

Great South Bay

Ecosystem-based Management Initiative

What is the Great South Bay Ecosystem-based Management Project?

Ecosystem-based Management is a term used to describe a new approach to managing the natural systems and humans that thrive together in our communities. It is a way in which we look at how humans can help keep the natural environment and water-based economy of our estuary productive by ensuring that the interactions between humans and the components and resources of the estuarine system (shellfish, tidal marshes, seagrass meadows, fish, scenic views, recreational opportunities, etc.) can be sustained as a healthy system and provide for future use.

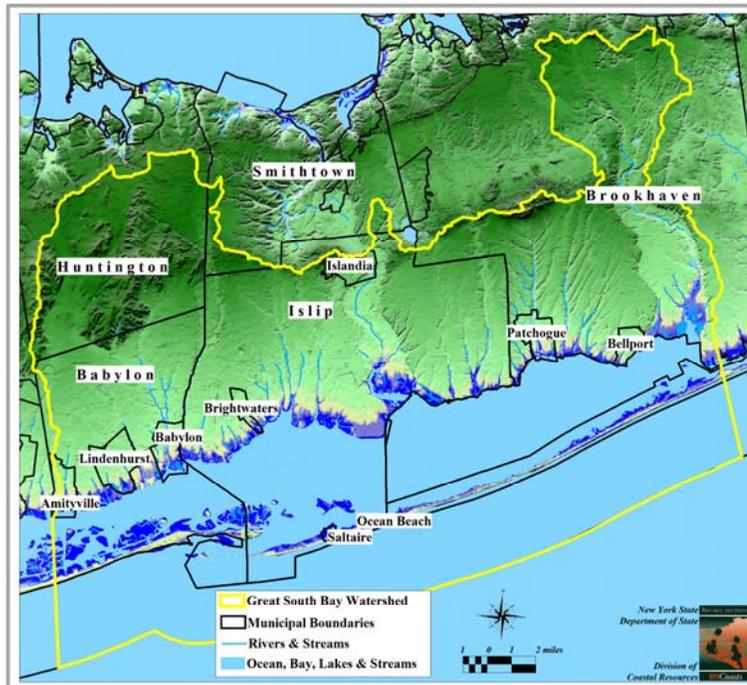
Think, for example, of all the resources provided and utilized in the Great South Bay estuary and its upland watershed. As a major part of the state-designated Long Island South Shore Estuary Reserve, Great South Bay is the largest shallow estuarine bay in New York State, with extensive back barrier and tidal creek salt marshes, eelgrass beds, and intertidal flats. The bay and its watershed area provides feeding and nursery habitat for a variety of important coastal and marine species including finfish, shellfish, and shorebirds. The bays and tidal wetlands help provide critical buffer against damage to human communities from coastal storms. The open waters and numerous tributaries protected by the barrier island provide excellent recreational and tourism opportunities for boaters, paddlers, fishers and other enthusiasts of the coastal environment.

(Continued on page 2)



The Great South Bay is the largest shallow estuarine bay in New York State and provides several ecosystem functions.

The Great South Bay and Ecosystem-based Management



The Great South Bay Ecosystem-based Management Demonstration Project area includes the upland watersheds of tributaries to the Great South Bay, the barrier islands, and extends from the Nassau/Suffolk County line on the east to the Carmans River on the west.

The Ecosystem-based Management legislation identified two demonstration areas where ecosystem-based management principles are being applied as models for the rest of the state. One of those demonstration areas is the Great South Bay, which comprises the central region of the South Shore Estuary Reserve. The demonstration project area includes the upland watersheds of tributaries to the Great South Bay, the barrier islands, and extends from the Nassau/Suffolk County line on the east to the Carmans River on the west.

Located in Suffolk County, the project area includes all or portions of the Town of Babylon, Town of Islip, and Town of Brookhaven. The watershed of Great South Bay can be described as "developing," in contrast to the more fully "developed" western bays portion of the Reserve. Development is generally less intense and open areas more extensive. The primary land use pattern is medium density development with pockets of more intense residential use on fingers of land separated by canals and waterways. Along the shoreline are substantial areas of green space dedicated as parklands and preserves. The intensity of development lessens from west to east within the upland watershed of the Bay. Its population has grown over the last decade and is projected to continue to do so over the next twenty years, but at a gradually decreasing rate.

(Continued on page 4)

Project Partners: Who Are They and What Are Their Roles?

