THE STATE OF CASCO BAY 2026

Every five years, we take a close look at Casco Bay. We look at the forces that affect the Bay's health, its condition, and living resources. We explore how both coastal and inland communities connect to the Bay — and all our waters. We examine information from dozens of sources then communicate our findings to the people and communities in the Casco Bay region.

BLOCK PRINT ARTWORKS BY JORDAN KENDALL PARKS

Casco Bay Estuary PARTNERSHIP
Caring for our waters together

MONITORING CASCO BAY

Every year, people and organizations across the region gather information about Casco Bay. Volunteers, land trusts, nonprofits, municipalities, and state and federal agencies all contribute. Casco Bay Estuary Partnership is one part of this larger effort. We bring together information from our partners and public sources to create a broader picture of the Bay and how it is changing.

2 Key Findings
4 The Casco Bay Watershed Map
6 An Overview of the Report
8 Letter from our Director
8 What You'll Find in the Full Report

KEY FINDINGS

Casco Bay and its watershed are constantly changing, in part because of what we do on land. The Bay's mostly-forested watershed, Maine's strong tides, and the efforts of volunteers and professionals all help protect the Bay. Our key findings highlight both challenges and signs of progress. Together, they help us understand the Bay and show where more effort is needed. Scan the QR code on the back to explore the full data set.

BAY
BY THE NUMBERS

160 square miles of water

575 miles of shoreline

785 islands, islets, and ledges

13 coastal municipalities

A tidally-dominated estuary receiving fresh water from the Presumpscot River, Royal River, Kennebec River (indirectly), and 31 other significant tributaries.

WATERSHED
BY THE NUMBERS

985 square miles

Touches

48 municipalities from Bethel to Cape Elizabeth (north to south) and from Stoneham to Phippsburg (west to east)

Has

4.4% of Maine's land area but:

25% of the population

32% of employment

39% of GRP

SINCE 2021...

- **Eight dams have been removed**, making 40+ miles of riverine habitat accessible to anadromous fish

  Read more in chapter 13 of the full report

- Volunteers have donated nearly **10,000 hours of time each year** to supporting conservation and stewardship programs, but recruiting younger and long-term volunteers remains a challenge

  Read more in chapter 20 of the full report

- One-fifth of the Bay's tidal marshes remain vulnerable due to sea level rise, but **several local partnerships have formed** to take proactive measures to build marsh resilience

  Read more in chapter 11 of the full report

- Eelgrass acreage gains measured in 2013-2018 have been lost; Casco Bay **lost 54% of its eelgrass** between 2018 and 2022

  Read more in chapter 12 of the full report

- Southern marine species—including **"Gulf Stream Orphans"**—have become increasingly common in the Bay

  Read more in chapter 15 of the full report

- **Nitrogen is continuing to decline in the waters of the Bay**, likely as a result of improved stormwater and wastewater treatment.

  Read more in chapter 8 of the full report

The Bay is an Economic Driver



10% of jobs in Cumberland County are related to the ocean economy.

10% of jobs are related to marine transportation.

5% of jobs are related to living resources/ fisheries.

5% other jobs

80% of jobs are related to tourism and recreation,

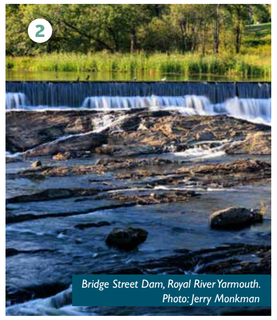


1 *Aerial shot of the Back Cove South Storage Facility in progress. Photo: Jerry Monkman*

Investing in Casco Bay

Communities are investing in water quality and the Bay by addressing sewage discharges in Portland, increasing aquatic connectivity across the watershed, and working together to restore tidal marshes.

1. **COMBINED SEWER OVERFLOW REMEDIATION**
   The Back Cove South Storage Facility was a multi-year and multi-million dollar investment that has greatly reduced sewage discharge to the Bay during storm events. It is just the most visible of several projects undertaken in recent years to reduce combined sewer overflow discharges.
2. **RESTORING AQUATIC CONNECTIVITY**
   Eight dams have been removed since 2020, reconnecting over 70 miles of riverine habitat to Casco Bay. Twelve degraded or undersized culverts have also been upgraded to StreamSmart culverts. Restoration is the result of multi-group efforts and helps to improve our road networks in addition to aquatic habitats.
3. **TIDAL MARSH RESTORATION**
   Dozens of organizations are undertaking collaborative projects to remediate the impacts of rising sea levels and historic farming activities on tidal marshes.



