

Currents

• A Quarterly Newsletter of the Casco Bay Estuary Project •

Volume 2, No. 2

Spring 1993

Harpswell Study: All Clam Flats are Not Alike

Harpswell shellfish managers and municipal officials are learning a great deal about the close connection between land use and water quality. A CBEP-sponsored study of two shellfish beds in Harpswell offers important lessons for their counterparts throughout the Casco Bay region.

Harpswell's project, titled "Rehabilitating Harpswell's Shellfish Resources" received \$4,500 under the CBEP Local Government Minigrant program in Spring 1992. Harpswell selectmen allocated \$1,500 to make up the required 25% match because they see the importance of Harpswell's shellfish resources to the town. With 180 miles of shoreline, Harpswell comprises approximately 40 percent of the total shoreline of Casco Bay, and clam flats are an important percentage of that total. There will be about 140 reciprocal shellfish harvesting licenses in the West Bath-Brunswick-Harpswell shellfish region this year.

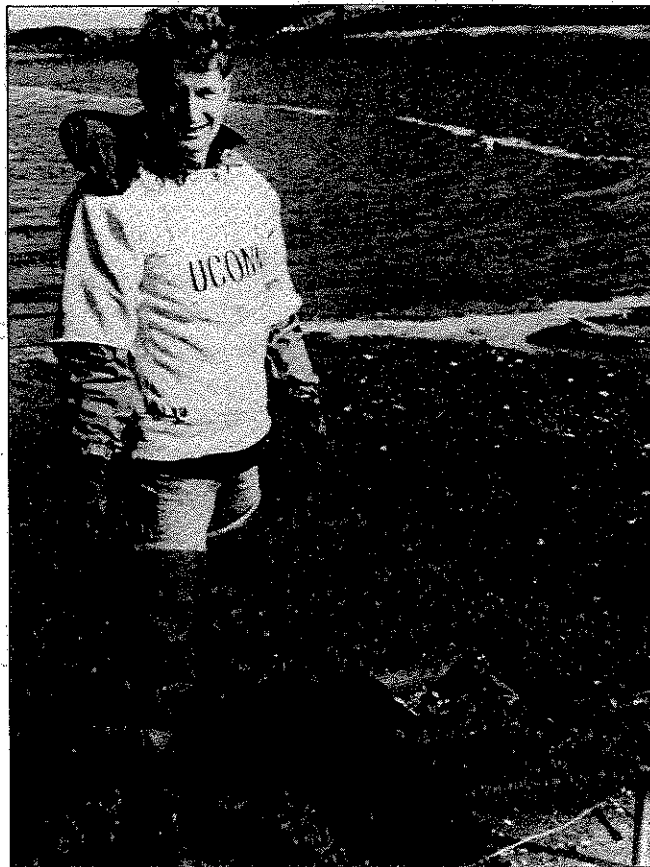
The study takes a close look at two shellfish growing areas in Harpswell, Stover Cove and Doughty Cove. Both areas are closed to clam harvesting because of known or suspected water quality problems. Project leaders Chris Heinig, of Intertide Corp., Harpswell, and Don Newberg, consulting geologist, set out two goals for Harpswell's study: to define pollution problems so they could develop remedial programs, and to establish a procedure for prioritizing and remediating other shellfish growing areas.

Two coves provide contrast in land use

Land use designations in local zoning ordinances determine the extent and type of development permitted near the shore and in a drainage basin. This indirectly affects water quality, and has a significant impact on the harvestability of shellfish in the cove. The two coves selected for the study, Doughty and Stover Coves, provide contrasting land uses and natural resource features.

Doughty Cove was selected for its potential of having a significant shellfish population. The long, narrow cove has few residences, most of which are occupied year-round. It receives drainage from wooded land and a freshwater marsh at the head of the cove, which is zoned Resource Protection.

In contrast, Harpswell's parcel map for Stover Cove shows a checkerboard which includes a number of small, 50 by 100 foot lots bordering the cove. Land surrounding the cove is zoned Residential. Many homes are inhabited seasonally, some year-round.



