Currents

• A Quarterly Newsletter of the Casco Bay Estuary Project •

Volume 2, No. 1 Winter 1993

Falmouth Watershed Study Offers Universal Lessons

A stormwater management project underway in Falmouth is drawing the attention of neighboring towns in the Casco Bay watershed. The project's interim report provides lessons and case studies about familiar issues of development, water quality, and public works maintenance that are applicable to all municipalities.

Falmouth's Stormwater Management Plan was authorized by the Town Council and is being conducted by the Conservation Commission. The plan is funded by a $10,000 Local Government Minigrant awarded by Casco Bay Estuary Project in Spring 1992 and $3,500 in local matching funds.

Falmouth provides an excellent test case for a municipal stormwater management plan, according to town planner George Thebarge. Like 39 other towns that lie all or partially within the Casco Bay watershed (see map on page 2), all points in Falmouth are affected by upstream activities and have the potential to affect water quality and property downstream.

One of the primary obstacles facing managers, and a priority focus of the Casco Bay Estuary Project, is a lack of public awareness about the power of stormwater. According to the report, "stormwater damage was done through carelessness, ignorance or misunderstanding of natural forces at work." Thebarge agrees: "95 percent of the activities which cause environmental damage are done accidentally."

The cumulative impacts of numerous small actions within a watershed are increased pollution, flooding, and property damage. In a rain storm, oils and heavy metals wash off roads and parking lots and run off into the bay. Deforestation along a stream can result in increased water temperatures, causing harm to cold water fish species such as trout and salmon. Improper culverting and drainage practices can flood adjacent property. Fertilizers from a golf course, farm field, lawn maintenance or animal waste can overload a river, stream or lake with nutrients, causing algae blooms and serious degradation of aquatic life. Erosion and siltation from land clearing for buildings can result in excessive nutrient inputs and higher water temperatures, and add to the load of heavy metals reaching Casco Bay.

But the costs of stormwater runoff are not strictly environmental. Falmouth learned from hard examples that poor watershed management results in higher infrastructure costs, such as

see Watershed on page 5

Support Your Local Harbor Seal

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

They are a natural opening act on the coast. Harbor seals in Casco Bay, and all along the Gulf of Maine coast, do things humans find worth watching—they sun themselves on rocks, stare back at people staring at them, bark, dive, and surface again. They can stay underwater for as long as seven minutes at a time. People photograph them; children want to play with them. After decades in the early 1900s during which they nearly disappeared from the shores of the Gulf of Maine, harbor seals are coming back now in growing numbers.

Harbor Seal *Photo by David Houghton*

Their presence is a sign that there is not too much disturbance or noise on the rocky ledges they share with many species of seabirds in the Gulf of Maine. Researchers in the Gulf monitor harbor seal populations to track how many pups are born each spring, the best indicator of their health and of the status of their habitat. The most recent survey, taken in 1986, estimated a total population of 14,500 harbor seals in the Gulf of Maine, nearly double the number that existed a decade earlier.

Harbor seals are year-round residents of the Gulf of Maine. Their range extends from as far south as North Carolina north to the Arctic Circle. They are among several marine mammals known as pinnipeds, from the Latin words "feather feet," describing the fin-like flippers they use to propel

see Seals on page4

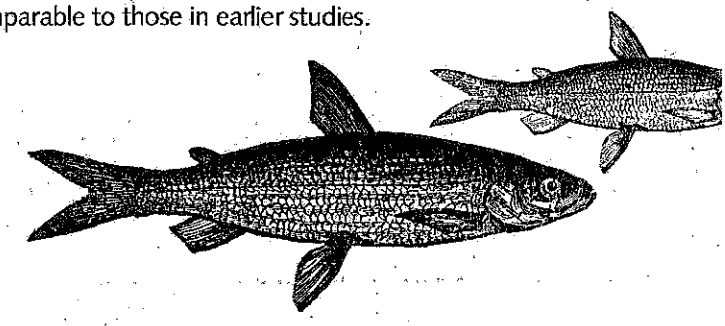
Study Gets to the Bottom of Contamination in Casco Bay

The Casco Bay Estuary Project has released the results of its first study of sediment contamination in Casco Bay. Sediment samples from 65 locations taken in August, 1991 were analyzed for over 60 possible contaminants. Lee Doggett, state Project coordinator, said that "contaminants related to human activities are detectable throughout Casco Bay, but in most cases occur at exceedingly low concentrations." Doggett added that "localized contamination by various chemicals are generally far below levels suspected of evoking a toxic biological response."

