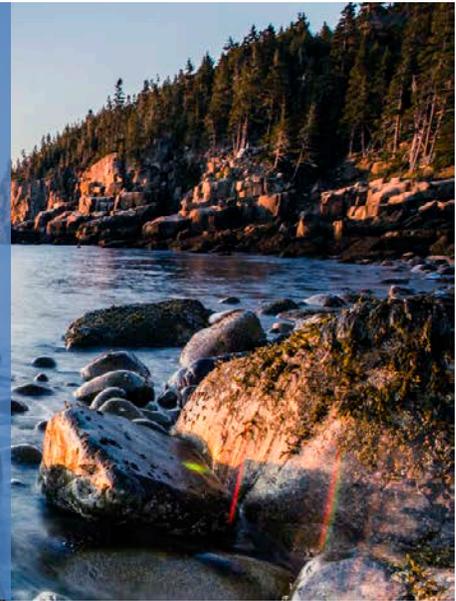


Identifying Resilient Coastal Sites in the Northeast and Mid-Atlantic



Nearly half of all Americans live and work in coastal counties, areas that also provide critical habitat for a diversity of fish and wildlife. Important as these places are for supporting human and natural communities, their capacity to do so in the face of rising sea levels varies widely. In response to this threat, scientists from The Nature Conservancy evaluated more than 10,000 coastal sites in the Northeast and Mid-Atlantic to determine their ability to provide a natural buffer to communities from increasing inundation by rising seas, as well as their capacity to sustain biodiversity. Each site received a resilience “score” based on the likelihood that its coastal habitats are able to migrate to adjacent lowlands. With these results in hand, communities and resource managers can better prioritize land acquisition, identify areas for restoration, and develop effective strategies for sustaining the natural benefits provided by coastal habitats.



Defining Resilience

Sea levels are expected to rise by 1 to 6 feet over the next century, and coastal sites vary markedly in their ability to accommodate such inundation. Sites flanked by extensive lowlands provide space for the coastal habitats within to migrate landward in response to sea level rise (Figure right). The amount of space available for habitat migration is determined by the landforms, topography, and elevation rise surrounding the tidal zone.

However, that potential habitat migration can be strongly influenced by human activities. Even a site that is naturally predisposed to allow for migration may not be able to accommodate sea-level rise if development or disturbances interfere with natural processes. For example, hardened shoreline can create barriers to migration, a lack of sediment can prevent the necessary accumulation of substrate, and an overabundance of nitrogen can disrupt root development, destabilizing the marsh.

Migration Space (orange). Plum Island MA.



In this study, Conservancy scientists evaluated 10,736 sites in the Northeast and Mid-Atlantic for the size, configuration and adequacy of their migration space, and for the natural processes necessary to support the migration of coastal habitats in response to sea-level rise (SLR).

Key Findings

With no action, this region could see an 83% loss of existing tidal habitats to severe inundation. But with proper management, there are thousands of individual sites where tidal habitats could increase and expand through landward migration, reversing this trend. These resilient sites could offset more than 50% of tidal habitat loss, providing critical habitat for birds and wildlife, and buffering people from the effects of storms and floods. **Conservation of these resilient sites is critical** if we are to sustain nature’s benefits into the future.

“Resilient Coastal Sites has the potential to catalyze a host of proactive steps by local communities concerned about the long-term prospects for their coastal resources.”

-Scott Schwenk, Science Coordinator USFW North Atlantic LCC

The results identify the most resilient coastal sites within five coastal shoreline regions that represent different types of estuaries (Map below). Within each shoreline region, the Conservancy:

- Calculated the average amount of functional migration space across all sites.
- Scored individual sites by the degree of variation from the average.
- Scaled the results to the scenario of 6 feet SLR to identify the sites that were most resilient under severe, but possible, conditions.

Conservation Strategies

The results provide resilience scores and details for all 10,736 sites, which can be used to:

- Identify sites and tracts for **land acquisition** to preserve future migration space.
- Identify where **natural solution** strategies aimed as conserving habitats for storm buffering or flood protection are likely to succeed.
- Identify **restoration** sites which have ample migration space but for which the sustaining processes are disrupted or degraded due to human activities.
- Promote existing conservation at sites with **regionally significant** resilience and diversity.

Map and Study Area.

The map shows the results for 10,736 sites. Sites in green score above-average for resilience relative to other sites in their region.

Zoom-ins show areas that contain sites with high relative resilience.

This study was led by The Nature Conservancy’s Eastern Conservation Science team with direction from a steering committee of 35 scientists. It was made possible through a grant from USFWS’ North Atlantic Landscape Conservation Cooperative.

To learn more, view the report and companion website:

<https://www.nature.org/resilientcoasts>

Interactive Web Map at:

<http://nature.org/ECoastalResilienceMap>

