# How are CBEP and our Partners Promoting Stewardship in the Watershed?

**Answer: Through volunteer groups, educational programs, grants and technical assistance.**

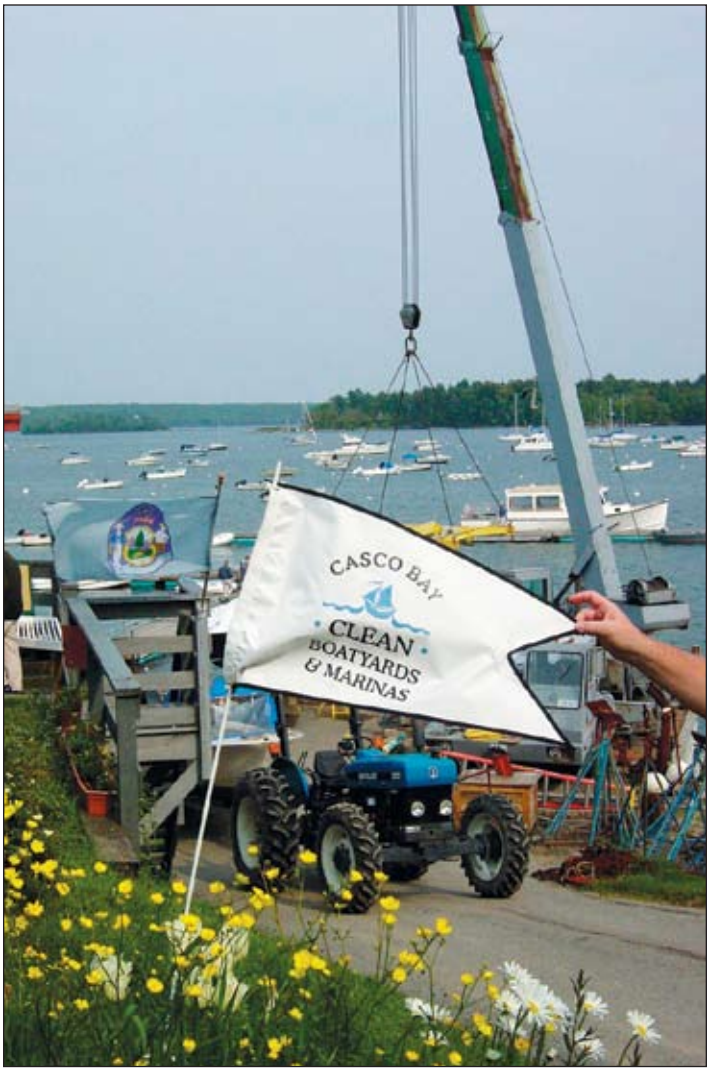
*Environmental professionals and golf course superintendents attend a CBEP-sponsored training on sustainable practices for golf courses.*

## Why is Stewardship of Casco Bay and its Watershed Important?

One quarter of Maine's population lives in the Casco Bay watershed. As watershed residents, we are each intimately connected to the environment around us in both visible and invisible ways. A dramatic oil spill clearly sends the message that we are damaging our resources. When we leave pet wastes on sidewalks and beaches or pour waste oil down a storm drain, it is less obvious that these pollutants will flow eventually to streams and the bay. Damage to the environment from human activities is evident in the closure of shellfish beds and beaches, the presence of toxic chemicals in the sediments and animals of the bay, in the decline in oxygen levels in parts of the bay and in the failure of some of our rivers and streams to meet water quality standards. If all members of the Casco Bay community act as responsible stewards, we can preserve and protect the resources of the watershed and the bay for future generations. We can accomplish this by changing individual behaviors that are detrimental to the bay and by raising awareness of the importance of protecting the bay and its watershed.

## What Are Some of the Stewardship Activities Taking Place in the Casco Bay Watershed?

All over the watershed, volunteer groups are collecting water quality samples, sponsoring clean-up days, protecting sensitive habitats through voluntary land conservation, advocating for environmental protection, helping to prevent erosion and sedimentation, and educating the public about sound stewardship. Local businesses and industry are promoting stewardship through, for example, reduced reliance on hazardous chemicals and responsible practices in site development and farming. The stewardship efforts of municipal officials include eliminating combined sewer overflows, reducing stormwater pollution, managing shellfishing areas, promoting waste recycling and protecting open space. The following projects are a few examples of the activities that CBEP and our partner organizations are supporting.




*The Casco Bay Clean Boatyards & Marinas pilot project has expanded statewide.*


*The "Keep Casco Bay Clean" message goes on the road at Paul's Marina, one of the first Clean Marinas in Maine.*

## Maine Clean Boatyards & Marinas Program

Originally piloted in the Casco Bay region, the Maine Clean Boatyards & Marinas Program is a collaborative partnership among industry, state and federal agencies, and environmental organizations dedicated to promoting best management practices in boatyards and marinas. The program has now expanded its focus to the mid-coast and Penobscot Bay regions and is also working in Southern Maine while continuing its efforts in Casco Bay. Participation in the program is voluntary and requires facility operators to sign a pledge and complete a self-assessment checklist prior to scheduling a verification visit. Technical assistance is available throughout the process and has helped many companies improve their environmental compliance. Upon successful completion of the verification visit a "Clean Marinas" award is presented and the facility is recognized publicly via a media event, news releases and advertisements.