2 *Bridge Street Dam, Royal River Yarmouth. Photo: Jerry Monkman*



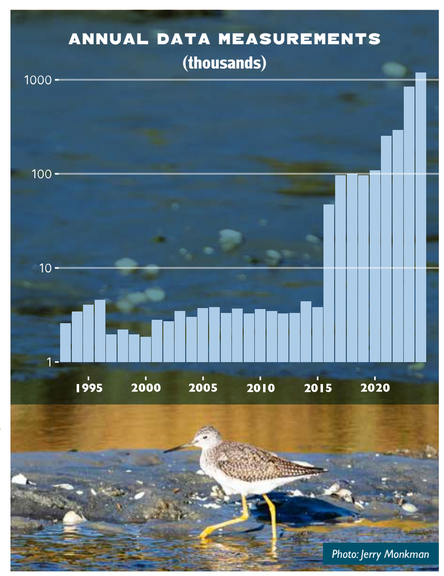
3 *Volunteers on the Presumpscot River. Photo: Jerry Monkman*

Changing Data for a Changing Bay

Data collection needs, methods, and technology are all evolving rapidly. In response, monitoring organizations are changing the types of data they collect and how they collect it.

Access to new types of data and more continuous data provides opportunities to detect patterns and trends that were previously undetectable. But it also presents challenges in data management and analysis.

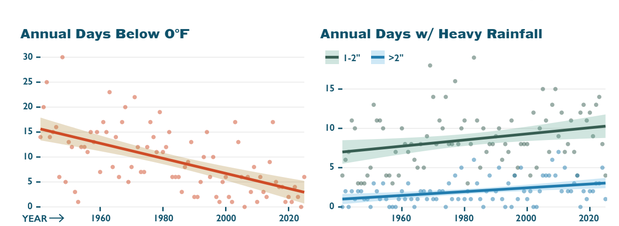
New data sources are constantly becoming available, helping us to deepen our understanding of the Bay. We are aware of evolving efforts to better incorporate place-based knowledge, collect data on freshwater chloride levels, marine zooplankton, and mudflats, and to produce high resolution bathymetry maps of Casco Bay. We hope to include outcomes from these efforts in our next report.

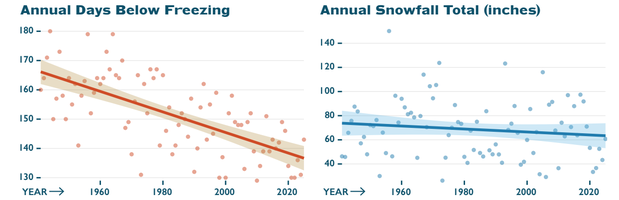


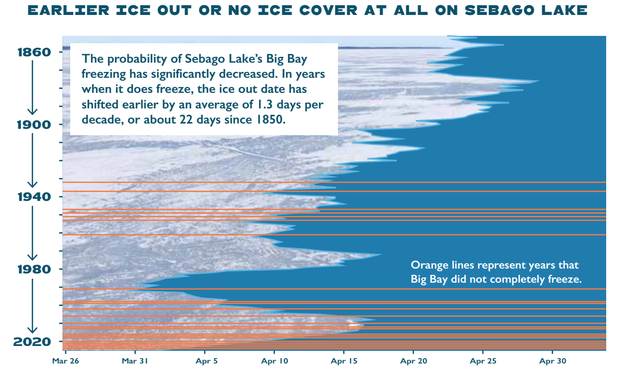
The number of water quality data points collected by Friends of Casco Bay annually, on a log scale. Continuous monitoring stations were added in 2016 and 2021

Climate Change

The changing climate is impacting the people, water, and habitats of Casco Bay. As fewer days reach temperatures below zero and below freezing, the growing season is longer, changing the timing of when pollinators, herbivores, and even humans interact with the plants they rely on for food.







Sebago Lake Ice Out Date, 1850 - 2025



Friends of Casco Bay Water sampling and eelgrass research Photo: Kevin Morris



Friends of Casco Bay Water Reporter and board member Sam Bengs photographing algae Photo: Kevin Morris



THE CASCO BAY WATERSHED

The Casco Bay watershed stretches from Dyer Point in Cape Elizabeth to Small Point in Phippsburg and north to Bethel. Spanning nearly 1,000 square miles, the watershed is home to a rich mosaic of beaches, salt marshes, forests, rivers and streams, lakes, and urban areas.

Casco Bay is closely connected to the land and waterbodies that surround it. Its unique estuarine environment connects inland freshwater to the saltwater of the Gulf of Maine, linking ecosystems from the upper watershed to the coast. The health of these interconnected systems extends beyond the Bay itself, supporting wildlife and the communities that live throughout the watershed.

