

As Impervious Surfaces Expand, Runoff Increases

Casco Bay Estuary
PARTNERSHIP

In the few parts of Casco Bay's watershed that have extensive impervious cover, even moderate increases in pavement and built infrastructure can degrade the Bay's most urban waters.



Runoff from Impervious Surfaces Linked to Declines in Aquatic Habitats

Impervious surfaces that do not absorb rain or allow it to infiltrate into the ground—such as pavement, sidewalks and rooftops—can aggravate erosion and hasten transport of sediments and pollution into aquatic habitats. Studies confirm that areas with a high percentage of impervious surfaces (10 percent or more) have diminished water quality and degraded aquatic habitat.

Runoff Impacts Are Highest in Urban Areas

The extent of impervious surfaces in the Casco Bay watershed, mapped most recently by the Maine Department of Inland Fisheries and Wildlife in 2011 (based on 2007 aerial photographs), was 5.1 percent overall. The highest levels are found in urban areas, commercial districts and downtown areas.

The watershed has localized areas with impervious surfaces greater than 50 percent on the Portland peninsula and in parts of the Long Creek watershed, which houses the Maine Mall and adjacent commercial development.

Maine's water-quality classification system establishes goals for each river and stream in the state. Class AA waters must meet the most stringent conditions. Class A, B and C waters must meet progressively less stringent standards. A 2012 State plan identifies target levels for imperviousness that can guide efforts to restore water quality in urban streams to meet these standards. For Class AA and Class A streams, standards generally require that impervious surfaces cover

no more than 5 percent of watershed area. The threshold increases to 9 percent for Class B streams and to 16 percent for Class C streams.

To assess local conditions, the Casco Bay watershed can be divided into smaller areas called catchments that reflect the way water flows across the landscape. As of 2007, two-thirds of the Casco Bay watershed was in catchments that met the recommended Class A threshold. Only 6 percent of the watershed was in urbanized areas with such high levels of imperviousness (more than 16 percent) that streams are unlikely to meet even Class C standards without significant investments to improve water quality.

Increases in impervious surfaces can degrade urban waters.

Impervious Surfaces Grow as Construction Rebounds

The *State of the Bay 2010* report cited a slightly higher estimate of impervious cover levels than reported here, due to changes in methods and data sets rather than a real reduction in impervious area. No data are available that allow for a quantitative comparison of impervious surface levels between 2010 and 2015, but some evidence suggests that levels of impervious cover have increased only slowly in recent years.

Creation of new impervious surfaces is closely coupled with construction activity. Regional construction slowed following the economic downturn, and only began to rise again in 2014. Thus for most of the past five years, the rate at which new roads, parking areas, and buildings were created fell below recent historic trends. Increasing construction activity in the coming years is apt to expand the coverage of impervious surfaces.

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.

Percentage of Catchments in Imperviousness Target Classes

