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Hudson River

State: New York

Threat: Storm surge barriers

At Risk: Fish and wildlife;
river health

Summary

The Hudson River Estuary, heartbeat of New York City, is a biologically rich tidal system that provides essential habitat for many species of fish and wildlife. This river has faced many challenges, the latest of which is a potential project by the U.S. Army Corps of Engineers to build massive storm surge barriers that could have catastrophic consequences for the river and region. These giant ocean gates threaten to choke off tidal flow and restrict the migration of fish, changing the ecology of the Hudson River forever. The Army Corps must expand its approach and find solutions that protect New York City, the Port of New York and New Jersey and shoreline communities without harming the river.



PHOTO: JOHN LIPSCOMB

HUDSON RIVER, NEW YORK

The River

The Hudson River flows 315 miles from the Adirondack Mountains in upstate New York through the Hudson Valley and into New York Harbor. As the second largest estuary on the East Coast, the Hudson provides critical habitat for many species, including endangered Atlantic and shortnose sturgeon and threatened banded sunfish. It also supports fisheries of both migratory and resident species. In addition, the Hudson is a drinking water source for more than 100,000 New Yorkers who reside in Poughkeepsie, Rhinebeck, Esopus, Hyde Park and Lloyd. The river is at the heart of a \$5.5 billion tourism industry, attracting visitors who come to experience the river itself and to explore the regional history, forests, shorelines and communities throughout the Hudson Valley.

The environmental movement had its origins on the Hudson with a fight over a power plant on Storm King Mountain, where for the first time in U.S. history the law required consideration of environmental impacts during construction of a hydropower project. In the mid-1900s, General Electric (GE) infamously discharged polychlorinated biphenyls (PCBs) into the upper Hudson River, contaminating sediments, fish and wildlife, and negatively affecting local communities for generations to come. Recently, the New York State Department of Environmental Conservation concluded that the PCB cleanup is still incomplete and not protective of public health and the environment. GE is adamant that it has fulfilled its obligation. The U.S. EPA is expected to issue decisions imminently on whether the cleanup is complete and protective of human health and the environment. The fight goes on.

The Threat

Ever more extreme weather events and rising sea levels, the predicted impacts of climate change, are threatening cities and communities on the Atlantic Coast. In 2012, Hurricane Sandy devastated New York City and surrounding communities. The hurricane, and the storm surge it brought with it, caused large-scale flooding and cost billions in damage. In response, the U.S. Army Corps of Engineers is considering six plans involving various scales of massive in-water barriers and/or land-based measures, like dunes, levees and floodwalls, intended to “manage the risk of coastal storm damage” to the New York – New Jersey Harbor and the Hudson Valley.

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Hudson River

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HUDSON RIVER, NEW YORK

PHOTO: JUAN ALBERTO PUENTES PUERTA

Unfortunately, the Army Corps' approach is far too limited. It only addresses half of the problem. In addition to facing increasing risks from coastal storms, communities face increasing flood risk from sea level rise caused by climate change. The in-water barriers, with gates that remain open for ships to pass except during occasional large storms, would do nothing to prevent the inevitable regular flooding that will increasingly come with sea level rise. Without fully considering the 155-mile Hudson Estuary and its vast network of tributaries as a dynamic system, the Army Corps' proposal could have catastrophic ecological consequences for the Hudson River and New York Harbor.

The storm surge barrier designs that the Army Corps is considering are essentially massive sea walls with gates. These walls could act like partial dams, blocking fish and wildlife, including Atlantic and shortnose sturgeon, American shad, American eel, river herring and sea lamprey, from moving up- and downstream, and restricting the natural flow of the river. Furthermore, barriers across New York Harbor would dramatically alter the tidal exchange essential to transport sediment, nutrients and contaminants. Obstructed by barriers, sewage and other contaminants could flush into the ocean more slowly, increasing localized pollution in the Harbor. With inhibited tidal energy, higher nutrient levels could lead to more frequent algae blooms and lower dissolved oxygen that would impact the health of the estuary and upriver tidal marshes. The tides are the heartbeat and respiration of the 155-mile estuary. Tides are essential to the river's ecology. In-water barriers could strangle this ecosystem. They could also undo ongoing efforts to restore fisheries and habitats throughout the estuary.

Moreover, this approach would leave communities vulnerable to ever more frequent and inevitable flooding from climate change-related sea level rise. According to the ClimAID (2014) report, prepared by academic researchers and utilized by New York State Department of Environmental Conservation, New York has experienced at least a foot of sea level rise since 1900. New York City is planning for up to 75 inches – more than six feet – of sea level rise by 2100. Furthermore, as the impacts of climate change become more severe, future major storms on top of increasing sea level rise will one day overwhelm in-water barriers, ending the storm surge protection they once provided. The people of New York City and the Hudson Valley need rational, adaptable flood management plans that protect against both storm surge and sea level rise while allowing the river to run free.

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What Must Be Done

In Spring 2020, the Army Corps will release a Draft Feasibility Report / Tier 1 Environmental Impact Statement on coastal storm surge plans. This step will have enormous consequences, as it will limit the scope of the measures under consideration moving forward and could eliminate the only acceptable scenario presented thus far: on-shore measures, which can include natural features and other environmentally-friendly technologies. The Army Corps must expand its approach to include options intended to prevent coastal flooding from both storm surge and sea level rise, without any in-water barriers or structures that would restrict the critical connection between the river and the sea. A comprehensive, adaptable plan of this magnitude must include a full suite of management approaches to reduce the impacts of rising floods, including natural infrastructure that restores natural features like floodplains, wetlands, barrier islands, and oyster reefs; nonstructural approaches that relocate, flood-proof and elevate buildings and infrastructure; and where necessary, land-based approaches to protect buildings and infrastructure that cannot be relocated.