Don Newberg photo

Field Assistant Todd Lajeunesse stands next to a sample point in Stover Cove, Harpswell. The clams will be sized and counted as part of the population evaluation.

Septic systems and runoff - what does it mean?

Compared to Doughty Cove's natural drainage area, runoff in Stover Cove passes through dense development. Surface drainage quickly saturates the soil. Water moves easily through the underlying sands and gravels, carrying pollutants to the cove. Although water testing for this study did not establish a clear link between septic systems and bacteria levels in the cove, the septic systems around the cove, including many older ones, are suspect because they "can be assumed to introduce pathogens directly into groundwater", which ends up in the cove.



see Harpswell on page 4



WORKPLAN SETS SIGHTS ON '95

Every year, the Management Committee develops a workplan and budget outlining work the Project will undertake in the coming year to address the Project's priority issues. The process begins in October as the Technical, Citizen's and Local Government committees develop their part of the workplan. The Project enters Fiscal Year 1993 in July by building on progress made in the first two years and forging ahead with new programs that focus on the priority issues facing Casco Bay. Here are some highlights of what's to come:

Impacts from Development

As a prelude to developing regulatory and non-regulatory approaches to address impacts from development, CBEP will begin collecting essential basic information. The U.S. Fish and Wildlife Service will be conducting a project to list the critical wildlife and plant species in Casco Bay.

Data Manager Tom Burns will map soils and wetlands in the Casco Bay watershed on the CBEP Geographic Information System. This information will be useful to planning boards in their review of development proposals.

Impacts from Stormwater

The Project will conduct training for local boards and officials to present a proactive development review approach. The training

will use case studies of Best Management Practices, or BMP's as they are called, to emphasize appropriate site management and development. BMP's will be evaluated for cost effectiveness and their success in reducing erosion and preventing stormwater damage. A "BMP retrofit" handbook will also be developed which describes techniques to retrofit sites to improve water quality of stormwater runoff. To help local officials decide which BMP's to use, the TAC and Project staff will produce a map that identifies the pollutants of concern in the Bay.

The Local Government Minigrant program will be offered again in FY93. This year it focuses on three priorities of the Project: minimizing the impacts from development, stormwater, septic systems and overboard discharges. Towns will be able to apply for grants of up to \$10,000 to conduct projects that address those priorities.

Impacts from Individual Wastewater Systems

The Project will continue to support the Casco Bay volunteer water quality monitoring program with funding for FY93. Already about 75 people are working with Friends of Casco Bay to do the sampling.

See Workplan, page 5

The Casco Bay Estuary Project is

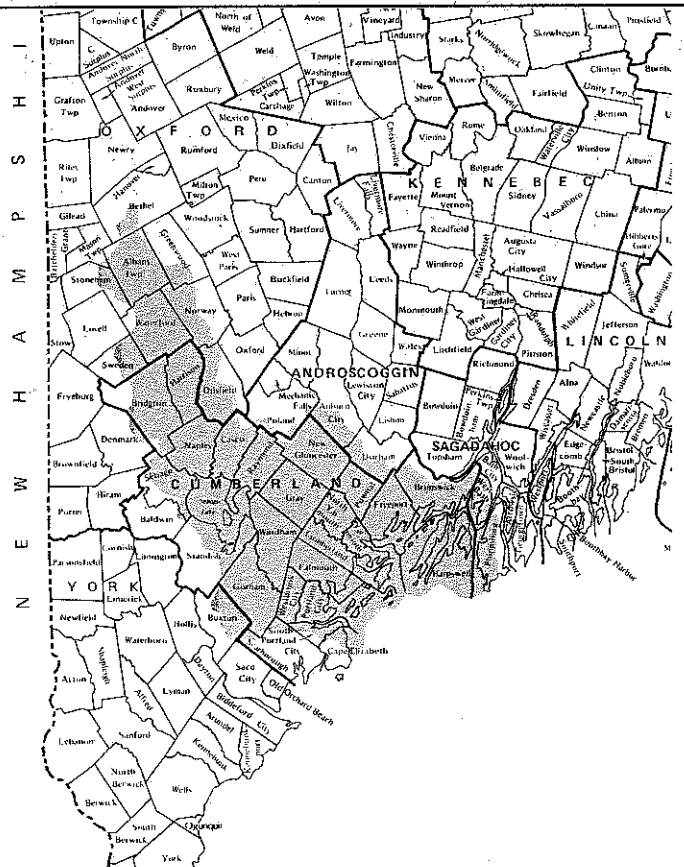
a partnership between the U.S. EPA and the State of Maine. The project is directed through an open, consensus building approach that brings together the public, business, academic institutions, and local, state and federal agencies to develop a comprehensive conservation and management plan. The process is designed to insure that local needs and values are the foundation for that plan.

