Most Shellfish Areas in Casco Bay Meet State's Approved Classification

Casco Bay Estuary Partnership

The majority of Casco Bay's waters are open for shellfish harvesting, but harvesting restrictions affect about half of the Bay's soft-shell clam habitat. To see further improvements, communities will need to further reduce sources of fecal contamination, and the State will need to fund adequate water sampling, biotoxin monitoring and sanitary surveys.

Shellfish Bed Status Signals Water Quality

In the last decade, the Public Health Division of the Maine Department of Marine Resources (DMR) has reassessed how shellfish beds are managed to more accurately account for potential sources of pollution. Casco Bay has a mosaic of management areas designed to protect the health of consumers eating soft-shell clams, mussels, oysters and quahogs—whether dug from mudflats or harvested from aquaculture.

The State classifies shellfish growing areas based on several factors: the presence of fecal indicator bacteria, proximity to sewage treatment plant outfalls, and temporary events such as heavy rainfall or a wastewater treatment plant malfunction. These rules are mandated under the US Food and Drug Administration's National Shellfish Sanitation Program (NSSP). Waters are classified based on a "sanitary survey," which involves water testing, a shoreline survey looking for potential pollution sources, and an analysis of other potential risks. Only when a sanitary survey has determined little risk of pathogen pollution are waters harvestable year-round. Many coastal waters are managed on a conditional basis, depending on rainfall, time of year, or episodic events like malfunctions in sewage treatment plants.

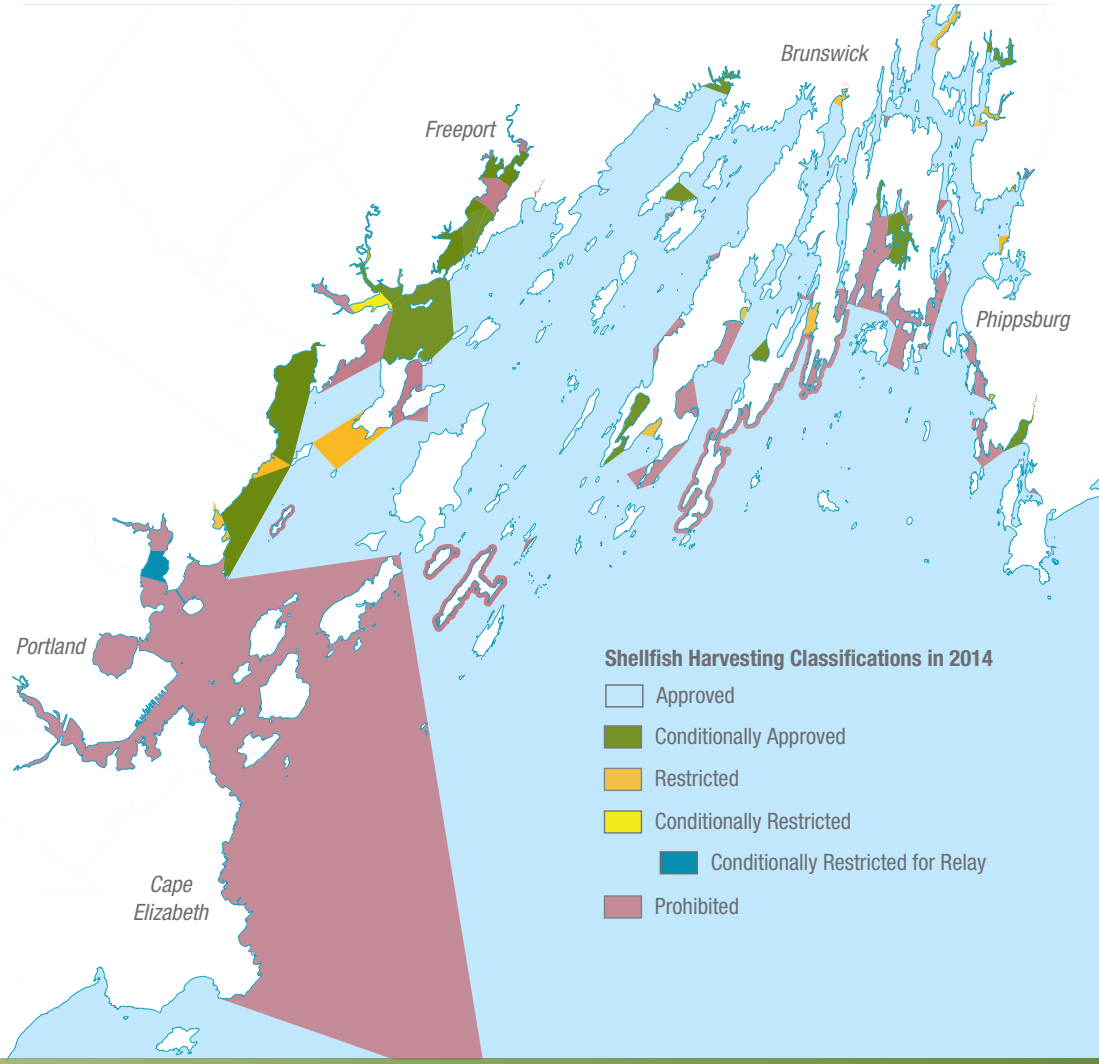
	Shellfish Growing Areas		Soft-shell Clam Habitat	
Classification	Acres	Percent	Acres	Percent
Approved	97,542.9	67.1	4,868.1	48.4
Conditionally Approved	8,314.8	5.7	1,999.4	19.9
Restricted	2031.4	1.4	331.8	3.3
Conditionally Restricted	327.8	0.2	194.2	1.9
Prohibited	37,154.0	25.6	2,654.6	26.4
TOTAL	145,371		10,048.2	

