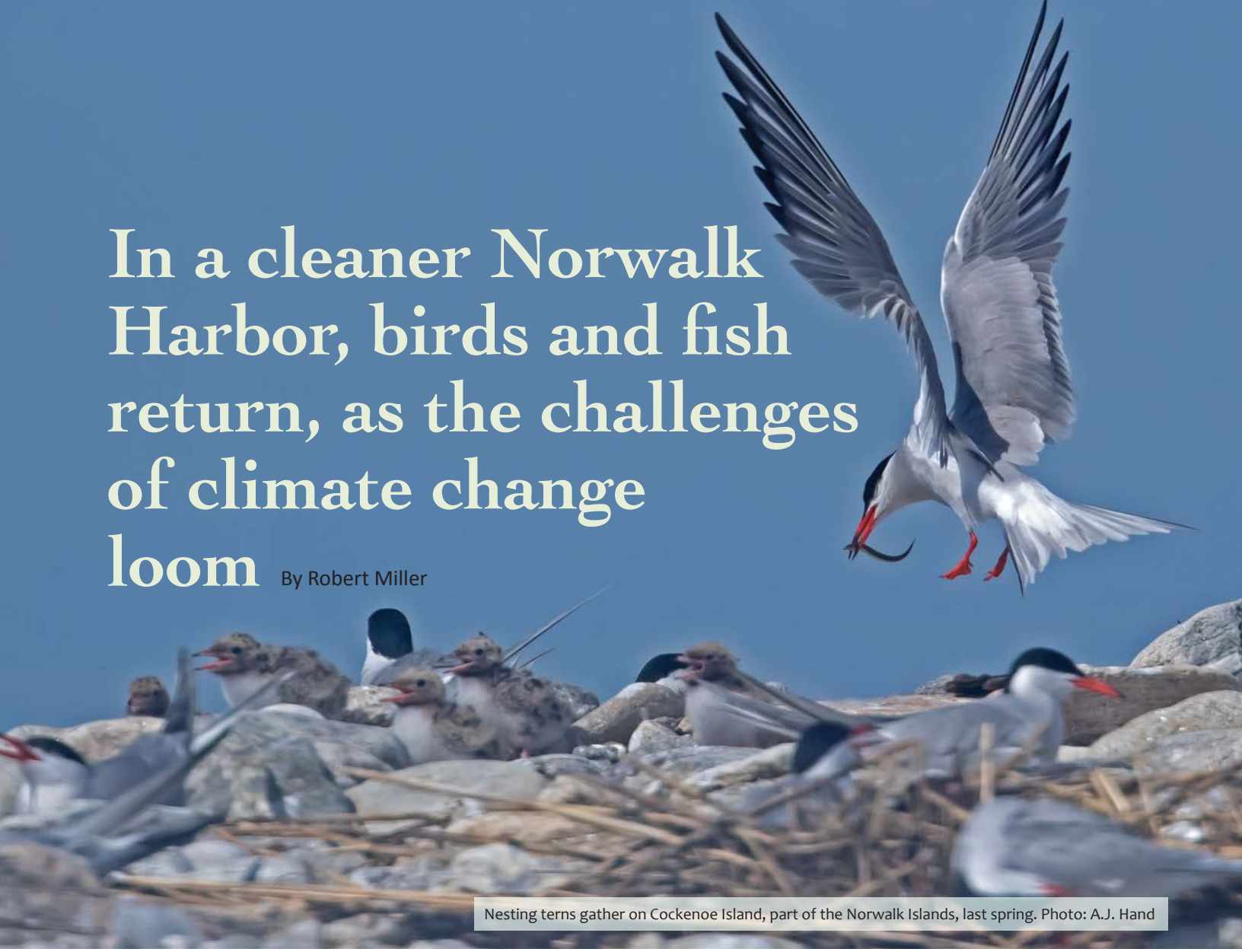
In a cleaner Norwalk Harbor, birds and fish return, as the challenges of climate change loom

By Robert Miller



Nesting terns gather on Cockenoe Island, part of the Norwalk Islands, last spring. Photo: A.J. Hand

There were common terns clustered on a sandbar – a spot too small to qualify as one of the Norwalk Islands. But cluster the terns did.

The trick, said A.J. Hand, who was piloting his skiff around the islands with Tina Green, was to settle in the prime real estate above the high-tide mark – the wrack line. Then they could nest safely, without worry about being flooded out. A Westport resident, Hand is an avid birder and bird photographer.