The project mission is

to preserve the ecological integrity of Casco Bay and ensure the compatible human uses of the bay's resources through public stewardship and effective management. To accomplish this the

Casco Bay Estuary Project will:

- take steps to prevent, and mitigate impacts from existing and potential pollution sources and habitat loss;
- support efforts to understand the bay ecosystem, including natural processes and the impact of human activities;
- support public education efforts to instill a responsible sense of public ownership of the bay, especially among coastal and watershed communities;
- develop the management framework to sustain the bay's resources and benefits.



MEET GEORGE FLAHERTY

To demonstrate the depth of the Casco Bay Estuary Project's Volunteer committees, Casco Bay Estuary Project's Local Government Coordinator Sherry Hanson interviewed George Flaherty, one of three Local Government Committee representatives on the Management Committee and Portland's Director of Public Works.

Q: George, what motivated you to become involved in the CBEP?

A: I asked to be involved at the very beginning of the process. I thought that I had a lot of knowledge that would help the project and that I could provide some guidance on what can and can't be done based on what we already knew from our work on our combined sewer overflows (CSOs), the snow dump and the Peaks Island sewage treatment situation.



These studies told us that the factors that impact water quality are very complex and there are a lot of issues out there that we don't understand. Because of this Portland needed somebody that was going to get involved in the CBEP and stick with the process from the beginning to the end.

Q: Portland has done some very innovative stormwater treatment planning. How did this get started and what are some of the benefits?

A: In 1985 we did a study of the East Side system which happens to have Fall Brook running down through it. How do you handle the sewer system when the system is at design capacity but there's a lot of land still to be developed? How do you increase your capacity?

As we began to think about how to solve the problem we thought, why not use the Brook? So we decided to take the Fall Brook and shape it and improve its flow characteristics. If we did this, we could do some biological treatment by opening up some areas with natural sediment and plants and take the cleanest of the storm water and flow it through the Brook all the way to Back Cove.

When we started to look at the costs of developing a natural stormwater conveyance system it turned out that it was millions of dollars cheaper than building a traditional stormwater system. So it was a win-win situation, manage stormwater, improve backyards, create a nature trail system and save millions of dollars.

Q: The rural towns within the watershed tend to point to the urbanized areas as the source of pollution to the Bay. What is your response to that accusation?

A: Let me provide some food for thought for the uplanders. When we began our CSO program we wanted to determine the amount of pollution that would be eliminated through the removal of the CSOs. But we found out that there wasn't enough information to tell whether or not the removal of the pollutant load from the CSOs would improve the ambient water quality by 1% or even 1/2% because Portland's at the bottom of the hill and a little bit of pollution in Windham and a little bit in Gorham and a little more in Westbrook means a whole lot to the water quality of the Bay. So it's nice to live at the top of the hill and say "it's not our problem" but that's not the case. There has to be a total commitment from everybody in the watershed.

Q: Do you have some advice for those towns that don't have stormwater drainage systems or treatment facilities but are beginning to realize that they do have stormwater problems?