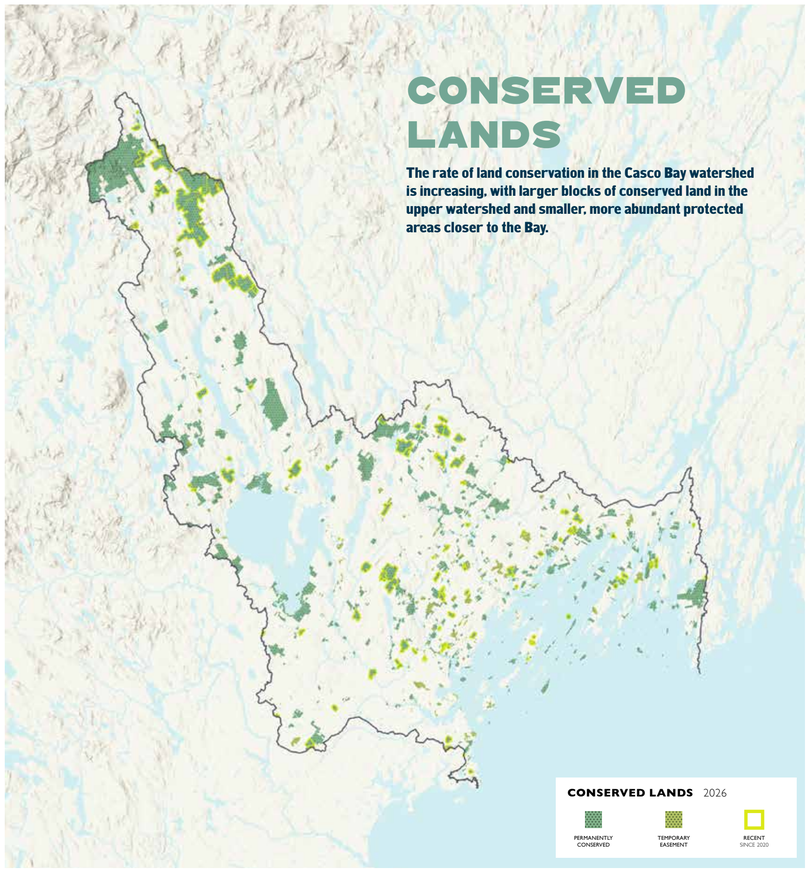




Cousins River Marsh | Photo: Jerry Monkman

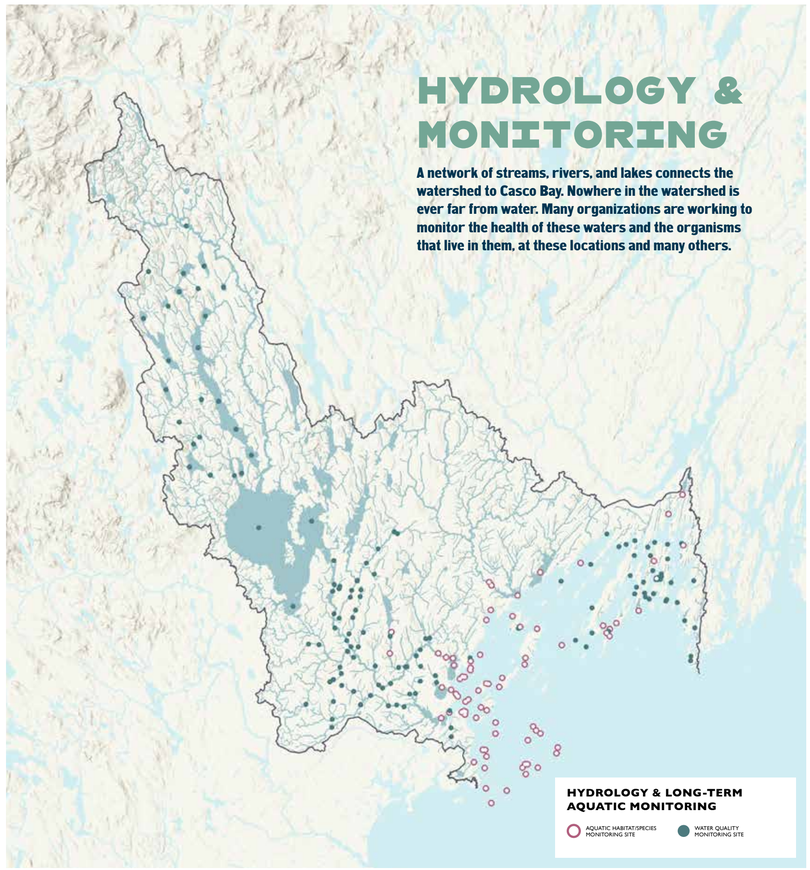
CONSERVED LANDS

The rate of land conservation in the Casco Bay watershed is increasing, with larger blocks of conserved land in the upper watershed and smaller, more abundant protected areas closer to the Bay.