"The first to get here always take the top," he said.

Nearby was Cockenoe Island, owned by the town of Westport. It's the best rookery in Long Island Sound for wading birds like egrets and night herons. As Hand's skiff approached, the plumage of the big white birds – great and snowy egrets alike – shone as they perched in the summer trees or waded at the back of a green grass-filled inlet.

Nearby was an American oystercatcher – black-headed, bright-eyed, orange beaked. A decade or so ago, they were rare birds in the Sound. Now they've come back.

At nearby Goose Island, the double-crested cormorants ruled, gathering on the rocky beach, standing proudly on the sign that marks the island as part of the Stewart B. McKinney National Wildlife Refuge.

"There's so little habitat for these birds," said Green, former president of the Connecticut Ornithological Society. "Especially in Fairfield County."

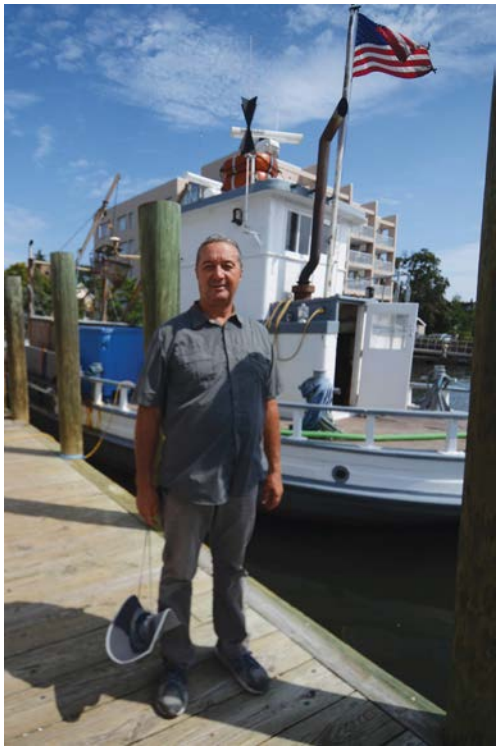
There are 25 rocky outcroppings in the archipelagos that make up the Norwalk Islands chain. Some are privately owned, some public property, some part of the McKinney refuge. In the summer, birds nest there. In the winter, harbor seals haul out on the outcroppings.

That the waters of Norwalk Harbor – and the western end of Long Island Sound in general – are supporting this much life is a testament to things getting better. In waters surrounded by millions of people – not even counting the 8.5 million in New York City – and their cars and boats and parking lots and over-fertilized lawns – there are surprising amounts of life in its still-polluted waters.

In recent years, there have been thick schools of menhaden (also called bunker) in the Sound – baitfish for birds and bigger fish alike.

"There are seals here in the winter," said David Hudson, research scientist at the Maritime Aquarium in Norwalk, which draws about 500,000 visitors a year. "We've had humpback whales three years running. There was a pod of 50 dolphins here. We've had sand tiger sharks near Bridgeport."

The harbor is the center of the state's oyster industry. Norm Bloom & Son harvest oysters from large beds in Norwalk Harbor and beyond, along the length of the state's shoreline. But all his boats bring what they've raked up back to Norwalk for sorting, bagging and sale.



Norm Bloom, owner of Norm Bloom & Son and Copps Island Oysters, stands on one of his docks in Norwalk beside one of the company's boats. Photo: John Pirro

Oysters don't grow in one spot. Bloom's crews are constantly moving them from one site to another to ensure their growth from seed oyster to harvestable bivalve. The water quality in the Sound determines where the crews work and what they can do. Sometimes, after heavy rains fill rivers and stormwater-laden rivers pour into Norwalk Harbor, some areas have to shut down completely for a few days until the pollution clears.

"Water quality is everything," Bloom said. "The quality of the oysters depends on it."

For the last two years, there haven't been fish kills in Norwalk Harbor. Its waters haven't become hypoxic, when the oxygen levels drop so low that fish can't live.

"It's been close," said Dick Harris, who has been studying water quality in Norwalk Harbor and its tributaries for more than 30 years and now works for Bloom & Son. "But it hasn't happened."

Tessa Getchis, aquaculture extension educator for Connecticut Sea Grant, has worked with Bloom and other commercial shellfishermen across the state for the past two decades. She also understands the importance of the water quality monitoring efforts that are essential to keeping both commercial and recreational shellfish beds healthy.

"Safe seafood harvest is dependent upon clean water," she said. "Monitoring is necessary to ensure clean water and identify areas that may be impaired by land-based pollution, and is carried out by a collaboration of industry and local and state environmental managers."