Classification of shellfish growing areas (all waters of Casco Bay) and soft-shell clam habitat areas in 2014 by Maine Department of Marine Resources Public Health Division. *Data: DMR*

In 2014, harvesting was unrestricted in the majority (67 percent) of Casco Bay's waters. However, more than 37,000 acres of waters (25.6 percent) were classified as Prohibited. Many of these waters are nearshore and close to pollution sources such as wastewater treatment plants and Combined Sewer Overflows. Thousands of the prohibited acres adjoin islands (where residential licensed "overboard discharges" can raise pathogen risks if not well maintained).

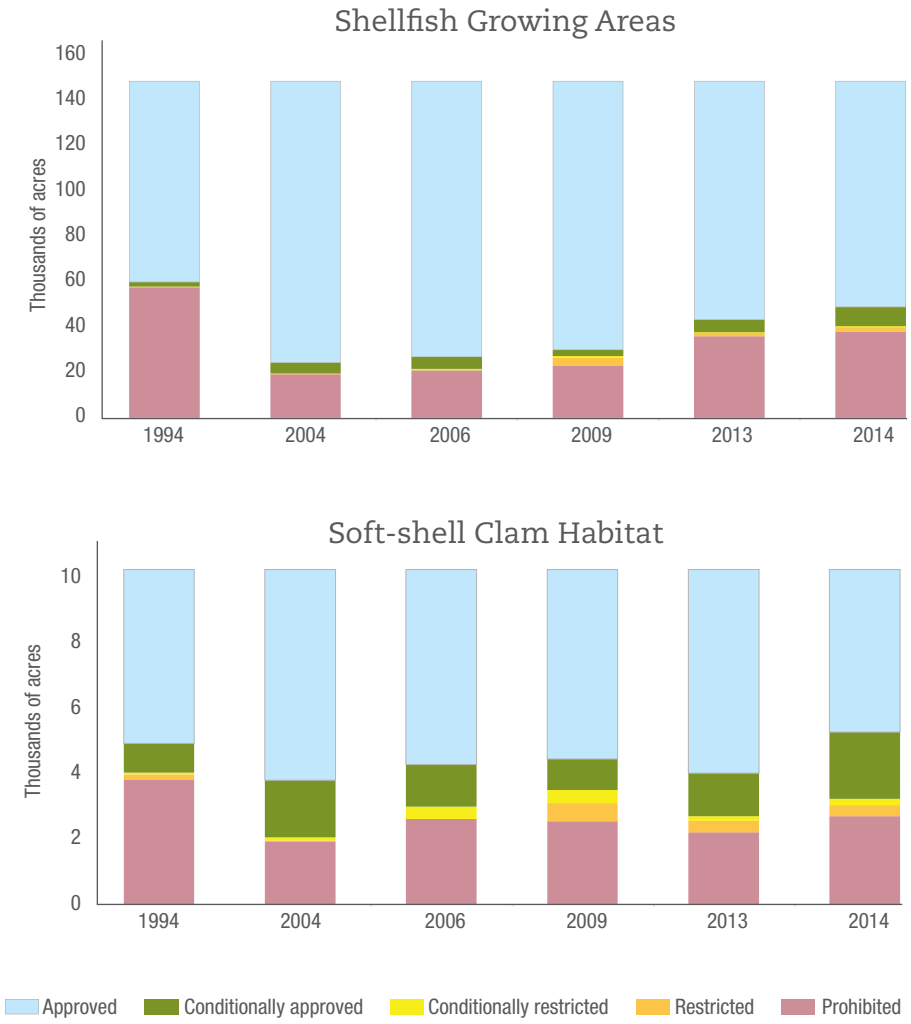
The Maine DMR has five shellfish classification categories, reflecting a gradient in water quality. Approved represents the best water quality, and Prohibited represents the worst.

