

Lakes and Streams Typically Have Good Water Quality

Casco Bay Estuary
PARTNERSHIP

Water quality in most of the Casco Bay watershed remains good, with cause for concern in selected lakes and streams. Problems with stream health are especially common in urban and suburban areas.

Bay's Health Depends on Tributaries' Well-being

Rivers, estuary and bay form an ecological continuum: pollution in inland waters is transported to the Bay and degrades its water quality. Living organisms from ospreys to alewives migrate between fresh water and saltwater environments with the turn of the seasons, and even with changes in weather.

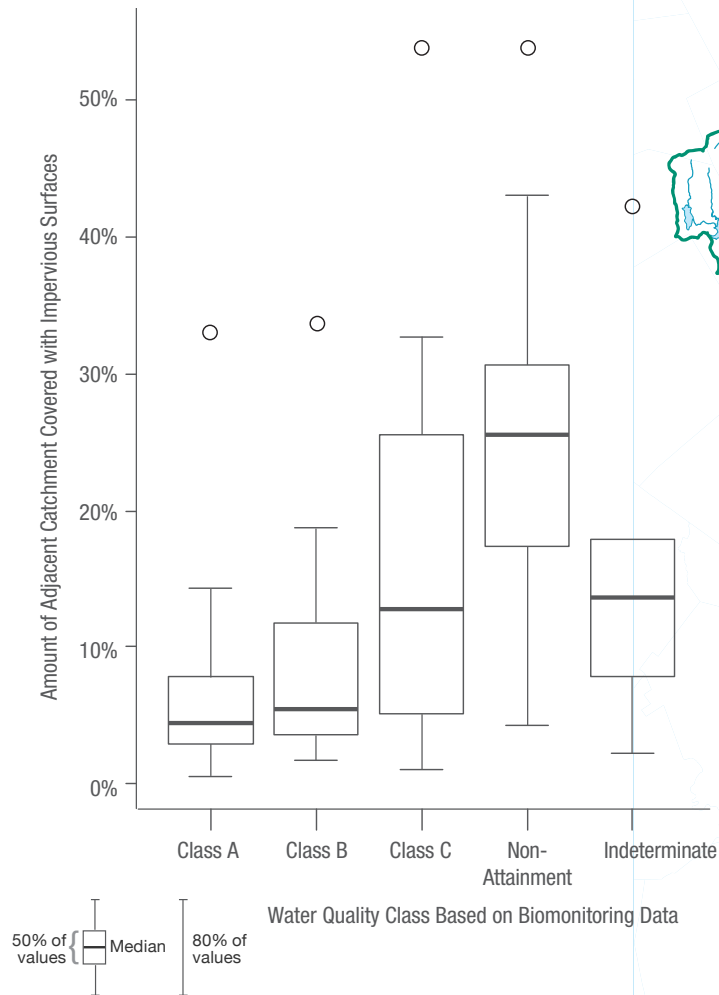
More than 10 Percent of Rivers and Streams Fail to Meet Water-Quality Goals

The Maine Department of Environmental Protection (DEP) is charged with evaluating the health of the state's waters every two years. Technically, all of Maine's fresh waters fail to fully meet water-quality standards because mercury contamination is prevalent enough that the State posts a fish consumption advisory to limit or avoid eating freshwater fish. Because that restriction applies statewide, it is useful to look at other forces that locally degrade water quality.

The Casco Bay watershed contains approximately 1,228 miles of mapped rivers and perennial streams. As of 2012, 141 miles (11.5 percent)—falling within 28 streams—failed to meet applicable water-quality standards (other than the mercury standard). The most common problems include low dissolved oxygen, and stream insect communities indicative of poor conditions. Most of the main stem of the Presumpscot River fails to meet water-quality standards because of low dissolved oxygen that can occur in the river's many impoundments when water levels are low.