Now, there are even plans to establish a kelp farm off Sheffield Island, the largest of the Norwalk chain. So there are many reasons to be happy.

"There seems to be a trend where things are getting better," said James Ammerman, science coordinator for the Long Island Sound Study, which combines the work of Connecticut, New York and the federal Environmental Protection Agency on research in the Sound. Connecticut Sea Grant is part of the consortium of participating organizations.

"It's a remarkable, remarkable success story," said Patrick Comins, president of the Connecticut Audubon Society, about the return of bird life in the Sound.

But there is this: Persistent water quality problems plague places like Norwalk Harbor, and they are not going away.

Earthplace, which runs the Harbor Watch program that studies the water quality of the harbor and its tributaries in 17 towns, recently published a study in the journal *Estuaries and Coasts*. It looked at water quality and fish-netting data it had collected in Norwalk Harbor from 1987 to 2016.

The study found that water temperatures and salinity in the harbor's waters have increased over those 30 years, while oxygen levels have declined. It also found that over those years, Harbor Watch researchers collected fewer demersal fish – fish that live near the bottom of the Sound. That decline included important commercial species such as winter flounder.

Sarah Crosby, who directs the Harbor Watch program, said she agrees that there are reasons for optimism when animals like oystercatchers and whales show up in the Sound.

"But we're scientists," she said. "We have to look at the data."

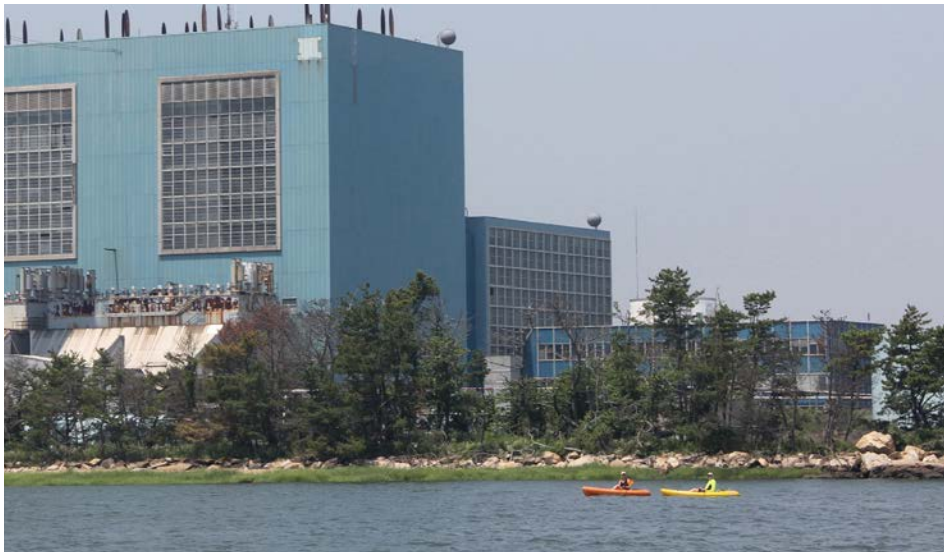
And that data point in at least one direction.

"We're losing the cold-water species," Crosby said.

Ammerman of the Long Island Sound Study said climate change, with its rising ocean levels, higher water temperatures and higher levels of salinity, could alter Norwalk Harbor and the Sound in ways no one is prepared for.

"It's sort of the 800-pound gorilla that's sitting in the living room," he said.

One of the many rocky inlets on the Connecticut coastline, Norwalk Harbor has no sweeping beaches, thanks to the great collisions of ancient continents and the push and retreat of glaciers.



Kayakers paddle past the Manresa Island power plant in Norwalk harbor last spring. The coal-fired plant closed in 2013. Photo: Judy Benson

A worker at Norm Bloom & Son sorts oysters. Photo: John Pirro

Long Island Sound was itself a glacial lake until its ends broke open and let the Atlantic Ocean in.

"People don't always connect us with being part of the Atlantic Ocean," said Dave Sigworth, associate director of communications for the Maritime Aquarium.

That is especially true at the western end where the Sound's tidal flow – its coming and going – has to pass through a narrow run by Throg's Neck, into the East River and New York Harbor to reach the Atlantic.

That means that it can take a while for the Atlantic to recharge the waters at the western end of the Sound.

"It's sort of like Las Vegas," Sigworth said. "What goes into the Sound tends to stay in the Sound for a while."