Compared to levels of contamination found in bays sampled nationwide, contaminant levels in most of the locations sampled in Casco Bay were below average. Notable exceptions are polycyclic aromatic hydrocarbons, or PAH (mostly residues derived from combustion of petroleum products) at eleven locations in Casco Bay, and polychlorinated biphenyls (PCBs) found in sediment at one site in the inner Fore River. Studies done elsewhere show that PCBs at levels such as were found at this site may be high enough to elicit a toxic response in some bottom dwelling organisms. PCBs were formerly used in industrial compounds, and were banned from production in the late 70's. Ten of the twelve sampling stations ranking highest for toxic contaminants were in inner Casco Bay where there is the greatest concentration of urban population centers and industrialization.

While faring well compared to America's other populated bays, areas of regional concern did show up in the sampling results. In the eastern part of the bay, for example, the study reports occurrences of metals, PCBs and PAHs. The presence of localized contaminants there is unexplained, because no sources are known to exist in the areas of concentration. "We don't why the hot spots turned up in the sampling results," says Doggett. "The Technical Advisory Committee will be asked to review these results to see if further work is necessary."

The study compared the results from this study to earlier sediment contamination studies in Casco Bay. Though direct comparisons are impossible due to differences of contaminants measured, methods used and locations sampled, the report concluded that in general, concentrations measured this time are comparable to those in earlier studies.



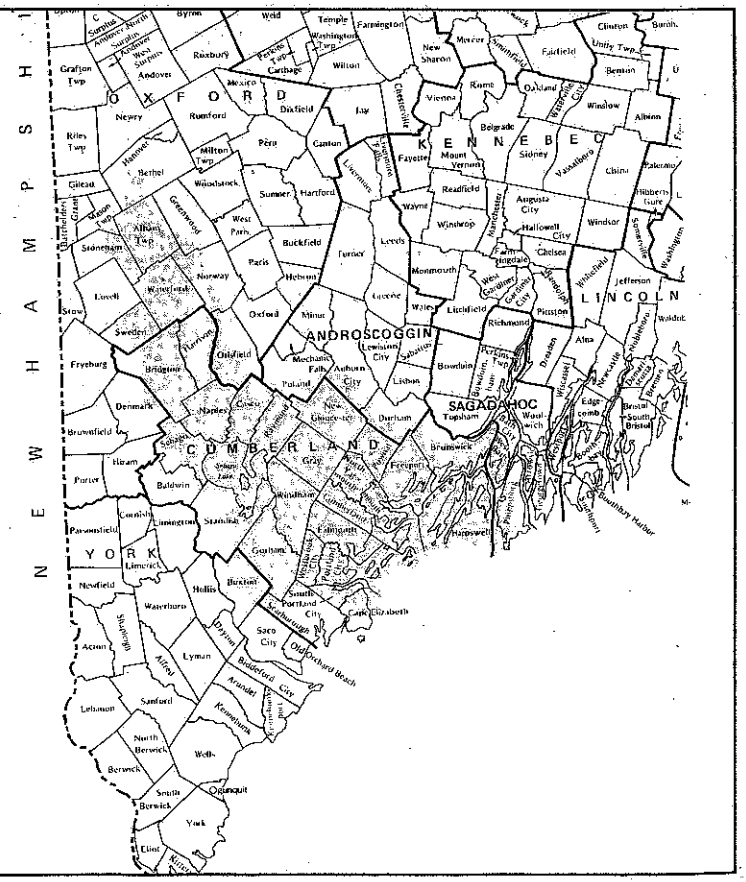
The Casco Bay Estuary Project is

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, mitigate, and remediate 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.



Estuary Project Grant Programs Show Diversity and Creativity in the Watershed

The Casco Bay Estuary Project announces its Fall 1992 award winners in two grant programs: Action Plan Demonstration Projects and Public Outreach Minigrants. The winning projects, totaling $76,106 in grants, range between student-produced educational videos in So. Portland and Bonny Eagle High Schools, to designing a wastewater management district in Brunswick. Here is a brief description of the grant winners, by category:

Public Outreach Minigrants

Public outreach minigrants are a resource for individuals or groups in the Casco Bay watershed interested in promoting environmental awareness. The Public Outreach Committee received 11 proposals from groups in nine towns to conduct educational and public involvement activities in the Casco Bay watershed. Here are the winners:

