



Thousands of North Shore Structures Threatened by Flooding Within 10 Years, Report Finds

By JOHN OUELLETTE

Within ten years, more than six hundred North Shore buildings could experience tidal flooding on a daily basis, and more than 7,000 structures would flood during a hundred-year storm event. By 2070, the numbers increase to 3,100 and 12,000, respectively. Meanwhile, pristine and popular beaches like Crane Beach in

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Ipswich, which has already lost the equivalent of eighty-four football fields of sand since the 1950s, will become increasingly "sand-starved" in the next decade and beyond.

These are among the findings of the "State of the Coast" report released by [The Trustees of Reservations](#) this summer. The forty-page report highlights the climate change-driven impacts of sea level rise and storm flooding faced by thirteen North Shore coastal zone communities, including impacts to beaches, salt marshes, developed areas,

armored shorelines, and habitats, as well as future adaptation opportunities and solutions. The data show that many climate impacts will intensify in the next decade, and will accelerate after 2050.

"North Shore communities, leaders and coastal landowners can no longer postpone climate-facing emergency planning and decision making," says Tom O'Shea, the Trustees director of coast and natural resources. "Time is running out to take actions that will protect our coast. ... Now is the time to pursue resilience through sustainable and adaptive approaches."

Crane Beach in Ipswich was the site of a summer 2019 organizational outing by The Trustees. With 1,500 feet of sand and dunes already lost since 2000, this Trustees' property is expected to continue to experience more dramatic erosion of than any other public beach along the North Shore, according to the group's 2020 State of the Coast report.

(photo courtesy of The Trustees.)



Findings and Recommendations

The Trustees compiled the report using publicly available data and evidenced-based reports from numerous organizations and agencies, as well as independent research. The organization assessed likely storm flooding impacts to buildings and roads using results from the Massachusetts Coast Flood Risk Model developed by the Woods Hole Group, providing an in-depth look at town-specific impacts, including maps of near-term daily tidal and storm flooding. Projected changes to vulnerable salt marsh and coastal habitat came from Sea Level Affecting Marshes Model results, developed by the Woods Hole Group for the Massachusetts Office of Coastal Zone Management.

The report's key findings include some concerning projections, along with a menu of possible approaches to avoid coastal catastrophe.

- While noting the key role that salt marshes play as important buffers against coastal flooding and storm surge, the report states that failure to take swift action could result in the loss of four hundred acres of the Great Marsh by 2070. Recommended resiliency strategies for salt marshes include "building marsh elevation, along with removing tidal restrictions such as dams and culverts that disrupt natural water flow."

- The report warns that "some of our largest beaches are experiencing the greatest rate of shoreline loss," and sea level rise means "smaller beaches hemmed in by seawalls, groins, and development may be increasingly sand-starved with nowhere to go."
- The estimated cost to repair the region's 54.4 miles of aging seawalls and coastal armored structures is \$88.3 million. But simply repairing these structures is not always the best course since they were not designed to withstand climate change impacts and can "wreak damage of their own on nearby natural shorelines." More resilient options, the report contends, are necessary for coastal communities to withstand future challenges.
- With only 25 percent of the region's coastal habitat permanently protected, the report calls for a regional land protection strategy to "help enhance the resiliency of both coastal and upland areas and relieve pressures from development and pollution."

The report finds important differences in the North Shore's northern and southern tiers that may require targeted approaches. Less-developed areas in the upper North Shore may experience greater impacts to natural areas in total, but may be more resilient than the smaller beaches and marshes south of Gloucester, report authors note. While developed areas in the southern region

are often higher in elevation, some residential and urban waterfront areas are vulnerable to significant flooding impact. Structures such as seawalls and nearby shorelines will be increasingly challenged by storm flooding impacts, according to the report.

A Tool for Policymakers

At the report's unveiling on August 20, Energy and Environmental Affairs Secretary Kathleen Theoharides said it "provides an in-depth look at the unique challenges North Shore communities are facing as a result of climate change," and underscores the importance of the Baker-Polito administration's ongoing work "to significantly reduce greenhouse gas emissions and partner with communities to build climate resilience." She said the report also highlights informative data and resources, many developed by state agencies, that "communities can use to better understand future climate threats."

Peter Coffin, chair of The Trustees of Reservations and president of Breckinridge Capital Advisors, which sponsored the report, said, "It's critical that municipalities have strong research and data to properly evaluate and mitigate this risk and plan for the future. Reports such as the 'State of the Coast' are integral to further educating key stakeholders about climate science and reinforce our commitment to actively developing best-in-class research and data to assist in these efforts."

THOUSANDS OF NORTH SHORE STRUCTURES THREATENED BY FLOODING

Coastal landowners, town officials and other stakeholders can use the Trustees' findings to identify areas of critical concern and prioritize investments in mitigation efforts and resilience projects. Additionally, "project spotlights" in the report highlight

resiliency work already underway in some communities, providing examples for others to follow.

Senator Bruce Tarr, whose district includes much of the coastal territory studied for the project, called the Trustees' report "a comprehensive and

thoughtful assessment of a number of the risks to our natural and built environments backed by real-world data and scientific analysis." He said the document buttresses the ongoing work of many organizations, including the North East Coastal Coalition and the Merrimack River Beach Alliance, and points to the need for more collaborative efforts to build knowledge and momentum for policy development.

The Trustees plan to publish the "State of the Coast" report annually over the next four years, with a focus on Cape Cod and the Islands to be released in the summer of 2021, followed by the South Shore, and finally, the South Coast. The cities and towns covered in the North Shore report are (north to south): Salisbury, Newburyport, Newbury, Rowley, Ipswich, Essex, Rockport, Gloucester, Manchester-by-the-Sea, Beverly, Salem, Marblehead and Swampscott.

The report can be downloaded at www.onthecoast.thetrustees.org/download-a-copy. Interactive [mapping](#) and [detailed data](#) are also available. 🌟



In Salisbury, about 40 percent of the coastline is vulnerable to coastal inundation and the public beach experiences erosion rates of more than two feet per year, according to the Trustees of Reservations' "State of the Coast" report.

(photo courtesy Office of Coastal Zone Management)