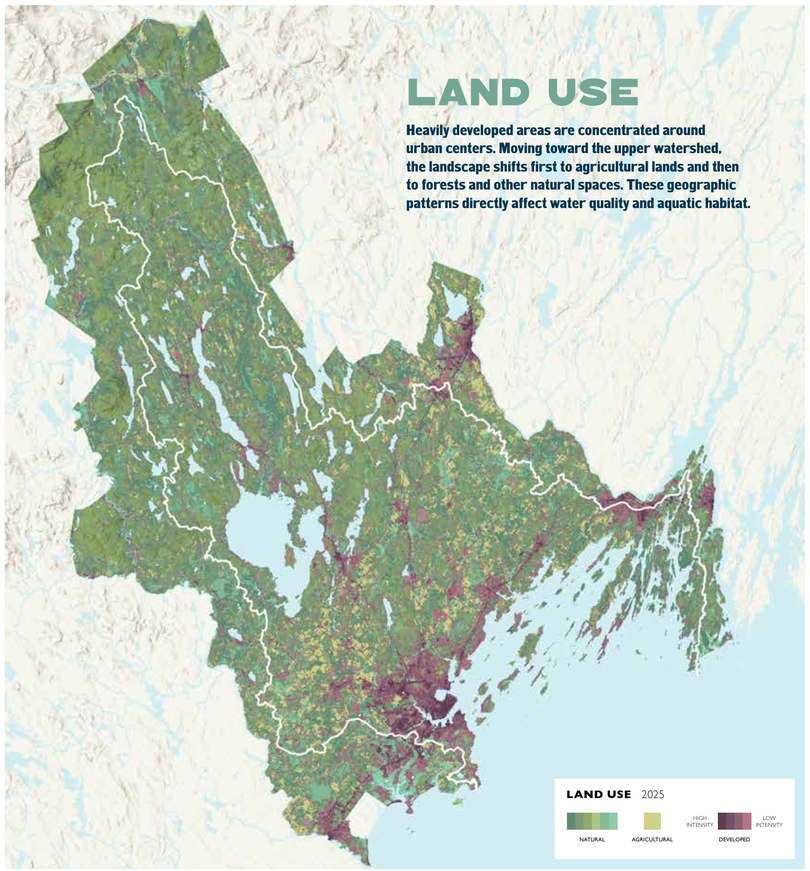
HYDROLOGY & MONITORING

A network of streams, rivers, and lakes connects the watershed to Casco Bay. Nowhere in the watershed is ever far from water. Many organizations are working to monitor the health of these waters and the organisms that live in them, at these locations and many others.



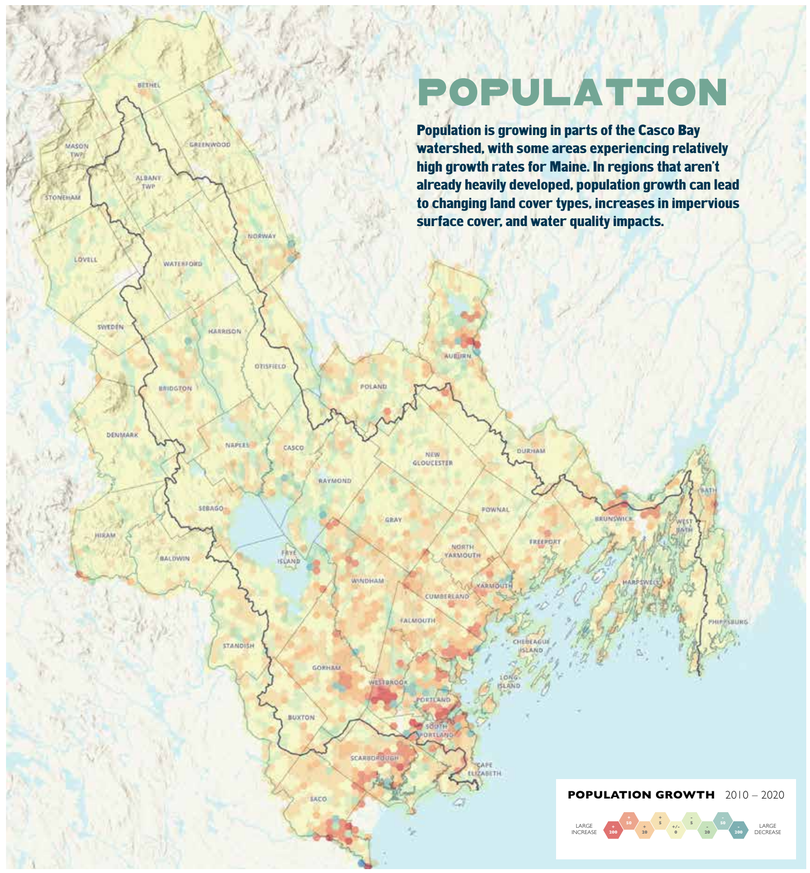
LAND USE

Heavily developed areas are concentrated around urban centers. Moving toward the upper watershed, the landscape shifts first to agricultural lands and then to forests and other natural spaces. These geographic patterns directly affect water quality and aquatic habitat.



POPULATION

Population is growing in parts of the Casco Bay watershed, with some areas experiencing relatively high growth rates for Maine. In regions that aren't already heavily developed, population growth can lead to changing land cover types, increases in impervious surface cover, and water quality impacts.



Community Initiatives

Two major projects have recently come to fruition after decades of focus and action from local community members. Collaborative efforts around land conservation as well as volunteer stewardship and education continue to play an important role in moving forward key initiatives.

Construction of the **Confined Aquatic Disposal cell** to hold contaminated sediments dredged from Portland Harbor began in winter 2024. The Waterfront Alliance was a major force in planning and coordinating the work, conducted in association with Portland and South Portland, the Portland Harbor Commission, the Maine Department of Transportation and others.