A: I think that we need to dispel a couple of myths. First of all, there has always been the feeling that pollution abatement and the improvement of water quality is very expensive. But the cost of having to clean it up in the future is going to be a lot more.

People think rainwater, no problem. It comes down, it runs across the parking lot, it runs into the brook and away it goes. People need to understand that stormwater is a problem. If you have a huge parking lot, the parking lot is going to create stormwater problems and the people who own the parking lot should bear the expense of managing that stormwater. One way of doing this is by creating a stormwater utility.

We also need to educate people. There are good land management practices that can be used that really won't cost the landowner much. If they are implemented they will keep the streams and the feeder brooks from becoming polluted.

Did You Know?

WHAT COLOR ARE LOBSTERS? AND OTHER FUN FACTS!

1. What color are lobsters?
2. Is lobster blood red?
3. How long does it take for a lobster to grow to one pound in weight?
4. How often do lobsters molt?
5. How does a lobster smell?
6. What part of a lobster's body is measured to determine if it is large enough to keep?

Answers:

1. Usually greenish brown when alive, however lobsters come in red, blue, yellow, and white. Except for the white ones, they all turn red when cooked.
2. Lobster blood is usually gray or pale blue, but it can sometimes be orange, green or pink.
3. Four to seven years.
4. An adult male lobster will grow a new shell and shed its old one about once a year. Females molt once every two years. During its early growth stages, a lobster is believed to shed some 25 times over 5 to 7 years. After a molt, a lobster's shell takes about 8 weeks to harden.
5. By using four small antennae located on the front of its head, and tiny sensing hairs that cover its body. A guage is placed between the eye socket and the end of the large body shell, called the carapace.
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• from "Nor'easter," magazine of Northeast Sea Grant Programs

Harpswell, continued from page 1

Doughty Cove clams

Shellfish surveys conducted in the two coves for the study show that Doughty Cove contains a shellfish resource of considerable and lasting economic value if the shellfish beds could be opened to harvesting. At an estimated yield of about 186 bushels/acre and assuming an annual mean value of \$55/bushel, the report estimates the value of the clams in Doughty Cove will average approximately \$67,540/year. Furthermore, the survey indicates that young clams maturing in years to come will sustain the high economic value of the cove.

Stover Cove clams

Stover Cove, on the other hand, contains a small population of clams. Improvement of water quality to enable resumed commercial harvesting would require significant expense and effort. With an estimated yield of 70 bushels/acre over a relatively small area in Stover Cove, the report estimates the value of the clams in Stover Cove will average approximately \$13,750/year, and there is little potential future value in Stover Cove because few young clams showed up in the survey.

Heinig and Newberg identified bacterial contamination as a threat to a spring fed drinking water supply in Stover Cove, and recommended further study to locate the pollution sources. While no remedial work is recommended in Stover Cove due to the meager clam population and high cost of restoration, the report does recommend acting to restore the valuable clam resource in Doughty Cove to harvesting.

Throughout the course of the study, Heinig and Newberg worked to bring Town committees up to speed with their findings. "We found that the goals of the Shellfish Committee and the Conservation Commission are right alongside each other" says Heinig. Heinig and Newberg hope the results of the study will spawn further cooperation between Harpswell's committees. Says Newberg, "This report offers a straightforward argument for specific protection. It shows existing economic value of harvestable clams and that it is clearly a renewable resource." Heinig adds "There is a real model for Harpswell and other towns in Doughty Cove. It would be a travesty if this report goes up on someone's shelf and that's where it ends. All too often that's what happens."

