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Scientists say river restoration ‘can only make it better’

By Edward Miller
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WELLFLEET — More than 80 local shellfishermen and other citizens turned out last Thursday to listen to planners of the Herring River Restoration Project talk about ecology, coastal geology, sediment mapping, groundwater hydrology and water chemistry, and most left feeling reassured that the massive undertaking would ultimately benefit the shellfish industry in important ways.

The program was cosponsored by the Wellfleet Shellfish Advisory Board and the Friends of Herring River to address concerns expressed by many shellfishermen about the potential effects of the restoration project on their grants and livelihood.

“It’s really important that we understand the science,” said Don Palladino, president of the friends. “The enormity of the change that could result from the restoration is of major significance.”

Palladino and John Portnoy, a retired ecologist with the National Park Service, described declining water quality in the estuary and the need for action to reverse its deterioration.

“A detailed plan has been designed to prevent negative impacts and minimize potential risks,” Palladino said. “All the indications so far are that water quality will be improved.”

Portnoy, coastal engineer Kirk Bosma, and coastal geologist Mark Borrelli summarized the research studies of the watershed and harbor going back more than 35 years. The damaging effects of diking the river and severely restricting the tidal flow, they said, included the loss of more than 1,000 acres of salt marsh to non-native plants, wildlife habitat loss, marsh subsidence, reduced storm surge protection, more mosquitoes, acidification and oxygen depletion of the water, fish kills, odors and the contamination of shellfish beds by fecal coliform bacteria.

Bosma described the painstaking collection of data to create a dynamic model of the movement of water and sediment with the tides in the estuary. The accumulation of silt in Wellfleet Harbor is a major concern, and so the potential movement of sediment downstream with the increased tidal flow worries shellfishermen.

“Flood tides are stronger than ebb tides,” Bosma said, “so sediment will tend to be transported upstream, not downstream.” Coarser sediment, he noted, would move “slightly seaward” or remain where it is, while fine-grained material suspended in the water would move upstream, away from the harbor and its shellfish beds.



Shellfishermen Zack Dixon, Barbara Austin and Becca Taylor, members of the shellfish advisory board, which cosponsored the river ecology meeting. [PHOTO TERESA PARKER]



Steve Spear and Don Palladino ponder a question from Elspeth Hay after Thursday’s meeting. [PHOTO EDWARD MILLER]

The new dike, Bosma added, would allow a high level of control of water levels, making possible a program of adaptive management to go with precise, real-time monitoring of changes in the estuary.

Bosma was challenged by Ron Gabel, a retired doctor from Yarmouth Port who is a member of the advocacy group Herring River Concerned Citizens. Gabel read a passage from a hydrodynamic modeling report by the Woods Hole Group, a coastal science consulting firm, which he said concluded that shellfish would be smothered

by sediment discharged from the river system because of the increased tidal flow.

“How will adaptive management take care of that?” Gabel asked.

Bosma responded that he was one of the authors of the report, and that the passage Gabel quoted had been taken out of context. It was not a conclusion but was from the introduction, he said, and simply stated one of the concerns that directed the research.

“This is why we did all the science — to find out what is going to happen,” Bosma said. “There’s

a number of ways the sediment problem could be handled. You could open the tide gates in the winter, for example,” when most aquacultured shellfish have been removed from grants, to test the movement of sediment with minimum risk.

Helen Miranda Wilson asked what the effect of the restoration project would be on the larger problem of sediment in the harbor, which is severely in need of dredging.

“It’s not going to make it worse,” said Borrelli. “It can only make it better.”

Portnoy noted that

contamination by fecal coliform bacteria had caused the permanent closing of shellfish beds above the dike in 1984. He said the most likely source of the bacteria was wildlife feces. He listed the factors that lead to increased coliform: low salinity, low pH (i.e., high acidity), low dissolved oxygen and high sediment. The highest concentrations of bacteria are found just above the dike; they drop off rapidly below the dike.

“Coliform in the river varies inversely with salinity,” Portnoy said. “Restoration will dilute the high fecal coliform river water, increase salinity, increase dissolved oxygen and pH and increase the exposure of bacteria to predation and ultraviolet rays. All of these factors should reduce fecal coliform levels.”

One possible negative, said Portnoy, is that the restoration is likely to bring 200 to 300 black ducks to the river, “which might be a new source of fecal coliform.”

Borrelli tackled the question of the stability of the Gut, the narrow strip of land connecting Griffin Island to Great Island. Might the change in tidal flow result in an inlet forming, cutting off Great Island from the mainland?

After describing the geology and hydrology of the area, Borrelli said flatly, “It’s not going to happen. There’s no way a tidal inlet is going to form here and maintain itself. The Gut is dynamic but stable.”

Barbara Austin, chair of the shellfish advisory board, asked about the permitting for the project. “Are permits going to be issued just for phase one, then others later? Or are you getting permits for the whole thing at once?”

“There are two phases,” said project manager Martha Craig. “The first will be for Herring River and maybe Mill Creek. The second would include primarily upper Pole Dike Creek and the rest of Mill Creek. The later phase will happen only if agreements can be worked out with landowners. The permitting is going to take a few years, then there will be 18 months of construction, and then the tide gates will be gradually opened over five to 20 years. Phase one is almost entirely on National Seashore land, not private land.”

“Who speaks for the herring?” asked one audience member. “Are the herring going to be OK?”

“One of the benefits of this project is that there’s going to be more herring coming up,” said John Duane of the natural resources advisory board.

“Your questions are important,” said Palladino near the close of the evening. “If you don’t ask them tonight, come find us. We’ll do the best we can to give you the answers.”