



At right, Dr. Peter August, Vice President of the WHC and chair of the Napatree Science Advisors, alongside Dr. Bryan Oakley, Professor of Environmental Geology at Eastern CT State University and Napatree Geology Science Advisor.

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THE FUTURE IS NOW

The sea is rising. Climate change is accelerating. Storms are becoming more frequent and more intense. The question is: Will our community be prepared for the future?

The good news for Watch Hill and our local coastal communities is that there is a group of distinguished scientists partnering with dedicated local citizens working on the problem, spearheaded by the Watch Hill Conservancy.

Three years ago, the Watch Hill Conservancy (WHC) took the lead in creating an initiative called Planning for a Resilient Future. The goal is to try and proactively find solutions to the problems that climate change and sea-level rise are creating for the community. On September 13, 2021, the WHC presented its first report to our community at the Lanphear Livery’s Chaplin B. Barnes Reading Room in Watch Hill.



Residents assemble for the Watch Hill Conservancy’s presentation on sea-level rise last September.

“Watch Hill, by nature of its low elevation and proximity to the sea, is extremely vulnerable to inundation from sea-level rise and storm surge,” explained Dr. Peter August, Vice President of the WHC and chair of the Napatree Science Advisors. “Nuisance tides now flood many streets in the community and make access to some local destinations, such as the beach club, yacht club, beach cabanas, and the entrance to Napatree Point, difficult, if not impossible. Conditions will only get worse as sea levels rise. Nuisance tides occur often and are not storm-driven. Impacts from sea-level rise are here and now!”

Deborah Lamm, Chairman and President of the WHC, introduced the initiative to a good-sized crowd. “For the past three years, the Conservancy has led a community initiative to understand the effects of sea-level rise and storm surge in Watch Hill. We’ve had wonderful engagement by many local organizations in this effort. Our goal was to move away from a place of discussing someday impacts. That day is here.”

The work has already had a positive impact and has provided the evidence behind the Watch Hill Fire District’s successful grant application. The community was granted \$250,000 to create improvements at the entrance to the Napatree Conservation Area, the paved parking lot between the Merchants Square shops, and the entrance to the yacht club. The Fire District has developed very specific construction projects to help mitigate those impacts.

Dr. August began his presentation by explaining the problems already occurring. “We have urgent short-term problems we can’t wait to fix; they need to be fixed now. We have middle-term problems where we have a little bit of time to think about it, like the 3- and 5-foot sea-level rise scenarios, and then big problems, the big severe storms that Brian will cover.”

“As Deborah explained, we have a grant from DEM of \$250,000 to start this work, we are waiting for a final signed contract from DEM. Once we get that, we’re ready to hit the ground running. Step one: We have some big permitting we have to do. There are a lot of layers to the permitting process, and that will probably take six months to one year before we can do anything.”

“There’s another vulnerability to this nuisance-tide issue, and that’s the section of seawall from the Napatree entrance to about two-thirds of the way to the Yacht Club. There’s a section that’s about a foot lower than the rest and is overtopped about 10 times a year. This needs to be fixed right away; we haven’t figured out how to pay for that yet, but we’re working on it.”

It is estimated that the sea level will rise 3 feet by 2050, 5 feet by 2070, and 9.5 by 2100. The State of Rhode Island has inundation maps for every nuisance tide and sea-level rise scenario for the whole coast and Narragansett Bay. “These maps are generated by a program called STORMTOOLS, developed by CRMC, which is now part of the permitting and planning process. STORMTOOLS is one of the first high-resolution tools accessible to all local municipalities and planning organizations in Rhode Island to help make community-based decisions with regard to sea-level rise and storm events.”

When you look at the inundation maps, the blue areas indicate areas that will flood. They show that by 2050, major parts of downtown Watch Hill will be flooded twice a day at the time of high tide. “So, if you’re going to drive down Bay Street, you better have a tide chart on your dashboard because you’re not going to be doing it at high tide, twice a day,” said Dr. August. “After we’re done freaking out after looking at the inundation models, what can we do about it? One solution is to build up our seawall. We’re studying the solutions to this and trying to understand the economics. What’s it going to cost to mitigate the problem? What’s it going to cost the community if we don’t do anything? These are big questions that we’re staring at right now.”

Dr. Bryan Oakley, Professor of Environmental Geology at Eastern CT State University and Napatree Geology Science Advisor gave a presentation on the effect storms have on Napatree. “Napatree is a storm-driven ecosystem. Storms drive the changes we see on Napatree, and I’m not talking about flooding in Watch Hill, which is driven by sea-level rise. I’m talking about changes to the shoreline, about sediment moving around, the shoreline retreating, migrating back, and storms drive this process. Whatever sea-level rise does, it will accelerate that process in the future.”

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“Storm surge from the hurricane of ‘38 was 9 feet above mean higher high water. When this happens again – *when not if* – it’s going to look like the dark side of the moon on Napatree. All your familiar landmarks will be gone. After ‘38, all the houses were gone, and Napatree changed after that storm. Napatree as a whole, even though it was completely over-washed and the ocean took all the houses off it, didn’t cause a full-scale retreat of the shoreline. The big changes in Napatree’s shoreline occurred *after* the hurricane of ‘38. Napatree’s moved almost one whole width since 1939. If you walk out on Napatree to the middle of the barrier, where you’re standing at the high tide line, this was the back of Napatree in 1939. The question is why all this change if the ‘38 hurricane was the big storm? Our working hypothesis is that there were a series of other storms. The Hurricane of 1944, a couple of winter storms in 1950, Hurricane Carol in 1954, the Ash Wednesday Storm of 1962, and a series of extra-tropical storms in the early 1970s. These smaller storms were able to over-wash Napatree. But they might not have if there’d been enough time between the hurricane and the next storm for Napatree to recover.”

“What can we conclude? Number one, storms drive the bus. Sea-level rise are the tires on the bus. Sea level rise will likely accelerate all of this in the future. A big takeaway from our work with the shoreline change data is that multiple storms inside of that recovery period have a big cumulative impact on the shoreline. A storm like the ‘44 hurricane really wouldn’t have had such a big impact on Napatree if the ‘38 hurricane hadn’t happened six years before. Recovery from Sandy took at least five years, and a hurricane-of-‘38-scale event is going to be more than a decade to get everything back. The timing of storms inside of that recovery period really does make a difference.”

There are no simple solutions to the problems of climate change and sea-level rise, but there’s no reason to panic. The situation requires sound decisions and bold action. The *Planning for a Resilient Future* initiative will help our community adapt to these changes. Information the on *Planning for a Resilient Future* initiative can be found on the Watch Hill Conservancy’s website at <https://thewatchhillconservancy.org/initiatives/planning-for-a-resilient-future>.



63 days/year, tide level 1.34 feet MHHW exceeded on 10 days in 2020.