- An Approved classification authorizes shellfish harvest for direct marketing.
- Conditionally Approved areas have good water quality, but may be temporarily closed under certain conditions such as a significant rainfall event or a sewage treatment plant malfunction.
- Restricted areas do not meet all water-quality standards for an Approved classification, and the sanitary survey indicates a limited degree of pollution. Shellfish harvested from Restricted areas cannot be marketed directly; they must be "relayed" to Approved areas or cleansed at a depuration facility.
- Conditionally Restricted areas meet conditions for restricted classification, but may also be temporarily closed to harvest after adverse events. In 2014, a portion of the Presumpscot Estuary was classified as "Conditionally Restricted for Relay."
- Prohibited areas are closed to harvest at all times, when water testing shows elevated levels of fecal bacteria, or when areas are near sewage treatment plant outfalls or other potential sources of pathogens.



Policy Changes Affect Closure Areas

Over the years, changes in classification have occurred due to new information from shoreline surveys or water-quality testing, boundary changes to facilitate management or enforcement, reopening of cleaned-up areas, and changed NSSP recommendations.



Data: Maine DMR

While Prohibited and Conditionally Approved acreage has increased in recent years, these changes do not signal lower Bay water quality but changes in NSSP guidance. Most of the increase represents growth in the "Conditionally Approved" category (*i.e.*, areas open to harvest except under specific circumstances such as heavy rains).

Shellfish aquaculture is not yet widespread in Casco Bay, but interest in aquaculture and other forms of intensive shellfish management is growing. Many aquaculture facilities may be sited in locations that do not provide natural shellfish habitat so the impact of closure areas on them is hard to anticipate.

Improving State Testing for Red Tide

Harmful blooms of the algae *Alexandrium fundyense*, known locally as red tide, produce a biotoxin that accumulates in mussels and other shellfish and can lead to paralytic shellfish poisoning (PSP) in humans who consume the shellfish. Since 2005, when an intense and prolonged red tide closed shellfish areas in Casco Bay and throughout the Gulf of Maine, Maine DMR has more actively managed shellfish areas to protect public health. In 2006, DMR began to sample more intensively to pinpoint locations of toxicity.

DMR has changed the assay used to measure biotoxin levels in wild-caught mussels, employing High Performance Liquid Chromatography, which is considered more accurate and eliminates the need for animal testing (DMR estimates that in 2014 more than 40,000 mice were spared).

Monitoring Shellfish Beds Requires Resources

Maine DMR has lost resources for shellfish bed monitoring due to governmental cutbacks, leaving insufficient staff to conduct sampling and compile data. Some of these deficits may be filled by the New England Sustainability Consortium, which has received funding through National Science Foundation EPSCoR grants to the University of Maine and University of New Hampshire.

For additional references and information, please view the Bibliography of the full *State of the Bay 2015* report at www.cascobayestuary.org/state-of-the-bay-2015.