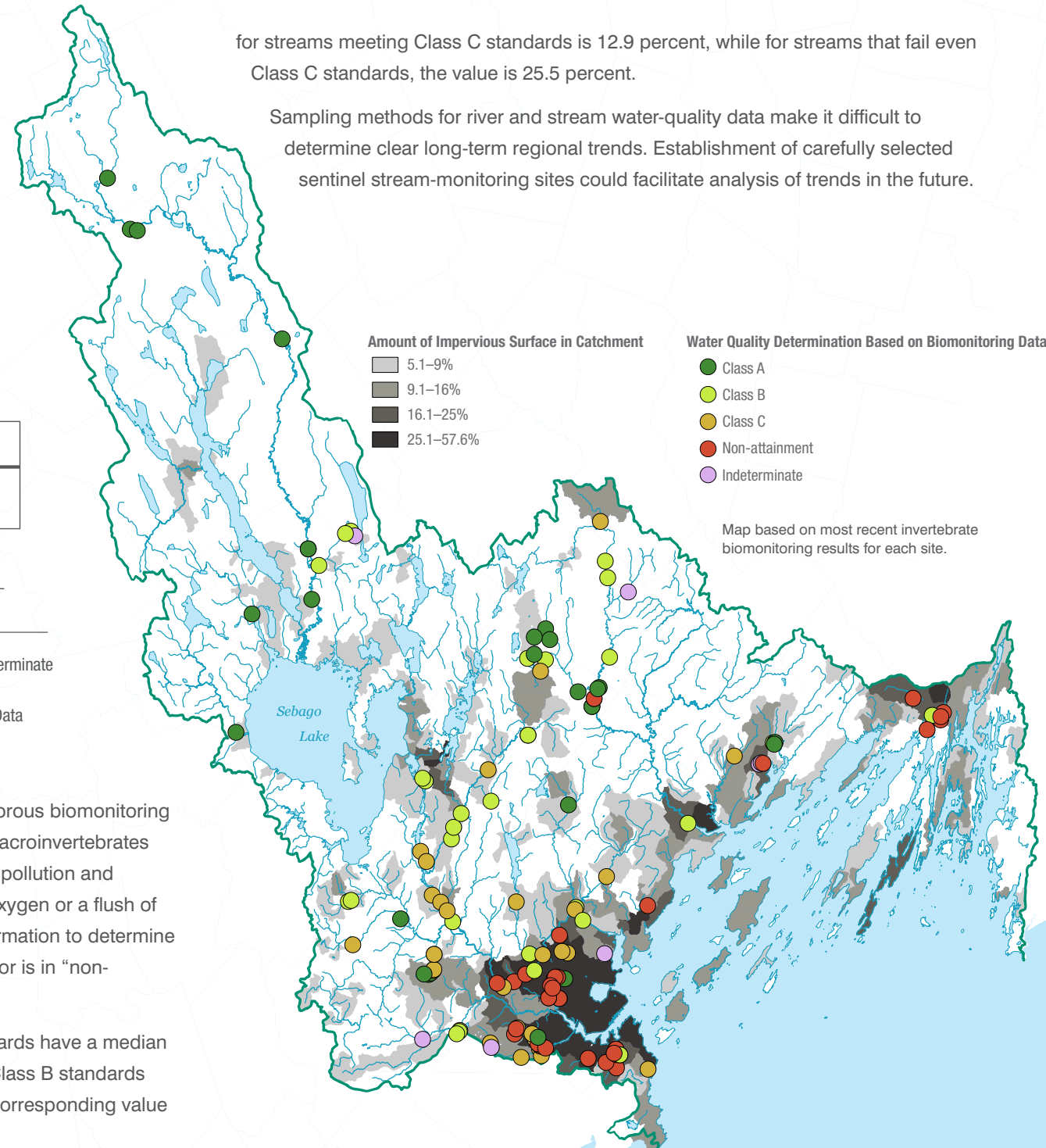
for streams meeting Class C standards is 12.9 percent, while for streams that fail even Class C standards, the value is 25.5 percent.

Sampling methods for river and stream water-quality data make it difficult to determine clear long-term regional trends. Establishment of carefully selected sentinel stream-monitoring sites could facilitate analysis of trends in the future.



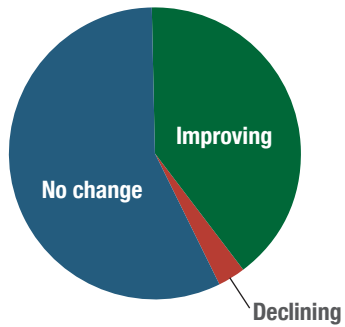
To gauge water quality, Maine DEP has developed a rigorous biomonitoring method that assesses what aquatic insects and other macroinvertebrates live in a stream. Their composition reflects both chronic pollution and more severe, short-term challenges like low dissolved oxygen or a flush of contaminants from flooding. DEP uses invertebrate information to determine whether a stream meets Class A, B, or C requirements; or is in “non-attainment” (not meeting even Class C requirements).

Waters that biomonitoring indicates meet Class A standards have a median local imperviousness of 4.4 percent. Streams meeting Class B standards have median local imperviousness of 5.5 percent. The corresponding value

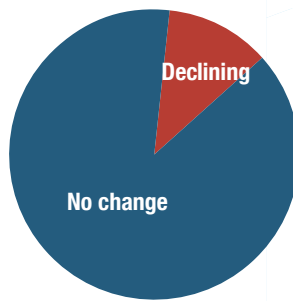


Changes in Lake Water Clarity

Long-Term Since Mid-1970s
(37 Lakes)



Short-Term Since 2000
(35 Lakes)



Lake Water Clarity a Concern

As of 2012, no lakes in the Casco Bay watershed were reported to be failing water-quality standards, but there is significant variability and emerging concerns such as the growing abundance of the blue-green algae *Gloeotrichia*.

Several lakes have locally developed and formally approved watershed-based plans that guide water-quality protection efforts and facilitate access to federal funding: Crescent Lake (Raymond); both Highland Lakes (Windham/Falmouth and Bridgton); Little Sebago Lake (Windham); Panther Pond (Windham); Sebago Lake (many townships); and Woods Pond (Bridgton). Long Lake and the two Highland Lakes also have legal water-quality improvement plans called "Total Maximum Daily Load" studies (TMDLs) to help control phosphorus (a nutrient that fertilizes algae growth and degrades water quality).

Several lakes have developed watershed-based plans that provide direction for protection efforts.

Water-clarity data from Casco Bay watershed lakes shows a slight but statistically significant improvement since the mid-1970s (with 37 lakes being monitored during at least five years over that period). Of those lakes, 40 percent show statistically meaningful increases in water clarity, while only one shows real declines.

Since 2000, though, water clarity has been steady or declining. Of the 35 lakes sampled at least five times since then, four (11 percent) show statistically significant declines in water clarity and none show meaningful improvement. The lakes with recent declines in water clarity include Panther Pond, Crescent Lake, Long Lake and Sebago Lake.

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.



Data: Maine DEP, 2012 Integrated Water Quality Monitoring and Assessment Report and www.maine.gov/dep/gis/datamaps/index.html. Accessed June 2015.