Photo: Jerry Monkman

The Bridge Street Dam on the Royal River in Yarmouth was removed in summer 2026. Leadership from town officials and local groups like The Royal River Alliance was instrumental in building community support over the years.



Photo: Jerry Monkman

Hundreds of volunteers donate **thousands of hours** of their time to support community science, environmental education, and land stewardship across the watershed.



Photo: Sebago Clean Waters

Community supported land trusts, conservation organizations, and collaborations like Sebago Clean Waters have conserved and permanently protected nearly **80,000 acres** of the Casco Bay watershed.



Photo: Presumpscot Regional Land Trust

INDICATORS

We organize information on status and trends in the condition of Casco Bay using indicators. Each indicator combines data from several sources to build a deeper understanding of a specific topic. Taken together, the indicators provide a comprehensive look at our waters.

SCAN QR CODE TO VIEW THE REPORT

Explore all 22 indicators online and access the full data set



1. Population and Land Use

Watershed Land Area Classified as "Forested" Continued to Decline. Between 1985 and 2025, Forest Loss was Estimated to be 38 Square Miles.

What we do on land profoundly affects the water. Loss of forest and increase in developed lands degrade aquatic habitats, increase erosion and flood risk, and add to pollutants entering our streams and rivers – which eventually reach our lakes and the Bay.



Suburban development adjacent to the Presumpscot River in Falmouth Photo: Jerry Monkman

2. Wastewater Disposal

Many Septic Systems are Located on Vulnerable Soils Near Water, But the Number of Overboard Discharges Has Declined

Tens of thousands of homes and businesses in the Casco Bay region manage sewage on-site, mostly with septic systems and a few with permitted overboard discharges. These systems protect human health and water quality when properly installed and maintained, but not all function as designed and cumulative effects can impact water quality. New research points to where threats to water quality are likely most important.

3. Combined Sewer Overflows

New Back Cove South Storage Facility is Predicted to Cut Combined Sewer Overflow (CSO) Discharge in Half. CSO Discharge Decreases at 15 Outfalls and Increases at One.

Combined Sewer Overflows, or 'CSOs', occur during and after large rain events when large volumes of stormwater enter combined sewer systems and cause discharge of mixed sewage and stormwater to nearby waters. Sewer separation and underground holding tanks (such as the Back Cove South Storage Facility) have been deployed by towns in the Casco Bay watershed to decrease --and in some cases eliminate -- discharge events.

4. Climate Change

Changing Climate Continues to Pose Threats to the Ecology, Economy, and Community of the Bay. Extreme Weather Events Remain a Major Concern with More Days Receiving Over an Inch of Precipitation.

The growing season is getting longer as fewer days reach below freezing. Winter temperatures are getting warmer, reducing annual snowfall. Habitat ranges of organisms are shifting, changing the availability of food and fishery resources. More frequent storms and rising sea levels create a growing need for more municipal planning, infrastructure upgrades, and funding to assist communities with preparing for extreme weather events.

5. Lakes

New Tools Improve Monitoring and Reporting but Human Lake Monitors Remain Vital.

The lakes of the Casco Bay watershed provide important habitat for wildlife and opportunities for recreation. They support tourism and underpin the region's many recreation- and tourism-based jobs and businesses. Clean water is essential for maintaining those benefits.

6. Streams

Stream Conditions are Linked to Development. Tributaries of the Presumpscot River and Urban Streams Have Persistent Water Quality Challenges.

The health of Casco Bay is linked to the health of the watershed. Streams from the coast to the upper watershed are connected to the Bay by movement of water, pollutants, and aquatic organisms. Poor water quality reduces populations of aquatic organisms and can block upstream and downstream movement of fish and other aquatic species. It also reduces recreational opportunities and puts human health at risk.

7. Bay Water Quality

Continuous Monitoring Shows Us How Casco Bay Flows and Breathes. Seasonal Patterns in Water Quality Differ By Location.

Casco Bay is a complex and dynamic system. Water flows are shaped by the tides, freshwater inputs, offshore conditions, weather, and even the plume of the Kennebec River. Water quality influences many of the ways people interact with the Bay (swimming, shellfish harvesting, fishing, etc.). Understanding how water quality changes in space and time helps us predict what areas are most at risk to pollution and understand how that might shape community interactions with the Bay.

The landscape tells a story about the Bay. Changes in forests, farms, developed areas, and natural spaces give us clues about how the watershed is changing and what that may mean for Casco Bay and the region's lakes, rivers, and streams.

8. Nitrogen in the Bay

Nitrogen Levels are Decreasing at Many Sites in the Bay. Improvements in Stormwater and Wastewater Infrastructure are Most Likely Responsible for Nitrogen Decreases.

Nitrogen is the limiting nutrient in most marine ecosystems, including Casco Bay. High levels of bioavailable nitrogen can trigger excessive growth of algae, leading to harmful algae blooms and low dissolved oxygen as excess algae decompose.

