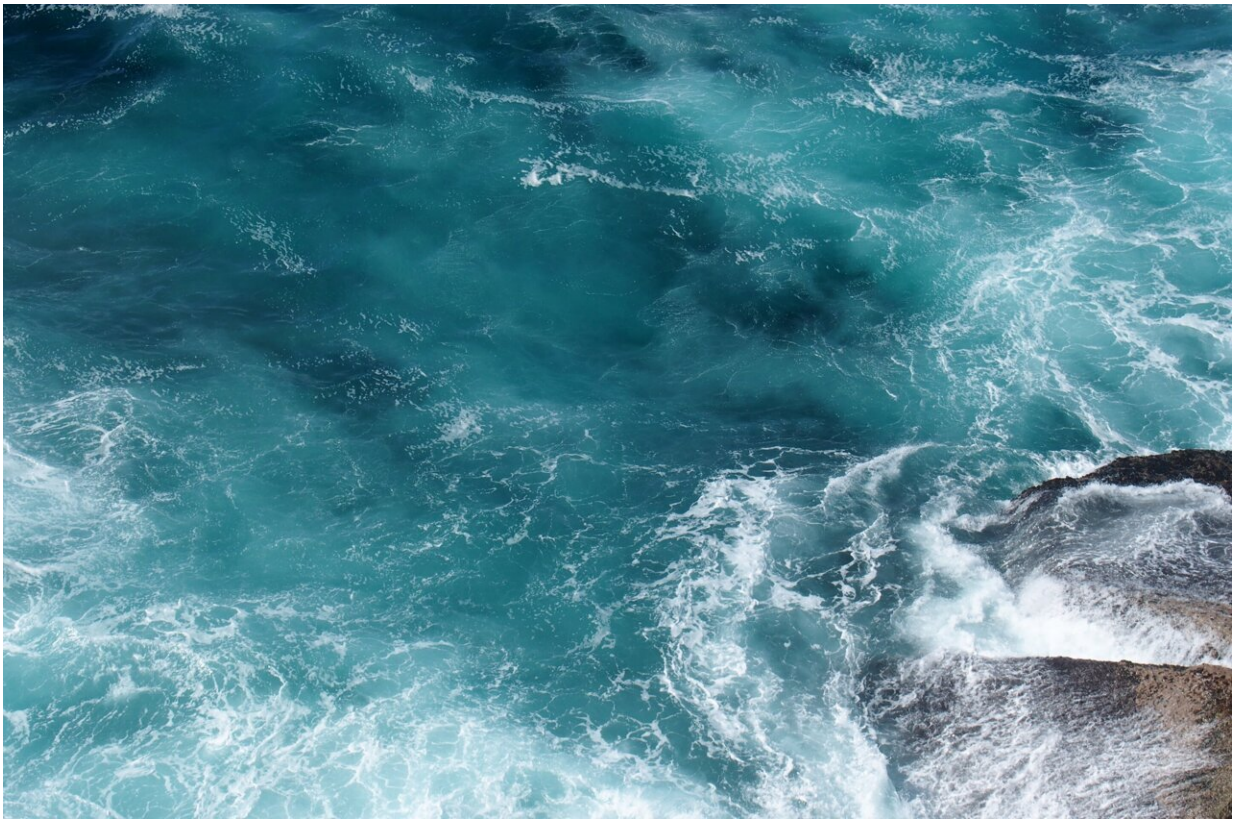


Scientists know rising seas will one day swallow Jersey Shore climate research center

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Credit: Unsplash/CC0 Public Domain

The only way to visit Ken Able's office is to traverse Great Bay Boulevard, a narrow, five-mile long road in Tuckerton, New Jersey, that crosses a network of brackish tidal marshes via a series of wood bridges.

The boulevard, nominally protected from erosion by a border of reeds and groundsel shrubs, had flooded on a recent day.

Undeterred, a woman in a truck plowed through, donned waders, and tossed a crab trap into a channel.

Dozens of diamondback terrapins negotiating the road tucked their heads as an occasional vehicle approached.

Able's office at the Rutgers University Marine Field Station lies at the end of the very tip of the boulevard, linked by a long boardwalk at the very edge of New Jersey. Flooding has become more common.

"We're losing our marshes, and that's very obvious," said Able, 79, a Rutgers professor emeritus and marine scientist who retired as the [station](#)'s director in 2019 but continues conducting research. "We've lost 140 feet at the edge of the marsh channel, and it's getting closer to the station all the time."

Able has one of the most unique vantage points in the eastern United States to measure and experience climate change firsthand: The Atlantic Ocean is slowly swallowing the peninsula on which the station rests.