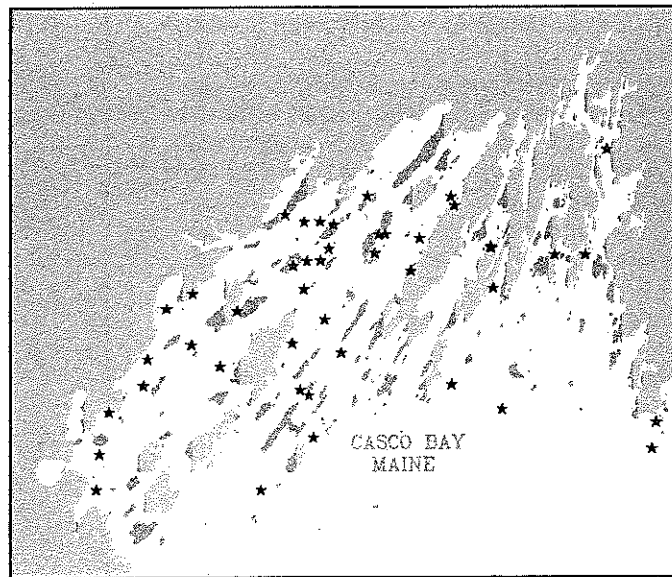
Planning Board Chairman Richard Cole is well aware of that danger, but is hopeful that some concrete results will come from the study. "People in Harpswell have always been receptive to pro-commercial fishing initiatives in the past," he says. While cautioning that people are willing to accept change in smaller bites, he adds that local zoning for shellfish resource protection is a viable option. "The Shellfish Commission could work with the Planning Board to pinpoint the most valuable (shellfish) areas where the least development exists, and apply some standards for new development there," said Cole. Thanks to the hard work that went into the report, a foundation is in place for prudent management and future protection of Harpswell's shellfish resources.

CORRECTION:

The article on harbor seals in Casco Bay in the last issue of *Currents* included a map developed from data provided to the U.S. Fish and Wildlife Service by the Maine Department of Inland Fisheries and Wildlife and Casco Bay Estuary Project.

Unfortunately, the overlay of seal haul out sites in and around Casco Bay was printed upside down on the map, leaving the impression that harbor seals in and around Casco Bay are terrestrial as well as marine mammals. The corrected version appears here, with haul out sites on the coastal ledges and islands, where they belong.

A final note: Although in previous years some biologists have said that harbor seal pupping



Harbor Seal Haul Out Areas and Pupping Grounds in Casco Bay

occurs in mid to late April, current research shows that in the Gulf of Maine pups usually are born from May through June. It is therefore especially important to be aware of the need to prevent disturbance in pupping grounds well into the summer months. My thanks to Roger Applegate, Wildlife Biologist in the Maine Department of Inland Fisheries and Wildlife, for pointing out this correction.

• Tatiana Bernard, Education and Outreach Biologist, Gulf of Maine Coastal and Estuary Project, U.S. Fish and Wildlife Service

Narragansett and Casco Bay Similarities and Differences

By Suzanne Petersen, *Save The Bay, Providence, RI*

Casco Bay Estuary Project



NARRAGANSETT
BAY PROJECT

Narragansett Bay is located in Rhode Island and southeastern Massachusetts. It has 147 square miles of water surface (almost the same as Casco Bay), an average depth of 27 feet, and 25% of its shoreline is man-made. Its watershed area consists of 1,657 square miles, with 61% in Massachusetts and 39% in Rhode Island. Major urban areas in the watershed area include the Massachusetts cities of Worcester, Fall River, Taunton, and Brockton, and the Rhode Island cities of Providence, Woonsocket, Cranston, Warwick, and Newport. Approximately half of Rhode Island's area is urban and the other half is forested/low density housing. The population of the watershed is approximately 1.8 million. In contrast, Casco Bay's watershed population is about 296,000.

In 1985, the Narragansett Bay Project was funded by the federal Environmental Protection Agency (EPA) and the Rhode Island Department of Environmental Management (DEM). A primary focus of the project was to collect scientific data: in its six years, the Narragansett Project undertook over 100 scientific studies before completing its Comprehensive Conservation and Management Plan (CCMP). The Project focused on these priority areas: 1. toxic pollution; 2. nutrients and eutrophication; 3. land-based impacts on water quality; 4. health and abundance of living resources (wildlife) and habitat; 5. fisheries management; 6. health risk to consumers of seafood; and 7. recreation in Narragansett Bay.