Eco-Links: educate recreational boaters on proper disposal of solid waste, used oil, and human waste; $637.
So. Portland High School chemistry class: produce a public awareness video on non-point source pollution and water usage; $637.
Bonny Eagle High School biology class: produce a public awareness video on pollution prevention using fictional characters; $350.
City of Portland, waterfront division: provide recycling and trash disposal facilities at Portland docks and educate boaters about bay stewardship; $2,000.
Durham Conservation Commission: produce audio/visual presentation on the Town's Runaround Pond project, using their example of inland water quality protection as a way to protect Casco Bay; $750.
Friends of Casco Bay: develop a bibliography of Casco Bay; $2,441.
Friends of the Royal River: water quality sampling, public outreach and education materials in the Royal River watershed; $1,500.
Maine Coast Heritage Trust: sponsor a one-day conference on greenways, trails, and open space protection; $2,000.
If you have a public outreach project in mind and need financial assistance, stay tuned to *Currents* for announcements of the next round of minigrants!

Action Plan Demonstration Projects

Demonstration grants are given annually to fund projects that demonstrate a solution to a priority problem in the Casco Bay watershed. This year's winning grants go to four towns:

Brunswick: assess feasibility of, and then design a wastewater management district in the town; $34,000.
Cape Elizabeth: design a stormwater control plan for a 200 acre area in the center of town to eliminate direct stormwater discharge into sensitive water bodies; $12,000.
All Estuary Project grants were matched 25 percent by the grantees. For more information about these and other Estuary Project grant programs, call the Project office at 828-1043.
Windham: provide technical assistance and conduct seminars on Best Management Practices (BMPs) for erosion control and stormwater, and distribute the DEP's BMP manuals to towns; $7,878.
Yarmouth: implement erosion control BMPs at a roadside problem area to emphasize the cost-effectiveness of BMPs; $10,000.

Did You Know?

The Presumpscot River

is one of three major river drainages emptying into Casco Bay (remember the other two?). Like Casco Bay's, the Presumpscot watershed is actually a compilation of many smaller drainages. Did you know:

1. Where does the Presumpscot River begin?

2. How many rivers drain into the Presumpscot River? Can you name them?

3. How many miles of rivers and streams drain into the Presumpscot?

4. How many acres of ponds and lakes there are in the Presumpscot River watershed (not including Sebago Lake)? Can you name two of these lakes?

5. How many acres of a) forested wetlands are in the Presumpscot River watershed? b) Non-forested? c) Marine wetlands?

6. Bonus question, for all the marbles: what is the land area of the Presumpscot River watershed?

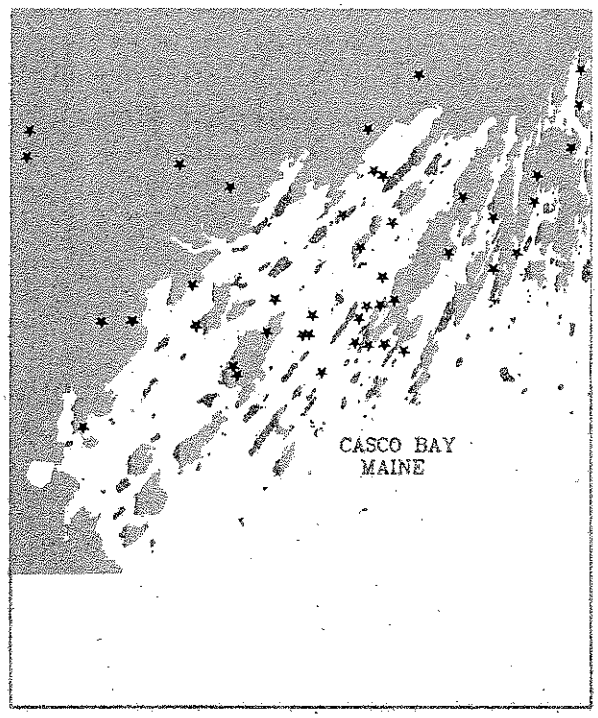
Answers:

The other two rivers are the Royal and the Stroudwater/Fore
1) At Sebago Lake Basin;
2) four: the Little, Pistaqua, East Pistaqua, and Pleasant Rivers;
3) 1011 miles; 4) 3,473 acres Little Sebago and Highland Lakes;
5) 4,233 acres of forested wetlands, 3,008 non-forested, and 115 marine;
6) watershed land area: 131,485 acres, or 205 square miles.

