HURRICANE HISTORY

Getting to the core of erosion

IN THE FIELD
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Secrets lie beneath the wetlands on the bay side of Lido Beach, clues etched in layers of peat and sand that researchers hope will reveal the story of past hurricanes and erosion.

On a recent overcast morning, a team of local professors and students in rubber boots hustled equipment across the high marsh at the Town of Hempstead's Lido Beach Nature Area. They worked quickly to beat the rain, trundling tools, an engine and 10-foot lengths of aluminum pipe out to the windswept spot where they planned to extract a cross-section of soil.

"We're here today to core through the marsh," said Beth A. Christensen, an assistant professor of environmental studies at Adelphi University.

She and researchers from Hofstra University and New Jersey City University in Jersey City want to reconstruct geologic history by analyzing sediment from the back bay marshes.

Back at the lab, they will look for deposits of sand from the ocean side of the barrier island that would have been carried over by storms. To check how old the layers are, any shells or roots they find are carbon-dated; sediment is also analyzed for radioactive elements deposited during nuclear testing in the 1950s.

NEWSDAY PHOTO / DANIEL GOODRICH

Students and professors attempt to collect soil samples by coring through the marsh at Lido Beach.

"What we're interested in finding out is how this marsh has changed through time," Christensen said.

The scientists want to try to reproduce results from a study last year by a researcher at Woods Hole Oceanographic Institution in Massachusetts. He found evidence of hurricanes as far back as the late 17th century here.

But it's not easy to find marshes along Nassau's South Shore that are pristine enough to provide accurate historical data. Ditches dug in the early 20th century to control mosquitoes cut the through the wetlands. Sediment dredged up during maintenance of navigation channels that cut through Hempstead Bay was also dumped in the marsh. Cores the group took earlier this fall showed 3 feet of dredged sand — not exactly the continuous sedimentary record they were seeking.

"There's been a lot of dredging and filling, so we want to pick a spot with storm deposits, not dredge deposits," said E. Christa Farmer, an assistant professor of geology at Hofstra University.

Out on the marsh, the team assembled a tripodal from duct tape and three aluminum pipes that rested on boards to prevent the whole thing from settling into the mud. Students inserted a 4-inch pipe through a hole in a plate at the top of the tripodal.

To propel that pipe into the mud, vibrations produced by a portable Honda engine travel through a hose attached to a weighted "head" clamped on to the pipe. One student started the motor while the rest, in hard hats, clustered around the pipe to help push it down at the proper angle. It took five to 10 minutes of straining to vibrate the shaft down 5 feet.

"We never get too much from the high marsh because it's a compacted layer" of sediment, said Deborah Freile, associate professor of geosciences at NJCU. "From the low marsh it goes in like butter."

The team sawed the pipe off about 8 inches above the ground, then capped it with a rubber seal. Two burly students used a jack and a pulley to wrench the pipe out from the sucking soil.

Later, Christensen donned a welding mask and fired up a circular saw to split the core as it lay across two sawhorses at a toolshed by the parking lot. Aluminum shards flew as she cut a shallow incision to split the pipe up one side, then flipped it over and did the other side.

Slicing through the incisions with piano wire, Christensen halved the core to reveal a sediment rainbow: stripes of pale sand, gray mud, black muck and rust-colored soil.

THE MONTH OF NOVEMBER

GETTY IMAGES PHOTO

Eastern gray squirrels bury nuts, which often leads to the growth of new trees.

You can see

As winter approaches, the ubiquitous Eastern gray squirrel provides a dash of electricity when so much outdoors has been unplugged. Look for them, of course, anywhere trees grow, though they favor oak, hickory and maple. Squirrels are the picture of industry, and theirs is a simple mission. They are gathering nuts, and they are storing them. Contrary to belief, squirrels do not cache great loads of nuts. They bury each one individually (often leading to the propagation of trees). They use their keen sense of smell to reclaim what they have squirreled away, even when their booty is buried under snow. Studies have shown that squirrels can recover up to 85 percent of the nuts they bury. They also eat seeds, fruit, fungi and flower bulbs. They don't hibernate, so they will be active as winter temperatures begin to arrive this month. They are acrobats of the backyard. They scramble along power lines and leap 6 feet at a time, using their busy tails as a rudder. As anyone who has released a dog into the yard knows, squirrels are fast. Eastern grays can top 20 mph. They communicate among themselves with various vocalizations — squeaking, chirping, chattering — but also by flicking their bushy tails. **— JOE HABERSTROH**

Out and about

WALK IN THE PARK. 10:30 a.m. Nov. 2. Four plus miles. Flat trails, circling through Heckscher State Park. Free. Info, Terrie, 631-885-4543.

THROUGH THE WOODS. 9:30 a.m. Nov. 4. Six to seven miles. Meet on the north side of Jericho Turnpike at parking area just west of Woodbury Road for a loop north to Stillwell Woods and back. Free. Info, George, 516-249-5041.

LEAF PEEK. 10 a.m. to 11:30 a.m. Nov 8. Fee: $3 per person, $2 per child, younger than 3 free. Registration required. Caleb Smith State Park, Jericho Turnpike, Smithtown. Information, 631-265-1054.

UNDER THE MOON. 8 p.m. Nov. 15. Meet at the end of Napeague Harbor Road about a half-mile north of Route 27. Hike to "walking dunes" under the moonlight. Bring a flashlight. Free. Leader: Richard Lupoletti 631-324-1127.

OFF THE LAND. Intro to wilderness survival. 10:30 a.m. to 12:45 p.m. Nov 16. Ages 18 and older. Fee: $3. Caumsett State Park, West Neck Road, Lloyd Neck. Reservations required, 631-423-1770.

THE FOUR Bs. They call it "Bike, Bird, Beach, Botany." 10 a.m. to 1 p.m. Nov 23. Ages 18 and older. Fee: $3, parking fees apply. Caumsett State Park, West Neck Road, Lloyd Neck. Reservations required, 631-423-1770.