9. Swimming Beaches and Shellfish Beds

Fecal Indicator Bacteria Thresholds are Being Exceeded More Frequently in Shellfish Monitoring, but Remain Steady at Beaches

Although reported health impacts are rare in Casco Bay, pollution of our waters with pathogens may sometimes pose a health risk. People and pets who swim, wade, or accidentally ingest polluted water can become ill. Clams and other bivalves concentrate pathogens from their environments so people who eat contaminated shellfish can also get sick. To help protect public health, state and local agencies track fecal indicator bacteria in coastal waters, closing waters to swimming and shellfish harvesting if the risk of contamination.

10. Toxics

PFAS Compounds are Ubiquitous in Casco Bay's Waters and Marine Life, However PFAS Concentrations in Surface Waters and in Fish and Shellfish Tissue Are Nearly Always Below Levels of Concern.

Toxics are biologically active pollutants that can harm humans or the environment. Some toxic compounds, like PCBs and DDT, have been phased out and environmental concentrations are slowly declining. PFAS stands for per- and polyfluoralalkyl substances. It refers to a group of long-lasting synthetic chemicals that have been widely used for decades, but that have recently been recognized as a significant pollutant.

11. Tidal Marshes

Tidal Marshes Are at Risk Due to Sea Level Rise, a Threat Compounded by the Impacts of Centuries of Human Use and Modification. Collaborative Restoration Initiatives Put Tidal Marshes on a More Resilient Trajectory.

The integrity of Casco Bay's ecosystems and our human communities depends on the health of coastal habitats like tidal marshes. Coastal habitats house fish and wildlife, support Maine fisheries, and protect us from flooding, storms and pollution. Rising sea level puts many coastal ecosystems at risk, but efforts are underway to improve the ability of tidal marshes to respond.

12. Eelgrass

Previously Reported Eelgrass Gains Have Been Lost. Remaining Eelgrass is Mostly in Low Density Meadows.

Eelgrass is an underwater flowering plant that forms dense underwater meadows in coastal areas. It is a vital nursery habitat for young fish and shellfish, including commercially important species such as lobster and scallops. Eelgrass meadows also stabilize sediments, protect shorelines from erosion, and absorb excess nutrients in the water.

13. Aquatic Connectivity

Initiatives to Reconnect Aquatic Habitats Are Underway in Coastal Streams and the Royal River, Crooked River, and Presumpscot River Watersheds. These Connectivity Efforts Include Dam Removal, Culvert Replacement, Constructed Fishways, and Other Restoration Activities.

Many aquatic species must be able to move among different habitats in order to thrive. Anadromous fish are born and reproduce in fresh water but live part of their lives in the ocean. Eastern brook trout and other fish that require cold, oxygen-rich water move seasonally among spring-fed streams, mainstem rivers, and estuaries to reproduce and feed.

14. Conserved Lands

The Pace of Permanent Land Conservation in the Casco Bay Watershed Reached an All-time High In the Last Five Years. The Rate of Conservation Needs to Increase to Meet 2030 Goals.

Throughout Casco Bay's watershed, especially near Portland, land is being developed in response to demand for residential, commercial, or industrial property. Setting aside a network of natural areas in perpetuity is important to protect clean water, conserve ecological communities, enhance climate resilience, sustain working forests and farms, and provide access to open space and outdoor recreation.

15. Marine Community

Casco Bay's Marine Community is Experiencing Changes Across Several Indicators. Shifts in Many Species' Abundance, Biomass, Growth, and Migration and Reproduction Timing May Be Linked to Warming Waters.

Casco Bay's marine community comprises species that range from algae and plankton, to recreationally and commercially important fish and shellfish species, to megafauna such as seals, whales, and sharks. Changes or declines in key species can reflect or act as early warning signs of changes in marine ecosystems that might affect fisheries.

16. Invasive Species

Invasive Species Remain a Persistent Threat to Casco Bay. A Changing Climate May Control Invader Abundance.

Invasive species are organisms that are not native to an area but arrive primarily through human activity and damage the local ecosystem. Marine invasives are mainly introduced by the accidental transportation of species from one place to another. Invasives can harm local ecosystems by altering the food web which can harm other species, fisheries, the economy, and public health.

17. Living Resources

Living Marine Resources Remain an Important Part of Casco Bay's Culture. They Also Contribute Millions of Dollars a Year to the Economy of Casco Bay.

