



# Coastal Adaptation to Climate Change

## Background

The National Park Service's 85 ocean and coastal parks and over 12,000 miles of shoreline currently experience effects from climate change, including reduced water levels in the Great Lakes, changing storm patterns, increasing ocean acidity and melting permafrost. Additional parks in the coastal zone will be vulnerable as sea levels rise. Climate change will amplify the existing dynamic nature of coastal and shoreline areas, threatening park resources, infrastructure, and public recreational opportunities. "Anticipatory planning" and engagement with local communities to consider new, more sustainable ways to provide visitor services and protect heritage resources in these dynamic environments are critical. Even if plans are not in place before storm events, recovery actions can employ new sustainability concepts. For example, planning for new ways of "doing business" is underway now as part of an interdisciplinary review to support NPS recovery actions following Hurricane Sandy. Lessons learned from this effort and projects underway in a variety of coastal and Great Lakes parks will inform next steps for climate change adaptation.

## Approach

The NPS is working with scientists and other partners to develop local, landscape, and ecosystem-scale adaptation strategies that protect coastal resources and promote their long-term resilience and sustainability. The science-based and collaborative approach draws on the goals and objectives outlined in the servicewide Climate Change Action Plan. Development of these coastal adaptation strategies entails:

- Support scientific research, inventory, and monitoring activities to gather data and improve understanding of climate and weather phenomena affecting coastal parks.
- Conduct risk and vulnerability assessments to identify projected impacts of climate and other stressors on park resources and operations.
- Develop guidance and tools to help NPS managers understand vulnerability and take actions that will increase resource resilience, including actions that are compatible with the dynamic coastal environment.
- Develop educational materials to inform the public about the need for comprehensive, swift, and effective measures to help the NPS conserve ocean and coastal park resources for future generations.

Adaptation in the coastal environment involves cultural and natural resources as well as recreational, and transportation facilities. In undertaking this work, the NPS is leveraging servicewide assets and programs and collaborating with other agencies, jurisdictions, and external partners.



A new inlet in the Otis Pike Wilderness of Fire Island National Seashore was created by Hurricane Sandy in October 2012. Monitoring of this coastal feature provides information on how intertidal platforms for salt marsh and island width are being built. Photo courtesy of Rebecca Beavers.

## Status and Next Steps

- Vulnerability assessments for sea and lake level changes published for 22 parks through a partnership with the USGS, in addition to decision-support tool development at Assateague Island National Seashore: <http://wh.er.usgs.gov/slr/>
- Dr. Robert Young is developing a Coastal Adaptation Strategies Handbook for coastal area park response to effects associated with storms and sea level rise. Initial vulnerability assessments for facilities in 41 coastal parks were completed in March 2013.
- Dr. Maria Caffrey is initiating a project to provide sea level and storm surge information for all coastal park units.
- The NPS has initiated a Rapid Review Team to evaluate construction projects in the coastal zone after Hurricane Sandy.
- Dr. Karl Nordstrom and Dr. Nancy Jackson are identifying coastal engineering structures that might be removed to allow coastal habitats to migrate.

## More Information

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