



Solutions

For a sustainable and desirable future

Published on *Solutions* (<http://www.thesolutionsjournal.com>)

[Home](#) > [Helping Coastal Communities Adapt to Climate Change](#)

Helping Coastal Communities Adapt to Climate Change

By: [Lynne Zeitlin Hale](#), [Sarah Newkirk](#), [Michael Beck](#)

Volume 2: Issue 1: Feb 10, 2011

This In Focus article can be found in

Coastal communities and decision makers urgently need to develop pragmatic, cost-effective strategies to protect both natural and human communities from the dramatic changes that are already underway due to climate change. Yet they lack both the information needed to plan and the enabling conditions needed to implement such strategies. This needs to change. If, in a rush to “defend the coast,” the potential value and role of coastal ecosystems—“nature’s green infrastructure”—are overlooked, we risk a future deprived of the ecosystem services that coastal ecosystems provide, including food, water, recreation, and shoreline protection.

Long Island’s coasts are at a critical juncture. Residential, industrial, and commercial development have cut off the public from the waterfront, and population growth, with its associated development pressures, threatens too many coastal natural areas. With climate change and predicted sea-level rise, the future health of Long Island’s coasts and estuaries depends on making adaptive land-use decisions today.

In their long-term planning, some of Long Island’s decision makers are evaluating ecosystem-based solutions, such as increasing the conservation of wetlands, alongside other options for adaptation. Ecosystem-based adaptation, or EBA, includes a range of actions for management, conservation, and restoration of ecosystems that help reduce coastal community vulnerability and increase resilience, and a growing body of evidence suggests that such adaptation can be cost-effective.^{1,2,3} EBA has a simple premise: using nature to help people adapt to climate change provides multiple benefits, which include the following.

Cost-effective shoreline protection. Increasing evidence suggests that in many circumstances protecting or restoring coastal ecosystems is a better adaptation strategy than building sea walls, flood barriers, or other “hard” structures that interrupt natural processes and degrade natural habitats. “Soft” or “green” infrastructure can not only slow shoreline erosion and provide protection but also can provide open space, wildlife habitat, and better water quality while simultaneously being economically efficient.⁴

Sustaining local livelihoods and contributing to local economies. Ecosystem-based adaptation helps maintain ecosystem productivity and supports sustainable income-generating activities in the face of climate change. In resource-dependent communities, the habitat values of coastal ecosystems are essential for maintaining fisheries, tourism, and other important economic sectors.

Carbon sequestration and reinforcement of mitigation efforts. Coastal wetlands, including marshes, mangroves, and seagrass beds, sequester substantial amounts of carbon.^{5,6} The majority of this captured carbon is likely to remain stable over millennial time scales, making these coastal ecosystems important carbon “sinks.”

On Long Island, land-use decision making is being informed by a decision-support tool known as Coastal Resilience (www.coastalresilience.org). This tool uses local data and projections of sea-level rise and storm surges to illustrate the future condition of the shoreline, the risks posed to communities, and the role of natural resources in protecting the coast.⁷ For example, in the town of Southold, decision makers are using Coastal Resilience to understand sea-level rise and coastal storms; to visualize the likely impacts and risks to social, economic, and natural resources; and to identify

management options that diminish losses to natural and human coastal communities. People in Southold are keenly aware of the invaluable contribution the surrounding coastal and marine environments make to their town, providing them with resources that drive the economy and offer a high quality of life to residents and visitors. The town is developing a new comprehensive plan and—through a locally driven stakeholder process—is using Coastal Resilience to integrate EBA approaches. EBA should be a part of the solution for more coastal communities, and Southold's comprehensive plan will be a valuable model.

With support from state and federal partners, as well as from NGOs and international aid agencies, The Nature Conservancy is rapidly expanding Coastal Resilience to places like the northeastern United States, the Gulf of Mexico, Puget Sound, the Caribbean, Papua New Guinea, and the Solomon Islands. The aim is to help communities in these places make decisions in the face of future climate change impacts. The hope is that, given time to plan, people will take steps to both preserve and restore the benefits that coastal ecosystems provide and will cost-effectively use those ecosystems to help them adapt.

This article is in part derived from the 11th Annual National Conference on Science, Policy and the Environment: Our Changing Oceans hosted by the National Council for Science and the Environment (NCSE).

References

1. Heinz Center and Ceres. *Resilient Coasts: A Blueprint for Action* (Heinz Center and Ceres, Washington, D.C., and Boston, MA, 2009).
2. US Environmental Protection Agency. *Synthesis of Adaptation Options for Coastal Areas*. EPA 430-F-08-024 (US EPA, Climate Ready Estuaries Program, Washington, D.C., January 2009).
3. Hale, LZ et al. *Renewable Resources Journal* 25, 21–28 (2009).
4. Costanza, R et al. The value of coastal wetlands for hurricane protection. *Ambio* 37, 241–248, 2008.
5. Nellemann, C et al., eds. *Blue Carbon*. Rapid Response Assessment (UN Environment Programme, GRID-Arendal, 2009) [online]. www.grida.no/publications/rr/blue-carbon.
6. Laffoley, Dd'A & Grimsditch, G, eds. *The Management of Natural Coastal Carbon Sinks* (IUCN, Gland, Switzerland, 2009). data.iucn.org/dbtw-wpd/edocs/2009-038.pdf.
7. Ferdaña, ZA, Newkirk, S, Whelchel, A, Gilmer, B & Beck, MW in *Building Resilience to Climate Change: Ecosystem Based Adaptation Lessons Learned from the Field* (Andrade, A, Herrera, B & Cazzolla, R, eds), *Adapting to climate change: Building interactive decision support to meet management objectives for coastal conservation and hazard mitigation on Long Island, New York, USA*, 74-87 (IUCN, Gland, Switzerland, 2010).

Source URL: <http://www.thesolutionsjournal.com/node/869>