

# Managing Majesty: The Hudson River Estuary Program

by Dan Shapley

In 1969, Robert Boyle wrote the most memorable sentence ever printed about the Hudson River: “To those who know it, the Hudson River is the most beautiful, messed up, productive, ignored and surprising piece of water on the face of the earth.”

Nearly 40 years later, the phrase still rings true, but for one thing: it would be hard to argue for “ignored.”

The environmental movement was busy being born when Boyle wrote his, “The Hudson River: A Natural and Unnatural History.” The Hudson, a polluted mess of a river at the time, was its midwife, with groups such as Scenic Hudson born out of the fight to prevent a power plant from being carved into Storm King Mountain; Riverkeeper emerging to fight for forgotten anti-pollution laws; and Clearwater, re-introducing Hudson Valley residents to their neglected namesake. Now, when describing the river, most people come back to words like beautiful, scenic and majestic.



Photo by Steve Stamm, NYSDEC

In 1963, Consolidated Edison proposed building the world’s largest pumped storage hydroelectric plant into the face of Storm King Mountain, a prominent peak at the northern gateway to the Hudson Highlands, south of Newburgh. The 17-year fight to stop the project established precedents in environmental law, including the right of citizens to participate in environmental disputes, led to the emergence of Scenic Hudson as a prominent citizen’s group on the river and raised issues about river management that are still a part of the policy dialog today. A goal of the Hudson River Estuary program is “to conserve the key features of the world-famous river scenery – the inspiration for the Hudson River School of American painting and for the tales of Washington Irving – and provide new and enhanced vistas where residents and visitors can enjoy Hudson River views.”

## Hudson River Estuary Program

Today, the ideals for which those early advocates fought have long since been codified in the likes of the National Environmental Policy Act, the Clean Water Act and the American Heritage Rivers initiative. Legions of attorneys, consultants and agency staff are employed in the service of safeguarding clean water and ensuring the public has the right to speak out against projects that may harm the environment.

In 1987, the same year Congress set up the National Estuary Program, New York passed the Hudson River Estuary Management Act which created the Hudson River Estuary Program, under the leadership of the Department of Environmental Conservation (NYSDEC). The program has evolved a collaborative approach that is

based on building partnerships to implement its long-range plans. The program explicitly acknowledges that: “No one organization or agency can fund all the science, all the education, all the conservation initiatives needed to protect and restore the Hudson and its watershed.”

To that end, it draws together the various interests on the Hudson - from scientists and conservation groups to commercial fishermen, anglers and educators and, not least of all, the various state and federal officials working to enforce related laws that were important alone but more powerful if enforced in a coordinated fashion.

“The problems were too big and complicated; you were going to need others involved, and you were going to need your stakeholders all involved,” said Dennis Suszkowski, science director for the Hudson River Foundation and a member of the committee that guides the Hudson River Estuary Program’s work. “That really has been a trick. People have been saying ‘stakeholder involvement,’ but doing it effectively is a real problem. ... It’s one thing about the Estuary Program that has been a real credit to the state and to the program leadership. I’m kind of amazed that we have such good participation of so many of the important stakeholders.”

In 2005, the Hudson River Estuary Program established a range of specific, measurable goals. Many – like making the river safe for swimming along its entire length – are tied to 2009, the 400th anniversary of Henry Hudson’s voyage up the river that now bears his name. Other goals - like the restoration of the Atlantic sturgeon population depleted by overfishing – will not be realized until mid-century at earliest.

Starting out, the program faced a river of unknowns. The map of scientific knowledge about the Hudson had been inked by firestorm and controversy - striped bass spawning grounds were known only if a power plant threatened to degrade them. There were large blank spots.

“There was such a catch-up mode to be done with just cataloging and trying to understand the resources you’re supposed to be protecting,” Suszkowski said.

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Photo by Steve Stamm, NYSDEC

An adult Atlantic sturgeon in the Hudson River, like this one held by DEC researchers, can reach lengths that exceed 10 feet and weigh 200 pounds. Once so common they sustained a commercial fishery with “Albany beef” and fresh caviar, sturgeon fishing will be banned until mid-century to allow for a recovery of the long-lived fish. One of the goals of the Hudson River Estuary program is to restore “the signature fisheries of the Hudson River to their full potential.”



Image courtesy of Roger Flood – SUNY Stony Brook

A pioneering set of Hudson River benthic maps reveals features like Diamond Reef (middle right) at the mouth of Wappinger Creek, which has been a navigational challenge to boat traffic; as well as intriguing shipwrecks, evidence of past industrial use, and, most importantly, the range of habitat types at the river bottom. This information is being matched with data about fish movements, submerged aquatic vegetation and other information to provide a clearer picture of the river's ecosystem and its critical habitats. The Hudson River Estuary Program counts this multi-partner mapping program as one of the most important accomplishments of its goal to protect river and shoreline habitats.

Projects like mapping the contours of the river bottom with sonar technology, delineating shoreline wetlands and underwater plant beds (submerged aquatic vegetation, or SAV) and figuring out exactly when and where anadromous fish spawn are essential. They are the foundations for the more sophisticated work of determining which species use which habitats and what areas of the river need protection to sustain ecological functions.