Seals, *continued from page 1*

themselves acrobatically through the water. They often seem curious about people, approaching boats and poking their heads above water for a better look. As the "harbor" in their name implies, it is unusual to see them very far offshore—they rarely sleep in open water, and prefer to return to land for the night.

Female harbor seals usually give birth to one pup a year, usually in mid-April in Casco Bay. It is important that seals are able to find undisturbed ledges during pupping. Disturbance from boats and other human presence at this time can jeopardize the pups' survival. Pups are born on land, and are able to swim by the next tide. If abandoned or separated from its mother, a pup becomes vulnerable to predation by ospreys, black-backed gulls, and even sharks.



Harbor Seal Haul Out Areas and Pupping Grounds in Casco Bay

Once weaned, seal pups follow their mothers to estuaries to feed on alewives and other fish that spawn in fresh water. Adults are fully grown at ten years of age, may reach five to six feet in length, and can weigh up to 250 pounds. A typical harbor seal diet includes herring, squid, cod, flounder, and many other kinds of seafood.

In the past, their fishing skills have gotten them into serious trouble. In the late 1800s, complaints about seals damaging nets and competing with fishermen led to the establishment of a bounty of one dollar per animal in Maine. Six years later, they were nearly exterminated in various areas of the coast. Harbor seals also were hunted for meat, oil, and skins. The greatest risk to harbor seals today is from drowning in fishing nets and from chemical pollutants in the water.

In 1972, the Marine Mammal Protection Act prohibited taking harbor seals in the territorial waters of the United States without a permit. Today, they can be taken for public display, trial production of leather products, mink food, and biomedical research. The National Marine Fisheries Service is responsible for protecting harbor seals and administering the Marine Mammal Protection Act.

Harbor seals in Casco Bay appear to be at home these days. We share the coast with them and, if we give them the space and quiet they need, they will continue to be one of our most popular and watchable marine mammals.

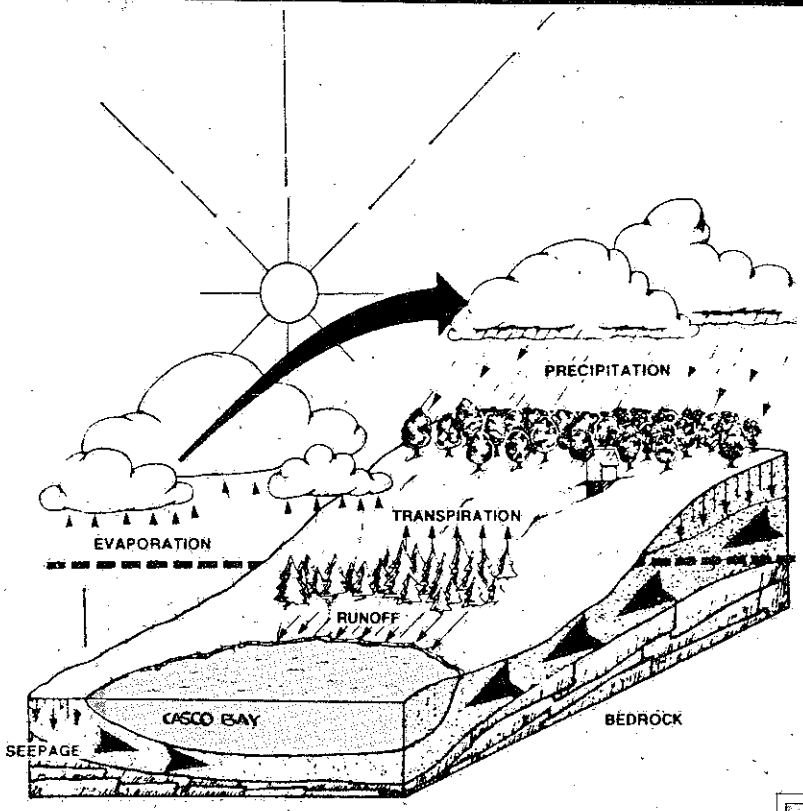
Protection of several other marine mammals, migratory birds, seabirds, anadromous fish, and endangered species in the Gulf of Maine is the responsibility of the U.S. Fish and Wildlife Service. The Service established the Gulf of Maine Project in Portland, Maine two years ago to help build partnerships among state and federal agencies, local organizations, and private citizens working to protect the living resources of the Gulf and facilitate on the ground improvements in coastal habitats. This Project participates on the Casco Bay Estuary Technical Advisory Committee.

