

Could Oysters Protect the East End's Shoreline? One Team Would Like to Try it Out

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A Biorock oyster reef | courtesy Roger Bason

All over the world, coastal scientists are looking at new ways of protecting populated harbors from storm tides and rising seas. But one new way of protecting the coastline is actually a very old way, planned by nature, but given a bit of a boost by modern science.

Roger Bason of the upstate New York firm Eccosolution is developing a proposal to surround parts of Fishers Island with a living oyster reef, using a patented technology called Biorock, a mesh of metal rebar that is given a slight electrical charge, which encourages the growth of calcium carbonate in oyster shells.

Mr. Bason is planning to pitch the project to the Fishers Island Conservancy later this week, and eventually bring the project to the Southold Town Board, but he said he's interested in discussing these reefs with anyone on Long Island who wants to protect the shore.

"I grew up on Long Island, and I've seen how people putting bulkheads in front of their properties helps them but not the next person down the line," he said in an interview in early

March. "I want to inform people about the technology itself, if a private interest or public entity wants to engage in getting this done."



A cross-section of a Biorock structure, nine months after installation.

Mr. Bason said there are many existing reef-type technologies that can be used to protect coastlines, many of which are extremely expensive and not necessarily effective. He said some giant concrete interlocking structures begin to collapse due to wave action and their own weight.

"Waves start to erode the substrate underneath them until they collapse," he said. "It's a lot of money for something that is temporary at best. Biorocks get stronger with age. They're continually plating themselves, like a pearl. They are anchored into the seabed, they stay in one place and they are porous."

Mr. Bason said the electric charge is very slight, akin to that produced by cellular processes in living creatures, and the structures can be touched underwater without any fear of shock.

"There's a multiple-benefit, synergistic effect of added biodiversity. It helps to rebuild beaches. There's a reduction of beach erosion. Fisheries improve. It's good for ecology in general. You get a lot of benefit all in one package," he said. "The navigational plan will be clearly marked, and will be sent to charts and computer updates to charts. Everything is either out of a navigable channel or below the depth of the largest vessels that go through there at low tide."

His team has built more than 400 Biorock reefs around the world in the past 20 years, mostly in island nations in the Pacific Ocean, but he said the reefs have been slow to take off in the United States, in part due to the abundance of regulatory agencies. He said he's had promising preliminary discussions about Biorocks with the New York State Department of Environmental Conservation.

Mr. Bason said he chose Fishers Island as a possible pilot site due to the extensive damage on the island from Superstorm Sandy, and also because he is familiar with the area. He has been working on another project to harness the tidal energy in Plum Gut for electric production for several years.

"We have two separate projects and technologies and have permits on either side of The Race, at Valiant Rock south of Fishers Island and right off of Plum Gut at Orient Point," he said. At both sites, he said, the reef project could be installed in conjunction with the tidal turbine.

He's currently looking to raise money for the construction of the tidal turbine.

"The Race is a world-class resource," he said. "Eighty-five percent of the tidal power in New York State is in The Race."

"But the focus has shifted because of Hurricane Sandy. Biorock may be a first component. It's meeting a dire need," he said. "Energy projects take time. The first tidal permit issued in New York City took ten years."