Maine now has ten designated Clean Marina facilities, including six in the Casco Bay watershed: DiMillo's Old Port Marina and Yacht Sales, Portland; Portland Yacht Services, Portland; Great Island Boatyard, Harpswell; Paul's Marina, Brunswick; Yankee Marina and Boatyard, Inc.; Yarmouth; and Panther Run Marina, Raymond.

There are several facilities in the pipeline working towards designation and it is expected that as many as ten more will be certified statewide this year. In addition to working with businesses, the Program will also make its first formal attempts to reach the boating public. The purpose of this outreach will be to make boat owners aware of their role in keeping Maine's waters clean. The Maine Clean Boatyards & Marinas Program is sponsored by the Maine Marine Trade Association with funding from the State Planning Office/ Maine Coastal Program. In addition to participating on the Steering Committee for the Casco Bay pilot project, CBEP provided a graduate assistant to support the program.

## Friends of Casco Bay Citizen Stewards Water Quality Monitoring Program

Since 1992, Friends of Casco Bay (FOCB) has been collecting scientifically-credible data on the water quality of Casco Bay. Research conducted by staff and volunteers has added to the fundamental understanding of the health and dynamics of Casco Bay. The data has been used to promote pollution reduction efforts, restore marine habitats, identify sensitive areas in need of protection or further study, and to inform state regulatory actions. For example, FOCB data was instrumental in the State reclassification of waters off Peaks and Little Diamond Islands, Two Lights in Cape Elizabeth and Willard Beach from class SC to SB, a higher standard for water quality.


*Friends of Casco Bay citizen water quality monitor.*

The Water Quality Monitoring Program is not just about collecting data; it also entails recruiting, training, and supporting a valued corps of volunteer "citizen scientists." Since the programs inception, more than 400 Citizen Scientists have been trained in U.S. EPA-approved sampling techniques. Rigorous review of the monitors' techniques and data ensure that the Program accrues reliable information on the water quality of Casco Bay. Shoreside sampling by volunteers complements the monitoring done by FOCB staff members Peter Milholland and Mike Doan aboard their Baykeeper boats. They conduct monthly profiles of the water column at ten offshore stations, year-round, at times coping with stormy weather, rolling seas, and frozen bays. CBEP provides funding to support this Water Quality Monitoring Program.

*2004 Royal River YCC team*

## Royal River Watershed Youth Conservation Corps

The Royal River Youth Conservation Corps began in summer of 2004. In just seven weeks, a team of five local high school students, working with a crew leader and a technical director, successfully completed over 20 erosion and pollution control projects in the Royal River watershed. They planted 149 trees and shrubs, moved 45 cubic yards of mulch, hand-placed 25 cubic yards of rock, dug 126 feet of ditches, removed 22 cubic yards of sediments from traps and kept over 18 tons of soil out of the water! They also stenciled 281 storm drains with the message "Protect Your Water... Don't Dump" or "No Dumping...Leads to Stream."

The Royal River YCC is making an important contribution to stewardship in the Royal River watershed, where polluted runoff is harming the scenic beauty, fish, recreational values, clam flats and other critical features of the system. A steering committee of state, local and federal partners including Sabbathday Lake Association, Maine DEP, CBEP, Friends of the Royal River, Cumberland County Soil and Water Conservation District and U.S. EPA guides the Royal River YCC. CBEP also provides funding to support the Royal River YCC. In Maine and elsewhere, the YCC model has proven to be an effective tool for raising awareness, energizing communities and inspiring local youth to become environmental leaders.

*Volunteer assisting with New Meadows watershed survey.*

## New Meadows River Watershed Project

The New Meadows River is, in reality, not a river at all but a drowned river valley that is an embayment of the ocean. The river provides recreational resources and supports extensive finfish, shellfish and lobster fisheries. Maine DEP has classified the New Meadows River as a "Coastal Wetland Most at Risk from New Development."

Initiated in 1999, the New Meadows River Watershed Project is guided by a committee of municipal representatives from Brunswick, West Bath, Harpswell, Phippsburg and Bath, state and federal officials, representatives from non-governmental organizations, and area citizens. They meet regularly to explore ways to meet their goal of protecting, improving and maintaining the vitality of the ecological and economic resources of the New Meadows River and its watershed. The Project has conducted upper and lower watershed surveys and produced a State of the River report. In 2004, the Project completed the New Meadows River Watershed Management Plan which recommends actions to reduce sources of polluted stormwater runoff, improve the productivity of shellfish harvests, conduct research on the ecology and economics of the watershed system, build public awareness and stewardship and maintain and promote the effectiveness of the Project partnership. CBEP is an active partner in the Project and provides funding to support implementation of the Plan. In 2005, CBEP received a grant from NOAA and the Gulf of Maine Council on the Marine Environment to study ways to improve water quality through improved tidal exchange in the New Meadows Lake, an impounded portion of the river.