KIDS CONSORTIUM

Important environmental issues that relate to Casco Bay are being tackled by municipal officials, local resource agencies, and students in the Portland school system through the KIDS Consortium program "Kids As Planners".

Students learn traditional skills such as reading, writing, and math by applying them to real projects and problems in the Portland area. It's learning by experience - the KIDS program links the school system directly with the community by having students take on projects that save taxpayer dollars. Portland's planners, public works and parks staff are involved.

The Casco Bay Estuary Project contributed partial funding to the KIDS program this year because this is an exciting new way to involve students in solving real world problems - within their community, and in Casco Bay!



The Hydrologic Cycle

road repairs, stormwater control and treatment. Ignoring the power of those natural forces can prove very costly, as Falmouth Public Works director Tony Hayes will testify. Road crews spent three months and $335,000 repairing over 50 sites in Falmouth damaged by stormwater runoff from Hurricane Bob, according to Hayes.

Falmouth's report points out that "watersheds in their natural state receive and hold water in the soil, in flood plains, and in wetlands and water bodies." Adhering to common sense practices such as wetlands protection and proper ditch stabilization can pay off in the long run. Adds Thebarge, "Simple, cost effective steps taken now will prevent more extreme, costly steps decades down the road."

The strength of this axiom is reinforced in the example of Falmouth's urbanized neighbor to the south. Portland's stormwater management system is an intricate web of sanitary and stormwater pipes, combined under the city's streets and leading to the treatment plant. The combined sewers overflow when plant or pipe capacity is exceeded in a rainfall, resulting in untreated wastewater flowing into the bay. Portland's director of Parks and Public Works George Flaherty says other, less developed municipalities can take a lesson from Portland. "The city is spending $1.9 million on stormwater facilities in fiscal year 1993," says Flaherty, "and a sizable proportion of that money is going to correct problems created by improper development".

Although Falmouth remains 70 percent undeveloped, the town council is aware of the economic and environmental risks of poor

Watershed, *continued from page 1*

stormwater management. In contrast, just 10 percent of Portland's land base remains undeveloped; the other 90 percent is occupied by buildings, roads, parking lots and yards. Its water quality problems are in proportion to the high degree to which the community has been built up. From nearly all perspectives including stormwater, Falmouth and Portland are very different landscapes. But planning for future development can help Falmouth, like all towns, avoid the costly headaches Portland is experiencing.

According to Thebarge, the steps his town is taking are applicable to many municipalities. "You could duplicate any case study in our report, in any town in the Casco Bay watershed," he says. "There are hundreds of incidents all over that reinforce the importance of preventative measures." Anyone interested in a copy of the interim report should call Project headquarters at 828-1043.

Groundwater Summary Responds to a Public Concern

At the April '92 Public Forum on Casco Bay, public concern was voiced about petroleum products contaminating the groundwater at Portland's oil terminals. Gary Roberts of Portland Pipeline Corporation was there, and indicated that nine terminals had conducted groundwater studies of their facilities. But the reports are massive and highly technical and pose a daunting challenge to any lay reader bold enough to venture through them.

Portland Pipeline responded by polling the oil terminals in the harbor for consensus on preparing a summary report of the nine hydrogeologic investigations of oil terminals conducted to date in Portland Harbor, done in a way that could clear up public fears and confusion about groundwater contamination.

They agreed, and the result is a nine page, highly readable report prepared by Market Decisions, a Portland consulting firm. The report presents the subject in four parts: 1) reason for the studies; 2) a summary of the main overall findings; 3) nature of cleanup, and 4) discoveries at individual terminals.

Casco Bay Estuary Project has copies of the report available to the public. For a copy, please call the Project office at 828-1043.

Address Correction Requested

04103

Portland, ME

312 Canco Road

Casco Bay Estuary Project

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

Fishermen's Forum March 4-6

Volunteer Water Quality Monitoring Workshop for Rivers & Streams March 27
pre-registration required; contact University of Maine Cooperative Extension at 800-244-2104)

Trails & Greenway Conference May 1
(pre-registration required here, too; contact Rupert Neily at Maine Coast Heritage Trust, 729-7266)

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:

April 6

June 1

The meetings are held evenings, 7:00 at the Yarmouth Community House, 57 east Main St., Yarmouth. If you're interested and want to know more about what's happening, call Bob Moore at the Project office: 828-1043.

Design & Production: Randall Landry