And, what comes into the Sound comes via the rivers flowing north to south.

The Norwalk River is Norwalk Harbor's largest tributary. It runs 21 miles from Ridgefield, Redding and Wilton before it reaches Norwalk and the Sound.

By and large, it's an urban river. For several miles, Route 7 – the busiest transportation corridor from Danbury to Norwalk – runs alongside it. Three sewage treatment plants release their effluent into the river. Stormwater – carrying fertilizer from lawns and oil and antifreeze from the roads – drains into it and then, into the Sound.

"It's our Number One problem," Louise Washer, president of the Norwalk River Watershed Association, said of all the storm runoff the river carries.

That's repeated along the intensely populated Connecticut shoreline.

"The Norwalk River isn't different than any of our other rivers," said Hudson, the aquarium's research scientist.

Combatting all the ways people can pollute the harbor has taken years of persistent work. The city of Norwalk cleaned up its act, and the effluent from its sewage treatment plant. There's less nitrogen – which feeds algal blooms and leads to hypoxia – coming into the harbor's water.

Harris, who ran the water testing program for Harbor Watch for 30 years, said the staff there has been dedicated to finding smaller spills – from broken sewer lines to leaking septic systems, and reporting them to Norwalk officials and the state Department of Energy and Environmental Protection, which then acts to stop the pollution. Harbor Watch now tests water quality in 20 rivers and 17 towns.

"You have to check on it, if you see it, if you smell it," Harris said.

It takes vigilance, in part because the urban infrastructure is very old, too often neglected and therefore prone to leaking.

"The city of Norwalk is going to need an enormous investment to replace it," said Crosby of Harbor Watch.

To further reduce pollution, the nonprofit East Norwalk Blue Inc. has a fleet of boats that go out and meet other boats in the harbor to collect their sewage. Less freely pumped sewage, less pollution. Started two and a half years ago, the organization operates four boats in Norwalk Harbor and one in Bridgeport Harbor.

Climate change is altering ecosystems – in Norwalk, in Long Island Sound, in our world – as we live and breathe.

Starting in 2017, a new program run by Save the Sound called the Unified Water Study has organized 20 groups to take water quality samples in 33 bays and inlets along the length of the Sound in both Connecticut and New

York. By using the same testing protocols at each site, the study's leaders hope to provide the Sound's communities with the most comprehensive water quality data available.

"We've had some exceptional groups studying water quality in different bays," said Peter Linderoth, water quality program manager for Save the Sound. "Now we have standard testing procedures, and we can have comparable data that will allow us to make studies from bay to bay."

But all this work – and all the improvements in water quality in Norwalk Harbor and the Sound in general – will be put to the test by climate change.

Ammerman of the Long Island Sound Study said that as Connecticut's summers get hotter, so will the Sound's waters. That will mean more stratification of the water column, less mixing of water within the column, less oxygen in the overall mix and potentially more fish kills.

"We've done all this work to reduce nitrogen levels and now climate change is trying to undo it," he said.

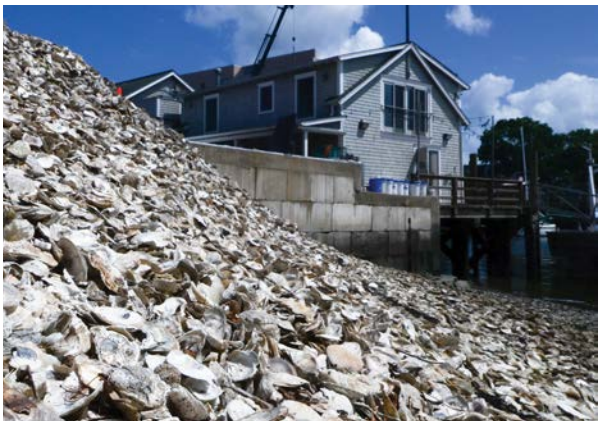
Climate change will also mean changes in the harbor's ecology, as salt water moves further onshore.

"The marshes are moving inland," said Hudson of the Maritime Aquarium.