Sea level rise

New Jersey has experienced 8.2 inches of sea level rise over roughly the last 40 years. That's twice the global average because not only is the ocean rising, but the land is sinking from natural geological forces and groundwater withdrawal to feed sprawl. So each inch of rising ocean is met with a compounding effect of collapsing ground.

The 87-year-old, three-story field station is on the precipice of it all.

The station was built in 1937 for the U.S. Coast Guard. In 1972, Rutgers took over the building and uses it as a base for the department of Marine and Coastal Sciences. The rambling building's pilings are sunk 33 feet deep into the peat.

On a busy day, dozens of scientists, students, researchers and volunteers pop in and out. Flooding of Great Bay Boulevard, known locally as Seven Bridges Road, is more frequent these days so staff exchange e-mails if the road passable.

In recent years, so-called sunny day flooding, or nuisance flooding, has increased in the area. Sunny day flooding occurs when [high tides](#) push water into low-lying areas without a storm—a signal water levels are increasing.

In the 1950s, Atlantic City experienced sunny day flooding about once a year. It averaged eight times a year between 2007 and 2016, according to data compiled by Rutgers and the New Jersey Department of Environmental Protection. By 2050, there's a 50% chance it could flood 120 days a year.

Able ran the Rutgers station for decades. He says the peninsula will be inundated at every high tide with another foot of sea level rise.

"Is that going to be 2050, 2070, 2100? We don't know," Able said.

"There are projections out there, but they are just that, projections."

Small standing pools of water have formed in normally dry patches of marsh. Some have become permanently pond-sized, Able notes.

By 2050, there is a 50% chance that sea-level rise will meet or exceed 1.4 feet from the base year of 2000. Those levels increase to 3.3 feet by the end of the century under a scenario of moderate greenhouse gas

emissions, according to the state's Scientific Report on Climate Change.

Concrete pads from a defunct meteorological tower sit just off the dock behind the field station, marking the current edge of the surrounding marsh system. A picture dated from 1998 that hangs in Able's office shows the marsh's edge 140 feet farther out than now.

Able has written multiple books with the station as a backdrop, including *Station 119: From Lifesaving to Marine Research*, a history of the field station's building, and *Beneath the Surface: Understanding Nature in the Mullica Valley Estuary*, about the surrounding 365,000-acre ecosystem.

'Literally watching our coasts change'

The field station sits where the Mullica River-Great Bay estuary meets the ocean. Windows in the building's peak gives expansive views of the Edwin B. Forsythe National Wildlife Refuge. Long Beach Island in Ocean County is just to the north, and Brigantine in Atlantic County just to the South.

Atlantic City's casinos loom in the distance.

The station is so exposed that waves from Superstorm Sandy in 2012 slapped against its sides.

As a result, the station is a near perfect site for studying marine life and sea level rise as it impacts the coast.

The Great Bay is fed by the Mullica River as it emerges unpolluted from the massive Kirkwood-Cohansey aquifer that lies under the Pine Barrens.

"The reason is that it's such a valuable place is, that it's on one of the

most pristine watersheds in the entire Northeast United States," said the field station's current director, Oscar Schofield, who chairs Rutgers' Department of Marine and Coastal Sciences.

Schofield said that as the ocean has warmed, the state is seeing some traditional fish species move north, and fish from traditionally warmer waters take their place.

"We know that we're literally watching our coasts change, and they're changing really dramatically at the field station," Schofield said.

"Heart of the storm"

A tide gauge installed in Atlantic City in 1910 shows sea level has risen 18 inches since then.

The Rutgers' marine station also has its own gauge, though much newer, as part of a national network of gauges. Schofield said other instruments are used to record wind and map changes to the land.

"We've got this field station right in the heart of the storm," he said. "So we said let's use it as a research base in the field to document everything."

At the field station, Rutgers studies various species of fish and blue crabs, and habitats. Researchers use sonar, which uses sound for sensing, and lidar, which uses light from a pulsed laser, to map the ocean floor and measure distances.

Lisa Auermuller, administrative director for Rutgers' Megalopolitan Coastal Transformation Hub, said scientists who work at the station open it to the public for a day each September so residents can see the work that's done there.

At the annual open house, staff present data, set up microscopes, display larval fish collected nearby, and bring in students to speak about their research.

One year, the open house drew 800 people in five hours so the station began issuing tickets for subsequent events.

"There's a specialness to this place that you won't be able to replace anywhere else," Auermuller said, noting that a local band, The Moon Sisters, recently released an ode to Seven Bridges Road.

Auermuller said the eventual loss of the station to the sea will be heartbreaking to staff and locals.

"This is an icon," Auermuller said of the station. "People are interested in what happens out here."

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