The program's ability to use science as the basis for its goals was possible in part because of resident expertise in the NYSDEC and in part because of university scientists that had made the Hudson their focus. It also owes a great debt to the happenstance that saw the New York Botanical Garden establish the Cary Institute of Ecosystem Studies in Millbrook in 1983. An independent research organization, its Hudson team contributes actively to the Estuary Program. In addition, the program has benefited from the involvement of other world class research institutions such as the Lamont Doherty Earth Observatory of Columbia University, Cornell University, Stevens Institute of Technology and SUNY Stony Brook.

As directed by the New York Ocean and Great Lakes Ecosystem Conservation Act of 2006, New York is embracing an "ecosystem-based" approach to managing the environment and has identified the Hudson River Estuary Program as an excellent model for the state. The Hudson River's management plan will likely get a fresh look, but its focus on science-based goal setting will no doubt inform other management plans across the state.

Its broad goals, according to its Hudson River Estuary Action Agenda for 2005-2009, are to:

1. Restore the signature fisheries of the estuary to their full potential, ensuring future generations the opportunity to make a seasonal living from the Hudson's bounty, and to fish for sport and consume their catch without concern for their health.

The NYSDEC monitors the health of fish populations through surveys of fish in various life stages at various times of year. Big striped bass, like this 34-pound fish caught near Catskill, NY by a researcher, are much sought after by river anglers. The Hudson River Estuary Program has set a goal of maintaining "a broad age structure of striped bass and a self-sustaining spawning stock at appropriate levels of abundance to provide a quality and economically viable fishery."



Photo by Steve Stannic, NYSDEC

2. Conserve, protect and, where possible, enhance critical river and shoreline habitats to assure that the life cycles of key species are supported for human enjoyment and to sustain a healthy ecosystem.
3. Conserve for future generations the rich diversity of plants, animals and habitats that are key to the vitality, natural beauty and environmental quality of the Hudson River Valley.
4. Protect and restore the streams, their corridors, and the watersheds that replenish the estuary and nourish its web of life – a system critical to the health and well-being of Hudson Valley residents and the estuary.
5. Conserve key elements of the human, pastoral landscapes that define the character of the Hudson River Valley and its setting of history and mystique.
6. Conserve the key features of the world-famous river scenery – the inspiration for the Hudson River School of American painting and for the tales of Washington Irving - and provide new and enhanced vistas where residents and visitors can enjoy Hudson River views.
7. Establish a regional system of access points and linkages so that every community along the Hudson has at least one new or upgraded access point to the river for fishing, boating, swimming, hunting, hiking, education or river-watching.
8. Promote public understanding of the Hudson River, including the life it supports and its role in the global ecosystem, and ensure that the public understands the challenges the Hudson River faces and how they can be met.
9. Revitalize all the waterfronts of the valley so that the Hudson is once again the “front door” for river communities, where scenery and natural habitats combine with economic and cultural opportunity, public access, and lively “green ports” and harbors to sustain vital human population centers.
10. Ensure that the Hudson River will be swimmable from its source high in the Adirondack Mountains all the way to New York City.
11. Remove or remediate pollutants and their sources so that all life stages of key species are viable, and people can safely eat Hudson River fish, and so our harbors are free of the contaminants that constrain their operation.
12. Track our progress and celebrate our successes.

### Reaching a River Renaissance

The particulars – such as determining the feasibility of restoring oyster beds to Haverstraw Bay, reducing pathogens in class C waters to support the swimmable river goal, and providing new or improved river access for every community by 2009 – add up to a vision of the river as a place for thriving wildlife and sustainable thriving human communities. Over more than a decade, there have been many notable accomplishments, including the creation of dozens of new parks and access points along the river; effective programs to encourage local towns with home rule jurisdiction to preserve key open spaces, habitats and natural areas; and the establishment of volunteer watershed protection groups for the major tributaries as well as for tree planting programs to conserve stream banks.

What exactly is the appropriate grand theme for a river that has been so thoroughly made over by industrial society? There’s no turning back the clock to a time before Hudson’s voyage on the Half Moon – before the valley’s forests were clear cut, its shorelines filled for railroads and factories, or the river’s shallows dredged for shipping lanes. So what is the goal?

“I think this question is a very important one, and I don’t think it



Photo by Steve Starnes, NYSDEC

Eaglets keep watch from a nest overlooking the Hudson River. The nation’s symbol is also a symbol of success on the river after a century’s absence as a breeding bird. Today about 22 pairs nest each season, while more than 100 are known to feed on river fish each winter. Without a clean environment with suitable habitat, success stories like the eagle’s might be impossible. Celebrating those successes is the final goal of the Hudson River Estuary Action Agenda.

has an easy answer,” said Jeff Levinton, a Stony Brook University professor whose research includes studying the feasibility of seeding oyster reefs in Haverstraw Bay. “The simple answers are obvious – that you would see more fish, that you would have more swimmable miles, that you would have more access points, seeing more of the natural resources that we’ve lost come back, protecting as much of the shoreline as possible, keeping state parks along the Hudson free of as much development as possible ... making sure that these shorelines are not loved to death by people.”

A habitat restoration model being developed in the New York-New Jersey Harbor Estuary by the Hudson River Foundation and others could provide a model for the rest of the river, Suszkowski said.

“The idea is that we weren’t going to set the clock back; we were going to look forward and look at this as more of a renaissance than a restoration. There are some concepts out there that practitioners have been calling re-naturing in some landscape ecology literature. Our idea is to create a mosaic of habitats that provide not only the ecosystem but the society with benefits.”

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