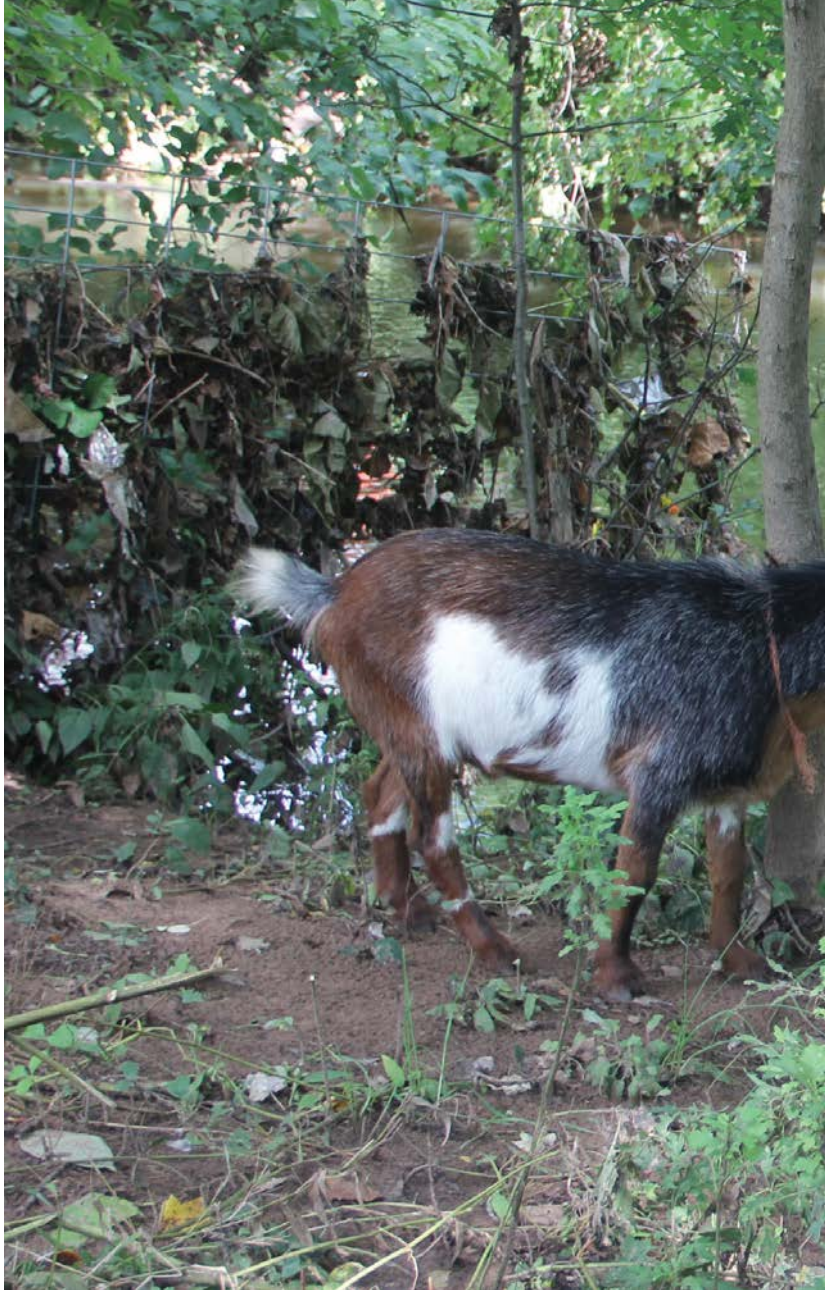
And that will mean changes in the fish populations and the lives of the people who harvest those fish and shellfish. Winter flounder may be leaving, Hudson said, but southern species like black sea bass are arriving. Lobsters have all but disappeared in the Sound. Blue crabs may take their place.

And none of this is hypothetical. Climate change is altering ecosystems – in Norwalk Harbor, in Long Island Sound, in our world – as we live and breathe.

"It's happening right before our eyes," Hudson said.



Oysters shells are piled near the Norm Bloom & Son docks in Norwalk. Photo: John Pirro



Goats that spent last summer feasting on invasive plants at a New Haven city park are just the latest actors in the story of how this urbanized coastal landscape is reducing its burden on Long Island Sound.

"We're trying to make Edgewood Park better for everybody," said Stephanie FitzGerald, president of the Friends of Edgewood Park.

By consuming thick stands of Japanese knotweed, bittersweet, multiflora rose and other non-native flora, the six goats, loaned from a farm in Rhinebeck, N.Y., are clearing the way for the return of native plants that will in turn benefit native insects, birds and other wildlife. That will lead to a healthier environment – and more food for the resident fish, turtles and frogs – along the West River, which flows through the park and ultimately into the Sound. It's one more piece of the complex puzzle of how this coastal city is connecting the dots between what happens on land and the health of its harbor, where productive shellfish beds and popular swimming