NEWSDAY PHOTO / JENNIFER SMITH

Nicole Maher measures the elevation of the marsh at Bass Creek.

## Monitoring LI's wetlands

MARSHES from G16

to a site, they slice into the peat, removing cakelike wedges to measure the depth above the white stripe.

"I'm taking three readings of depth accumulation," Maher said, holding up a ruler at the spot she calls F3. "For F3, we've got 5, 7, 15 [millimeters]."

Sediment here has accumulated more slowly than at a number of other

sites, according to preliminary data. Bass Creek gained only about 4.5 millimeters per year compared with Hubbard Creek, which gained just over 6.

But more time and more sampling is needed to determine whether those results reflect long-term trends. In the meantime, Maher patted the plug back down into the marsh. The peat would knit the edges back together until her next visit.

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