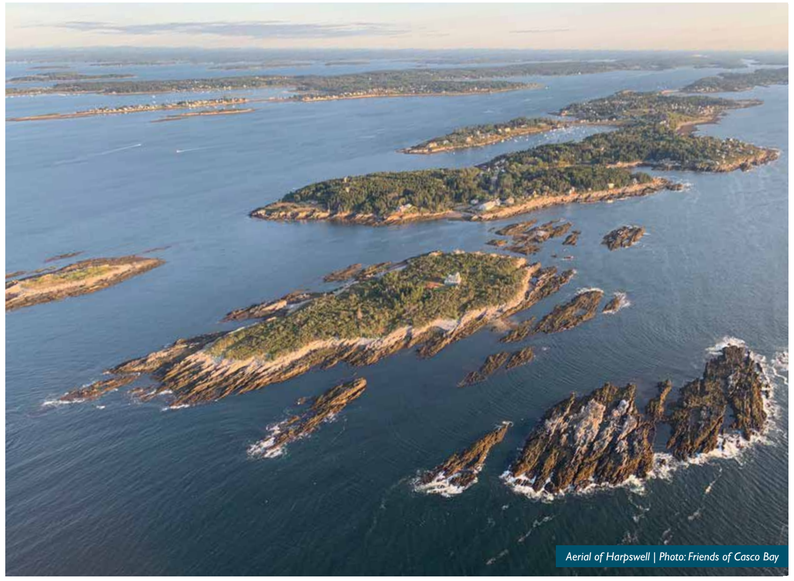
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18. Bay Economics

A Vital Ocean Economy, Driven by Tourism. Tourism and Marine Industries Play a Vital Role in Cumberland County's Economy, While a Healthy Casco Bay Remains Foundational to the Industry's Future.



A Brunswick High School marine science class collects green crabs at Wharton Point on Maquoit Bay in Brunswick | Photo: Jerry Monkman



Aerial of Harpswell | Photo: Friends of Casco Bay

Casco Bay is an ecological and economic treasure that is vital to the region's communities and economy. Its beauty, natural resources, and healthy ecosystems support businesses, tourism, recreation, livelihoods, and quality of life. While the Bay's full economic value is difficult to measure, its importance is clear in the many ways it sustains our region and its people.

19. Environmental Education

Place-Based Learning Connects Thousands of Students to Casco Bay. Building Environmental Literacy and Stewardship in the Next Generation.

Each year, thousands of K–12 students connect with Casco Bay and its watershed through hands-on learning in classrooms and outdoors. These experiences build environmental knowledge, critical thinking, and a sense of connection to local places. Programs across the region reach students in dozens of communities, helping inspire the next generation of Bay stewards.

20. Stewardship

Volunteers Donate Several Thousand Hours to Stewardship of Casco Bay. Seven Organizations Report on Volunteer Metrics Across Thirty-Three Watershed Communities.

Community members contribute thousands of hours each year to protecting Casco Bay lands and habitats. They care for conserved lands, restore habitat, support community science, and lend a hand at events and special projects. Beyond the work itself, volunteering strengthens communities and deepens people's connection to the Bay.

21. Climate Preparedness

Communities Mobilize for Climate Resilience: Community Resilience Partnership and Resilience Corps Programs Increase Local Capacity for Climate Resilience.

As Maine's climate changes, communities across the Casco Bay watershed are preparing for more intense precipitation, coastal flooding, sea level rise, and other impacts. Through programs such as the Community Resilience Partnership and Resilience Corps, municipalities are assessing risks, planning for the future, and building local capacity to strengthen resilience.

As our understanding of Casco Bay and the stressors impacting it continues to evolve, so does our recognition of knowledge gaps and additional data collection needs. Fortunately, there are dozens of individuals and groups collecting data in the Casco Bay watershed, from small local efforts to state regulated monitoring programs.

22. Emerging Data Sources

Data Collection Priorities and Methods Are Evolving. New Technologies, Knowledge, and Discoveries Are Inspiring New Data Collection Efforts.

New sources of information are constantly becoming available, offering fresh insights into conditions in the Bay and throughout the watershed. Technologies such as drones and eDNA provide new ways to observe and understand the Bay. New monitoring efforts are also expanding what we know about its health. CBEP is following these developments closely, with an eye toward incorporating useful data into future reports.

