

Protecting shellfish beds



FACTSHEET

Casco Bay’s productive waters and mudflats support a variety of shellfish species, including softshell clams, blue mussels, and quahogs. For many residents and commercial diggers around Casco Bay, shellfish harvesting represents an important tradition and source of livelihood.

The health of the Bay’s shellfishery not only affects the region’s economy and way of life, but it can also be an indicator of overall ecosystem health and water quality. Whether mudflats and other shellfish areas are open to harvest depends principally on the risk of fecal pollution.

Tracking changes to shellfish management area classifications leads to knowledge of the levels of fecal bacteria in the Bay, adding to an understanding of the Bay’s water quality.

Threats to Casco Bay’s shellfishery and beaches: nutrient & bacteria pollution

Nutrients like nitrogen are critical for marine plants to grow, but over-enrichment of nutrients is a form of pollution that causes excess algae growth. This can deplete the dissolved oxygen that shellfish and other marine life need to survive. **Bacterial contamination of shellfish beds** poses a public health threat if contaminated shellfish are consumed; swimming in polluted waters can also cause illness.

Sources of nutrient and bacteria pollution in Casco Bay include malfunctioning or improperly maintained septic systems; overboard discharge systems that incompletely treat sewage; municipal and industrial wastewater discharges; illegal sewage discharge from boats; and polluted stormwater runoff.

Status of shellfish beds in Casco Bay

Local, state, and federal government bodies have taken steps to reduce fecal pollution inputs to Casco Bay by removing overboard discharges, separating combined sewers, and designating Casco Bay as a No Discharge Zone (making it illegal to discharge human waste from boats) in 2006. Nonetheless, fecal bacterial levels are high in many areas and restrictions on harvesting shellfish remain.

In 2009, shellfish harvesting remained prohibited at all times throughout much of southern Casco Bay because of the high risk of pollution. Harvesting was also prohibited in parts of eastern Casco Bay, including Quahog Bay, Ridley Cove, and sections of Sebasco and Small Point Harbors. Portions of the New Meadows River as well as sections of Maquoit Bay that were closed to harvest in 2004 had been opened by 2009.

The work of the Casco Bay Estuary Partnership is guided by the *Casco Bay Plan*, which identifies five priorities for watershed protection:

1. *Minimize pollution loading from storm-water and combined sewer overflows*
2. **Open and protect shellfish beds and swimming beaches**
3. *Protect and restore habitat*
4. *Reduce toxic pollution*
5. *Promote responsible stewardship*



Mike Timberlake

Welcome!
This beach is part of the **Maine Healthy Beaches Program.**



Think Healthy. Act Healthy. Swim Healthy.

Maine Healthy Beaches Program signs notify swimmers of beach status using color coding. An orange overlay indicates swimming is not advised and red indicates the beach is closed to swimming.

CBEP's efforts to protect shellfish beds and swimming beaches

There are strong economic, ecological, and health incentives to reduce the levels of bacteria and nutrients entering Casco Bay. While state and municipal actions have begun to address the sources of contamination, further efforts are needed.

CBEP and its partners are working to open and protect shellfish beds and swimming beaches by providing technical assistance, training installers and pumpers of septic systems, and supporting compliance with Maine's Pumpout Law.

Providing technical assistance to help reopen and manage shellfish areas

CBEP coordinates and works with the Clam Team, a group of shellfishing stakeholders, to eliminate fecal pollution sources, re-open softshell clam flats, research red tide and other impacts to the fishery, and develop tools for sustainable management of the resource.

Supporting efforts to monitor and open swimming areas

In 2000, the U.S. Environmental Protection Agency began to implement the Beaches Environmental Assessment, Closure and Health Act in response to the growing concern about public health risks posed by polluted coastal bathing beaches. CBEP supports the Maine Healthy Beaches program, which is taking a leading role in the initiative by promoting public education on beach water quality issues and working with municipalities to monitor beaches.

Training installers and pumpers of septic systems

Every year, CBEP funds a popular one-day training program for septic system installers, which is hosted by the Cumberland County Soil and Water Conservation District and Maine Department of Environmental Protection. The program is aimed at ensuring that installers know the most current and effective installation techniques. Increased knowledge and skills among installers, coupled with regular upkeep by tank owners, are reducing discharges that can degrade water quality and lead to shellfish bed closings.

Supporting compliance with Maine's Pumpout Law

Maine's Pumpout Law requires marinas of a certain size to provide pumpout facilities enabling boaters to safely empty their boats' sewage holding tanks. Those facilities are sometimes unavailable or inoperative, increasing the likelihood that boaters will simply dump their waste illegally.

In collaboration with the Portland Water District, CBEP has supported the Mobile Pumpout Program operated by the nonprofit group Friends of Casco Bay (FOCB). FOCB's pumpout boat services hundreds of boaters on Casco Bay every summer, keeping more than 110,000 gallons of sewage out of the Bay since the program's inception in 1996. The biggest benefit of the pumpout boat, however, may be the publicity for the Bay-wide No Discharge Zone that the highly visible boat provides.