## Presumpscot River Watch

The Presumspcot River is the largest freshwater source to Casco Bay. It flows for 26 miles from Sebago Lake to Casco Bay, through one of the most developed and fastest growing watersheds in Maine. Since 1989, Presumpscot River Watch (PRW) has been helping to preserve and improve the health of the Presumpscot River and its watershed. Volunteer-driven and agency supported, the group conducts scientific monitoring and shares data to increase public awareness. In addition, PRW serves as steward for the river through participation in legislative, community, and individual efforts.

Water quality monitoring volunteers sample the river twice a month from May through August, measuring dissolved oxygen, temperature, and levels of *Escherichia coli* (bacteria) at 30 sampling stations distributed along the mainstem and tributaries of the river. Citizen volunteers are also trained to assist with laboratory analysis of water samples, following a Maine DEP-approved Quality Assurance Project Plan. CBEP supports the PRW monitoring program by providing annual funding.

Presumpscot River Watch

*Training Presumpscot River Watch volunteers*

## The Highland Lake-Mill Brook Project

Historically, sea-run fish species like the river herring and alewife swam from Casco Bay upstream into the Presumpscot River watershed to reproduce, before returning back to the ocean. With the removal of the Smelt Hill dam from the mouth of the Presumpscot in 2002, over 72 miles of streams and tributaries in the lower Presumpscot watershed were reopened to the migration sea-run fish. To improve fish passage and stream habitat at the Highland Lake dam on Mill Brook in Westbrook, Maine Department of Marine Resources has initiated a collaborative effort with the U.S. Fish and Wildlife Service, Casco Bay Estuary Partnership,

Natural Resources Conservation Service, City of Westbrook, Highland Lake Association, Corporate Wetlands Restoration Partnership, Maine Department of Inland Fisheries and Wildlife, National Fish and Wildlife Foundation and local landowners. Project partners plan to make several repairs to the fishway at the dam which will improve upstream migration. They will also install a fish weir along the top of the dam spillway which will improve the downstream passage of the sea-run fish past the dam, as they make their migration back to the ocean each fall. In addition, the project will work to restore the natural Mill Brook stream channel, located downstream of the Highland Lake dam, to make it more hospitable to native sea-run and freshwater fish.

Alewives, river herring species and American eel play an important role in the food web and in maintaining the health of coastal watersheds. In the inland freshwater and coastal marine environments they provide forage for bass, brown trout, salmonids, ospreys, eagles, kingfishers, blue heron, and aquatic furbearing mammals. Alewives are a host to native freshwater mussels, which they carry up- and down rivers in their gills. Spawning alewives heading upriver give cover to out-migrating salmon smolts in the spring. In the marine environment, they are eaten by a variety of predators, such as bluefish, weakfish, striped bass, cod, pollock and silver hake. This project provides an important step toward the restoration of these fisheries to the Presumpscot River watershed, Casco Bay estuary and Gulf of Maine.

*Crest of Highland Lake Dam and fishway with sediment bar obstructing attraction flow at fishway entrance. These improvements will help to restore runs of river herring and American eel.*

## Reference

New Meadows River Watershed Steering Committee, *New Meadows River Watershed Management Plan*, February 2004,

## Maine Volunteer Horseshoe Crab Spawning Surveys

Horseshoe crabs (*Limulus polyphemus)* are among the world's oldest living organisms, estimated to be more than 420 million years old. Ecologically their eggs are a critical food resource to migratory shorebirds enroute to their nesting grounds, and to fish which also prey on them. People have use horseshoe crabs for centuries for fertilizer, bait, and animal feed. Commercial harvesting of horseshoe crabs continues for bait, but they have been more valuable as a research subject, leading to significant gains in human medicine, and their blood is collected to test medical products for bacterial contamination.

*A horseshoe crab monitoring volunteer holds two molted shells.*

The Maine Horseshoe Crab Surveys were initiated in 2001 in response to anecdotal reports that populations were declining. This project involves collaboration between Maine DMR, Bar Mills Ecological, Maine Coastal Program, and many other organizations to establish quantitative baseline population data to determine whether horseshoe crab populations are stable or declining. Each year some 50-70 volunteers collect data at sites ranging from Casco Bay to Frenchman's Bay. Volunteers measure water temperature and survey the number, clustering and location of horseshoe crabs along a pre-established transect during predicted dates of peak spawning activity. The actual dates change each year but typically associated with the new moon and full moon lunar phases of late May and June.

Data reveal that horseshoe crabs in Maine appear to exist in isolated populations. Although spawning sites in Casco Bay are scarce given the available habitat suitable for spawning, two of the most important horseshoe crab spawning sites statewide are located at Middle Bay and Thomas Point Beach in the Bay. CBEP provided project funding to expand monitoring in Casco Bay and to develop a volunteer training handbook.