Upon final approval of the CCMP by EPA and the State of Rhode Island, the Narragansett Bay Project will be over, and Rhode Island's Department of Environmental Management will oversee CCMP implementation. The goals of the CCMP are: 1. prevent further degradation of water quality; 2. protect diminishing high quality resource areas; 3. improve management of Bay-dependent living resources; 4. rehabilitate degraded waters throughout the Bay basin; and 5. establish interstate and interagency agreements, to oversee and coordinate implementation of the CCMP.

The Project succeeded in identifying and quantifying a good deal of information. However, there are many obstacles to a clean and healthy Bay and watershed.

Information learned includes:

*The 116 Combined Sewer Overflows (CSO) in the Bay dump an average of 4 billion gallons of raw sewage into the Bay every year. Combined with a large but incalculable amount of pollution from failed individual septic systems, one third of the Bay's most productive shellfishing areas are permanently closed. The high number of boats and the low number of marine pump-outs adds further to the sewage problem of the Bay. Due to a dense population, even treated sewage is problematic, because it adds excessive nutrients and exacerbates problems of poor water quality.

*As a highly industrialized and militarized area, toxic contamination of the sediments poses a serious threat to the health and safety of consumers of shellfish and bottom dwelling fish. Narragansett Bay ranks in the top 20 most polluted bays for mercury, selenium, silver, copper, lead, nickel, PCB's, and PAH's.

*The amount of paved surface in Rhode Island (the highest % per unit area in the U.S.) means that much oil and other pollutants enter the Bay via stormwater run-off without the benefit of passing through soil or vegetation.

The Narragansett Bay Project is coming to a close, but its staff wants to wish the Casco Bay Estuary Project success. They hope that Casco Bay will take advantage of the experience and findings of the Narragansett Bay Project, and in turn, pass on what it finds to other estuary projects.

Workplan, continued from page two

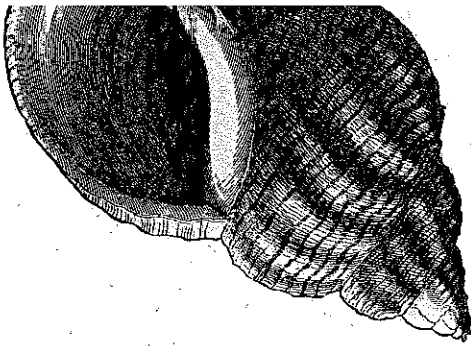
Pamphlets and videos on proper septic system maintenance will be made available for distribution by local plumbing inspectors, CEO's, planning boards and other local groups and committees.

Impacts from Contaminated Sediments

The TAC will develop a blueprint of scientific studies that are needed to provide technical information needed to support the final CCMP. It will also review existing data to see if any follow-up actions are needed.

Stewardship

Public awareness about the importance and health of Casco Bay is an important component of the FY93 workplan. Education of students and constituency groups will continue through presentations, *Currents*, a multi media public education campaign and a Homeowner's Handbook about what individuals can do to protect Casco Bay. Fact sheets, posters, and presentations at fairs and festivals will educate the public about how to prevent pollution in Casco Bay. Cooperating with and supporting other groups' efforts will continue with the Public Outreach Minigrants.



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Casco Bay Estuary Project

Look for the Casco Bay Estuary Project display at these upcoming events:

Portland Waterfront Festival, Portland
June 26

Common Ground Country Fair, Windsor
Sept. 24,25,26

Stay Involved!

The Citizen's Advisory Committee (CAC) meetings are open to the public. To stay in touch with the latest developments with the Casco Bay Estuary Project, plan on attending the next CAC meetings *(tentative please call to confirm)*.

August 3

October 5

December 7

The meetings are held evenings, 6:30 (tentative) at the Yarmouth Community House, 57 east Main St., Yarmouth. If you're interested and want to know more about what's happening, call the Project office at 828-1043.