The **Ocean and Great Lakes Ecosystem Conservation Council** is charged with coordinating programs and activities that help to protect and restore New York State's coastal ecosystems. The nine-member Council will work with various stakeholders to develop policies and principles to improve management of these coastal resources through implementation of effective action strategies. The Council includes the heads of nine New York State agencies including:

- Department of Environmental Conservation (Council Chair)
- Department of Agriculture and Markets
- Department of Transportation
- Empire State Development Corporation
- Office of General Services
- Office of Parks, Recreation and Historic Preservation
- Department of State
- State University of New York
- New York State Energy Research and Development Authority



The Council's Executive Director is the Deputy Secretary of State for Coastal Resources. The Division of Coastal Resources acts as staff to the Council and is spearheading the demonstration ecosystem-based management initiatives in both the Great South Bay and the Sandy Creeks watershed. The Great South Bay ecosystem-based management demonstration project is being closely guided in accordance with the Council's oversight and in cooperation with the South Shore Estuary Reserve Council and the Nature Conservancy. Their roles are as follows:

The South Shore Estuary Reserve Council: The Reserve Council is chaired by the Secretary of State, and is comprised of representatives from South Shore towns and villages, Nassau and Suffolk Counties, the City of Long Beach, and recreation, business, academic, environmental, citizen, and other key stakeholder interests. The Reserve Council and its partners work together to advance implementation of actions identified in the Reserve Comprehensive Management Plan to protect and restore the estuary's natural and cultural resources while sustaining the estuary related economy. A number of these implementation actions incorporate key components of ecosystem-based management (see article on page 3). The Reserve Council, its Citizens Advisory Committee and various work groups will ensure that interests and concerns of local stakeholders are considered in the Great South Bay Ecosystem-based Management Initiative. (www.estuary.cog.ny.us)

(Continued on page 4)

What is the Great South Bay Ecosystem-based Management Project?

(continued from page 1)

Ecosystem-based Management considers these and all the components of the ecosystem, *including humans*, rather than focusing on a single species or resource.

Ecosystem-based management initiatives in New York such as the Great South Bay demonstration project were adopted by legislation. In August of 2006, the New York Ocean and Great Lakes Ecosystem Conservation Act (Act) was signed into law. The intent of the act, which authorized the ecosystem management approach, is to view ecosystems or watersheds, not just in terms of their natural resources, but also for their significance to human communities in social and economic terms.

The Nature Conservancy is working in partnership with the NYS Department of State Division of Coastal Resources to draft an ecosystem-based management plan for Great South Bay. The ecosystem-based management plan is a guide to action for balancing ecosystem protection and restoration with economic sustainability. The ecosystem-based management plan will make recommendations for better aligning federal, state and local programs, provide direction for implementing future actions and identify research and monitoring needs to better protect and use the ecosystem wisely.

A key element of ensuring a healthy ecosystem is to understand, protect and restore the interconnections within and among habitats and species. The ecosystem-based management plan uses a set of ecological surrogates that represent the estuarine system, human use of the Bay ecosystem and their interconnections. The threats to and viability of the surrogates are used to gauge the health of Great South Bay. Specific, measurable objectives and actions to meet the objectives are outlined in the plan based on the best scientific information available. The plan also recommends a suite of indicators to monitor the effectiveness of the strategies, status of threat abatement and ongoing viability of the surrogates.

As a result of its past success in establishing and maintaining stakeholder partnerships to advance estuary management, the Long Island South Shore Estuary Reserve Council has been asked by the New York Department of State and The Nature Conservancy to partner with them on advancing the Great South Bay demonstration project in support of the Act and ecosystem-based management. The Great South Bay demonstration project will complement and support the many other projects underway in the Reserve as recommended in the South Shore Estuary Reserve Comprehensive Management Plan and will advance implementation of the management plan's stated goal to "incorporate an ecosystem perspective in management of estuarine living resources."

Implementation Activities in the Great South Bay

The South Shore Estuary Reserve Council and partners are currently implementing a number of on-the-ground efforts recommended by the South Shore Estuary Reserve Comprehensive Management Plan to improve the condition of natural resources in the Great South Bay. Implementation projects demonstrate the link between healthy communities and healthy ecosystems, as defined in the principles of ecosystem-based management. The following activities illustrate how implementation of the Reserve Comprehensive Management Plan incorporates key components (**in bold**) of ecosystem-based management:

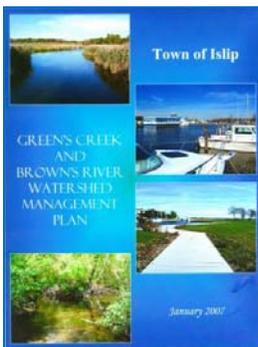


Staff of The Nature Conservancy and volunteers stock the Great South Bay with hard clams annually, and monitor their growth.



Brown tide research illuminates the complex interactions among ecosystems.