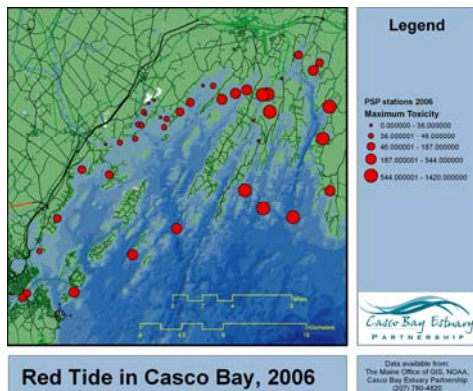


In 2001, CBEP led an effort to test the value of softshell clam farming options by seeding clams in three saltwater "farm" locations along the Bay.



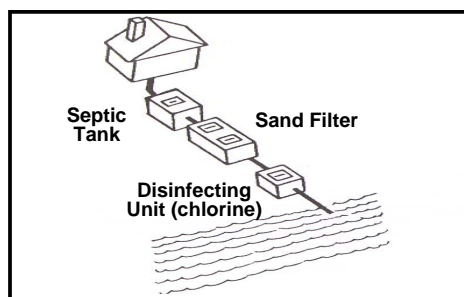
CBEP supports Friends of Casco Bay's Mobile Pumpout Program, which helps recreational boaters comply with Maine's Pumpout Law.

Friends of Casco Bay



Red Tide in Casco Bay, 2006

CBEP funded the gathering and analysis of data on red tide toxicity in Casco Bay. The above map shows maximum red tide toxicity in 2006, which had the highest levels in the outer and eastern Bays.



In many shoreside communities around Casco Bay, overboard discharge systems are a common method of treating household sewage. Unfortunately, they can contribute bacteria to nearby shellfish beds.



Actual and threatened bacterial contamination causes the closure of Casco Bay's shellfish beds to harvesting.

Case studies

Gathering and analyzing red tide data

Red tides are algae blooms that can be toxic to humans. They have damaging effects on marine life, the shellfishing industry, and the coastal economy. To better understand the causes and effects of red tides in Casco Bay, CBEP funded collection of water quality data in 2006 at more than 40 locations around Casco Bay on a weekly basis during the spring and summer months. Partner organizations have continued the study since. The data includes information on nutrients, toxicity, and the makeup of phytoplankton communities. Analysis of the results commissioned by CBEP in 2009 suggests that Casco Bay's red tides reflect regional water circulation patterns more than local nutrient sources.

Eliminating Overboard Discharge Systems (OBDs)

A typical overboard discharge system filters effluent through a combination of sand filters or mechanical tanks and a chlorination unit before discharging it to a water body. Because such systems are difficult to monitor and maintain, the Maine Department of Marine Resources considers each OBD a potential source of bacteria and permanently closes nearby shellfish flats to harvesting.

In 1987, Maine enacted the Overboard Discharge Law, which prohibited new systems and established a procedure for replacing existing systems with alternative treatment methods. Since that time, the state has worked with towns and homeowners, providing grant funding to help eliminate overboard discharge systems.

In 1999, CBEP began collaborating with the Maine Department of Environmental Protection, the Maine Department of Marine Resources, municipalities, and homeowners to provide technical and financial assistance to replace overboard discharges near productive shellfish resources. The number of permitted OBDs in Casco Bay has declined by 43 percent since 1997.

Installing local weather stations

Stormwater discharges often cause elevated bacterial levels in Maine's tidal flats. For that reason, precipitation levels are often used to decide whether to close clam flats. In 2008, CBEP funded the installation of six weather stations in local towns so that decisions about whether to close shellfish beds could be based on *local* precipitation information rather than on data from the Portland Jetport or from other regional weather stations.

Due to the early success of the program, the Maine Department of Marine Resources is expanding the program statewide.

Shellfish and swimming beaches strategies

CBEP established the following goal and objectives to protect shellfish beds and swimming beaches in Casco Bay.

Goal: Open and protect shellfish beds and swimming areas impacted by water quality

Objectives:

1. Provide technical assistance to help reopen and manage shellfish areas
2. Provide technical assistance to monitor and open swimming areas
3. Train installers and pumpers of septic systems
4. Support compliance with the Pumpout Law
5. Support efforts to prevent septic system malfunction through voluntary inspection programs during property transfers and education of key stakeholder groups
6. Expand cooperative programs between commercial pumpers and installers and municipalities to protect shellfish areas from septic system discharges

Partners

As with all of CBEP's efforts, collaboration is critical to its work to open clam flats and swimming beaches. Key partners include the Cumberland County Soil and Water Conservation District, Friends of Casco Bay, the Maine Coastal Program in the State Planning Office, Maine Department of Health and Human Services, Maine Department of Environmental Protection, Maine Department of Marine Resources, Maine Island Trail Association, Portland Water District, University of Maine Cooperative Extension, and the U.S. Environmental Protection Agency.

For more information

For more information about CBEP's grants and technical assistance programs, visit the website, or call 780-4820.

Protecting & restoring the ecological integrity of the Casco Bay watershed



The Casco Bay Estuary Partnership works to preserve the ecological integrity of Casco Bay and to ensure compatible human uses of the Bay's resources, through public stewardship and effective management.