

The Three Bays Monitor

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What's in the Water? Three Bays Report Details Health of Estuarine System

The facts are in. Some are pretty; others aren't. A report entitled "Water Quality & Habitat Health of the Three Bays Estuarine System" was released last Fall to much fanfare. Written by Dr. Brian Howes and George Hampson of the School of Marine Science and Technology (SMAST) at the University of Massachusetts, Dartmouth, the report represents the first comprehensive scientific evaluation of our beloved bays. Members of Three Bays Preservation, Inc. deserve thanks for making such an evaluation, however troubling, possible.

The following areas constitute what is known as the Three Bays System:

- North Bay, Cotuit Bay and West Bay
- 10 sub-watersheds
- Prince's Cove and Warren's Cove
- Seapuit River and Eel River
- The narrows from Cotuit Bay to North Bay, and from North Bay to Warren's Cove
- Dead Neck and Sampson's Island

Surface and mid-water samples were taken monthly from 18 monitoring points throughout the estuarine system between May and November of 1999. Scientists at SMAST analyzed the physical features of the samples, including temperature and light penetration, and took chemical measurements as well, documenting the levels of, among other things, nitrites, nitrates, oxygen and ammonium.

What We've Learned

Although the entire Three Bays System seems to be faring better than most other embayments on the south shore of Cape Cod, the system is still nitrogen limited - that is, additional nitrogen will increase the algae blooms we have seen with alarming frequency. The mouth of the Marstons Mills River, Prince's Cove, Warren's Cove and the narrows to North Bay are currently showing poor nutrient related health. The most imperiled area appears to be Prince's Cove, which is so overly fertilized that scientists are calling it eutrophic (when overproduction of algae results in oxygen depletion).

Not surprisingly, the Marstons Mills River seems to be a major point source of nitrogen loading to the estuary. The river carries nitrogen gathered through surface and groundwater inflows to the bays.

Three Bays Preservation: Committed to Progress

Naturally, it's tough for any organization - much less a relatively new one like Three Bays Preservation, Inc. - to fight years of pollution and neglect. Still, we are making strides - again, thanks to the generosity of our members. Among the important steps we are taking:

- Analyzing the DNA of the fecal coliform to determine where, precisely, the contaminants are coming from.
- Monitoring new freshwater inflows and nutrient gauging stations on the Marstons Mills River and the Little River.
- Installing a shellfish upweller propagation system, known as a FLUPSY, in lower West Bay. Such a system allows shellfish to take advantage of high nutrient levels and avoid the low oxygen levels on the bottom of a struggling water body.
- Adding four new water monitoring stations.
- Planning to dredge Cotuit Bay entrance next year, which will improve water quality and increase bird habitat on Sampson's Island.

Further recommendations from the report and staff at Three Bays Preservation include sampling bottom-living organisms; considering the leasing of a DNA analysis machine that could be used by other non-profit and government agencies; continuing to improve the relationship between Three Bays Preservation, Inc. and the Town of Barnstable; and researching the possibility of joining with other non-profit environmental organizations on Cape Cod to pursue a Cape-wide water quality monitoring program.

DNA Analysis Pinpoints Sources of Fecal Coliform

At Three Bays Preservation, Inc., we are not only interested in measuring the level of contaminants in our estuarine system, but also in determining where those contaminants originate. To that end, the organization undertook an ambitious and unprecedented DNA study of more than 70 fecal coliform samples taken from monitoring stations in the year 2000.

This study essentially took a DNA fingerprint of the samples and specified the species that have produced the fecal counts we are seeing. Predictably, the analysis revealed a wide variety of animal sources, including humans, birds, dogs, cats, deer, and rodents.

Two of the sampling stations, Prince's Cove North (near the marina) and another at the opening to Warren's Cove, exhibited extremely high percentages of human fecal coliforms (44 percent and 53 percent, respectively), which are considered the most serious threat to public health. The high count at the north end of Prince's Cove is possibly due to human waste from moored or docked boats, homes, and/or the marina. The high counts found at the south end of Warren's Cove appear attributable to failing septic systems.

Because we have found fecal counts that, in many cases, far exceed the internationally accepted limits for bathing and shellfish harvesting in Prince's Cove North and the south end of Warren's Cove, Three Bays Preservation, Inc. is recommending that residents and visitors avoid body contact with the water in these areas this summer. Armed with this

new and important scientific information, we intend to continue our monitoring and DNA analyses and, more importantly, we will work with health officials to remedy this disturbing problem.

It's Spring! Let's Meet!

Please join us for our annual Spring meeting June 16, 8:30 am-12 pm, at Cape Cod Academy, Osterville/West Barnstable Road, Osterville. Speakers will address in detail various issues mentioned in the water quality report, including the DNA analysis. We will also discuss areas of concern and observations cited by our readers who responded to the Fall 2000 questionnaire. The meeting will be a great opportunity for participants to ask questions about Three Bays' progress on the issues we all care so much about. And yes, admission is free and refreshments will be served.

We Need You

If you would like to participate as a water quality monitoring volunteer, Three Bays needs you. We are looking for people to collect water samples for our ongoing campaign to understand and remedy the problems we are seeing. The monitoring program takes place between May and October. We are also seeking boats that will bring volunteers out to the various monitoring points throughout the estuarine system. We hope to see you out on the water.

To Our Readers

This special issue summarizes the results from the first year of the Three Bays Water Quality Monitoring Program. The major findings help to “frame” the problems our community is facing in the Three Bays estuary and watershed. If you would like more information or have any questions, please call Three Bays at 508-420-0780 or email us at info@3bays.org.