A LETTER FROM THE DIRECTOR OF THE CASCO BAY ESTUARY PARTNERSHIP

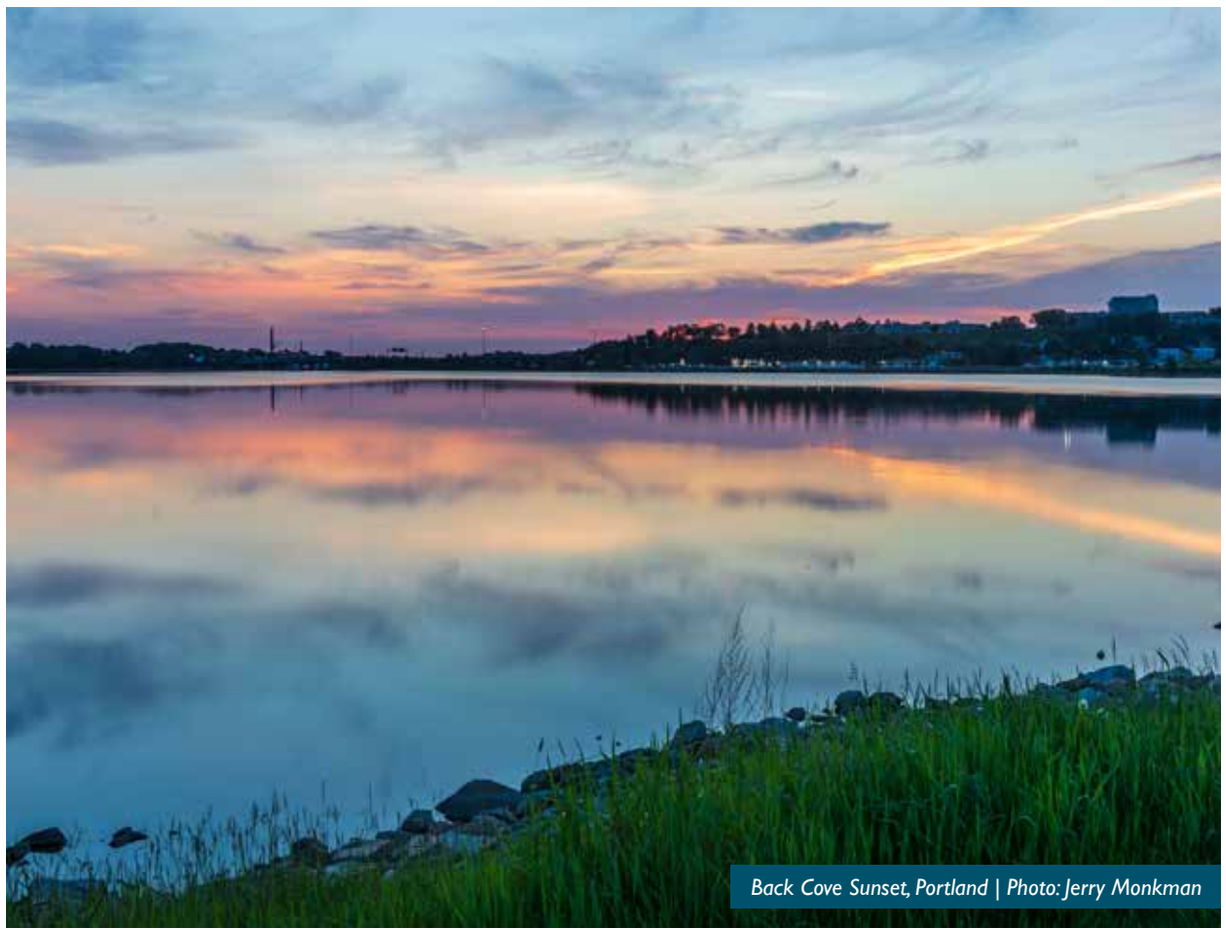
Water defines our region. Our lakes, rivers, streams and bays provide food, drinking water, livelihood, recreation, meaning and solace to residents and visitors alike. Our waters shape us, as our choices shape and reshape our waters. We are all people of the river, people of the lake, people of the Bay - even if sometimes we forget.

The document you hold in your hands, and the related online content, comprise the fourth State of Casco Bay report I have helped prepare. In 2026, emerging technologies like environmental DNA let us ask new questions, and ask old questions in new ways. Automated data collection has multiplied the data we collect – and need to make sense of – by a hundredfold. It has never been easier for agencies and organizations to share data. Both the breadth and quantity of information available has grown tremendously. But figuring out what it all means is not getting easier.

The process of drafting each State of Casco Bay report offers an opportunity to reflect on our relationship to water. As we prepared this report with more data available to us than ever before, I found myself reflecting not only on the science that is emerging, but also on the importance of building connections to place, community, and people. Data alone cannot build the wisdom we need to protect and restore Casco Bay. That wisdom grows in community, in the ties among people who care for the Bay, care for our communities, and care for each other. It is time to listen not only to the data brought together in this report, but to each other.

We are all people of the river, people of the lake, people of the Bay.

Curtis Bohlen, Executive Director
CASCO BAY ESTUARY PARTNERSHIP



Back Cove Sunset, Portland | Photo: Jerry Monkman



Eelgrass | Photo:Angie Brewer, Maine DEP

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WHAT YOU'LL FIND IN THE FULL REPORT

1. Population and Land Use
2. Wastewater Disposal
3. Combined Sewer Overflows
4. Climate Change
5. Lakes
6. Streams
7. Bay Water Quality
8. Nitrogen in the Bay
9. Swimming Beaches and Shellfish Beds
10. Toxics
11. Tidal Marshes
12. Eelgrass
13. Aquatic Connectivity
14. Conserved Lands
15. Marine Community
16. Invasive Species
17. Living Resources
18. Bay Economics
19. Environmental Education
20. Stewardship
21. Climate Preparedness
22. Emerging Data Sources

THANKS TO OUR PARTNERS

CBEP works to bring people together on behalf of Casco Bay, the waters of the Casco Bay watershed and the communities of the Casco Bay region. We could not have prepared this report without the help of our many colleagues who contributed in ways both large and small. Thank you. You know who you are.

Casco Bay Estuary Partnership's mission is to help conserve the ecological integrity of Casco Bay and its watershed through science, public stewardship and effective management.

Questions? Reach out at *cbep@maine.edu*

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