Diadromous Fish Restoration. The **adaptive management** component of ecosystem-based management can be applied in the Great South Bay through implementation of the *monitor, evaluate and adapt* principles. An example of on-the-ground adaptive management are the efforts of Reserve partners to restore diadromous fish spawning runs through the identification and monitoring of Great South Bay tributaries that support existing spawning runs of alewife, determining where barriers to passage exist, and then planning and implementing fish passage projects in those tributaries determined to be priorities. The first of these fish passage projects is moving forward on the Carmans River. As assessments about additional current spawning or potential spawning habitats become available, new fish passage projects can be planned and implemented in Great South Bay tributaries where barriers have been identified and can be reasonably addressed.



Watershed management plans identify measurable objectives that can be built upon through ecosystem-based management.

Hard Clams. Since the Great South Bay has historically been associated with high biological productivity, particularly commercial shellfish harvesting, there has been strong motivation for advancing **scientific investigation** to support informed decision making and restoration efforts. To date, the Nature Conservancy has partnered with New York State, Suffolk County, and the Towns of Brookhaven and Islip to restore hard clam populations in the Great South Bay. For this project, 190,000 hard clams were transplanted. 200,000 seed clams were grown and cared for by high school students and released in spawner sanctuaries. Monitoring work has shown that spawning and growth of clams was successful in 2006.

Brown Tide. Recognizing and understanding the **complex interactions among ecosystems** is part of advancing ecosystem-based management. While the identification of a small number of objectives is important to maintain focus, a continual reflection on the impacts of action to many species within an ecosystem and the functions within that system allows for more informed decision-making. Recently, significant research activity has been conducted to understand the occurrence and role of harmful "brown tide" algal blooms that can impair shellfish recruitment and growth and the potential management applications of this information gained from this research. This work has led to additional research questions and information needs which can be incorporated into an ecosystem-based management plan for Great South Bay and are supported by Reserve Comprehensive Management Plan scientific information and eco-system monitoring needs recommendations.



Adaptive management of diadromous fish includes assessments of alewife spawning habitat.

Watershed Management Plans. The **identification of measurable objectives** in the Great South Bay demonstration area is a critical part of the ecosystem-based management planning process that can build on and refine the existing objectives or outcomes of the Reserve Comprehensive Management Plan implementation process. A major ongoing focus for Reserve government implementation partners has been undertaking activities that improve estuary water quality as a foundation for the health of the Great South Bay ecosystem through a watershed based approach. Local governments have prepared watershed management plans which include recommendations for land use planning and water quality improvement projects for the Browns River/Greens Creek watershed, and the Swan River watershed, and are currently working to implement recommended actions.

Stakeholder Outreach: Your Input is Important!

A major component of the Great South Bay Ecosystem-based Management demonstration project is garnering perspective and input from those who live, work, enjoy and otherwise depend on the bay's natural resources for their quality of life. To ensure that the local voice is heard in this process, *EcoLogic*, a professional consulting firm, has been retained to facilitate a number of stakeholder meetings to be scheduled throughout the fall and held throughout the demonstration area. Stakeholder groups will include local government, academic institutions, community groups, fishers, boaters, water dependent businesses, recreational users and more. All interested residents are *invited* and *encouraged* to participate in this endeavor. If YOU would like to participate, please visit the South Shore Estuary Reserve Council website at www.estuary.cog.ny.us, or contact the South Shore Estuary Reserve Office at (516) 470-BAYS or sser@dos.state.ny.us.



Those who work, live, and enjoy the Great South Bay are encouraged to contribute to plan development.

The Great South Bay and Ecosystem-based Management

(continued from page 1)

Demonstrating the links between natural resources and the economy, and balancing the quality of human wellbeing with the protection of a restored, sustainable ecosystem is the goal of this project. The first step toward that goal will be development of a plan that characterizes the watershed both ecologically and economically. The plan will identify the steps necessary to achieve conservation and socioeconomic goals using methods to maintain ecological integrity and economic sustainability.

Project Partners: Who Are They and What Are Their Roles?

(continued from page 2)

The Nature Conservancy: The Nature Conservancy is a major land holder and land steward in the Great South Bay and its upland watershed, and is a partner on many of the implementation activities already occurring in the Great South Bay (See article on page 3). The Nature Conservancy has a great deal of experience with conservation planning and a long history of working with partners to accomplish community based conservation projects. They are also a member of the Reserve Council. (www.nature.org/longisland)



New York Ocean and Great Lakes Ecosystem Conservation Council



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For more information about the Oceans and Great Lakes Ecosystem Conservation Council, please visit www.nyoglecc.org