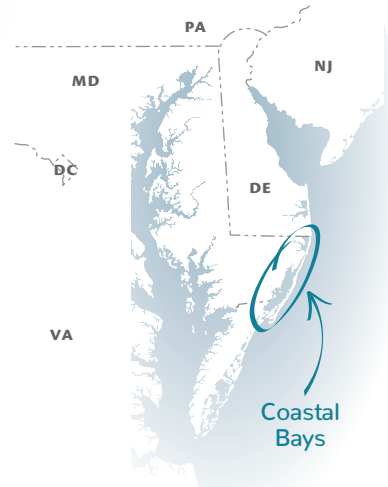
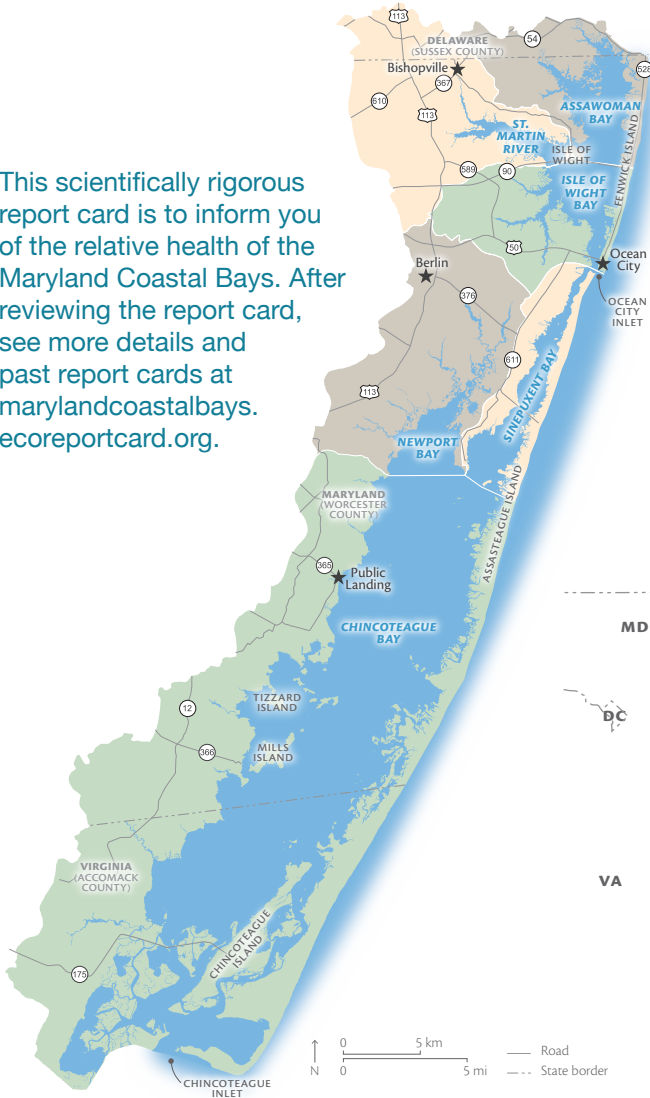


Coastal Bays REPORT CARD 2016



This scientifically rigorous report card is to inform you of the relative health of the Maryland Coastal Bays. After reviewing the report card, see more details and past report cards at marylandcoastalbays.ecoreportcard.org.



Gold stars for partnerships

Without the assistance of our friends, students, partners, and visitors, the Maryland Coastal Bays Program would not be able to accomplish so much.

★ The **Town of Ocean City** expanded their “Green Team” approach to include the “Adopt-A-Street” campaign, invested significantly in wastewater technology improvements, provided funds for beach replenishment and waterway management, and used mitigation funds for storm water improvements in Public Works areas.

★ The **Ocean City Reef Foundation, Inc (OCRF)** was established in 1997 and as of the end of 2016, has deployed almost 15,000 concrete blocks distributed over eight sites offshore of Ocean City. The artificial reefs are colonized by a host of organisms, which attract sport fishes like black sea bass, tautog, and summer flounder.

★ **Audubon Maryland-DC** was vitally involved in outreach and education efforts to inform locals and visitors of the need to obey restrictions placed on bird islands during the critical breeding and nesting season. In partnership with Maryland Coastal Bays Program and Assateague Coastal Trust, they created educational signs that were placed throughout the watershed.

★ **Worcester County Master Gardeners** helped revitalize a rain garden on Flower Street in Berlin. The Master Gardeners Advanced Learning Class identified previously planted species, while donating and planting more native species. The Master Gardeners help manage the Berlin Library Garden, where organic vegetables are grown for the Diakonia Food Pantry.

★ The **University of Maryland Center for Environmental Science (UMCES)** annually chairs the Science and Technology Advisory Committee of the MCBP. UMCES provides communication services through the Integration & Application Network that visually presents science in the Coastal Bays Report Card and 5-year State of the Bays Report.



Rick Younger

One of OCRF's artificial reefs.



Roman Jessien

An educational sign created in partnership with Audubon Maryland-DC.



Roman Jessien

Master Gardeners surveying the Flower Street rain garden.

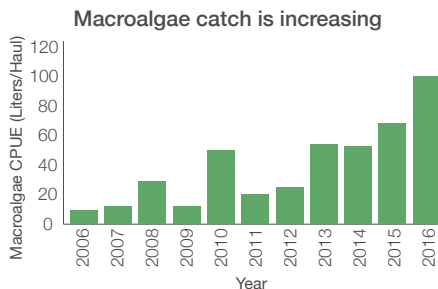
Seaweed is increasing over time

Seaweeds, also known as macroalgae or algae, are a natural part of a healthy bay. They provide cover for crabs and fish, produce oxygen, and serve as a food source. However, an excess amount of seaweed can have significant impacts on bay habitat and organisms.

The abundance, distribution, and composition of seaweed are affected by changes in nutrient inputs to the bays. As nutrient levels increase, seaweeds tend to replace the rooted seagrass because they are more efficient at taking up nutrients. A system with high seaweed abundance distributed throughout an area may indicate moderate nutrient loading.

Dense accumulations of seaweed have been observed in the Maryland

Coastal Bays and have caused shading of seagrass, decreased oxygen, and impeded recreational boating. Elevated seaweed levels in both Assawoman and Isle of Wight Bays led to a seagrass die-off (coupled with temperature stress) in 2015.



Macroalgae catch per unit effort (CPUE) is the amount of macroalgae collected in the Coastal Bays, which is increasing over time.



Adrian Jones

Dense floating mats of seaweed in the Maryland Coastal Bays.

Indicators used in the report card

The aim of this report card is to provide a transparent, timely, and geographically detailed assessment of 2016 Coastal Bays' health. Coastal Bays health is defined as the progress of four water quality indicators (TN, TP, chl-a, DO) and two biotic indicators (seagrass, hard clams) toward scientifically derived ecological thresholds or goals. The six indicators are combined into one Coastal Bays Health Index, presented as the report card score.

Detailed methods available at marylandcoastalbays.ecoreportcard.org.



Total nitrogen



Total phosphorus

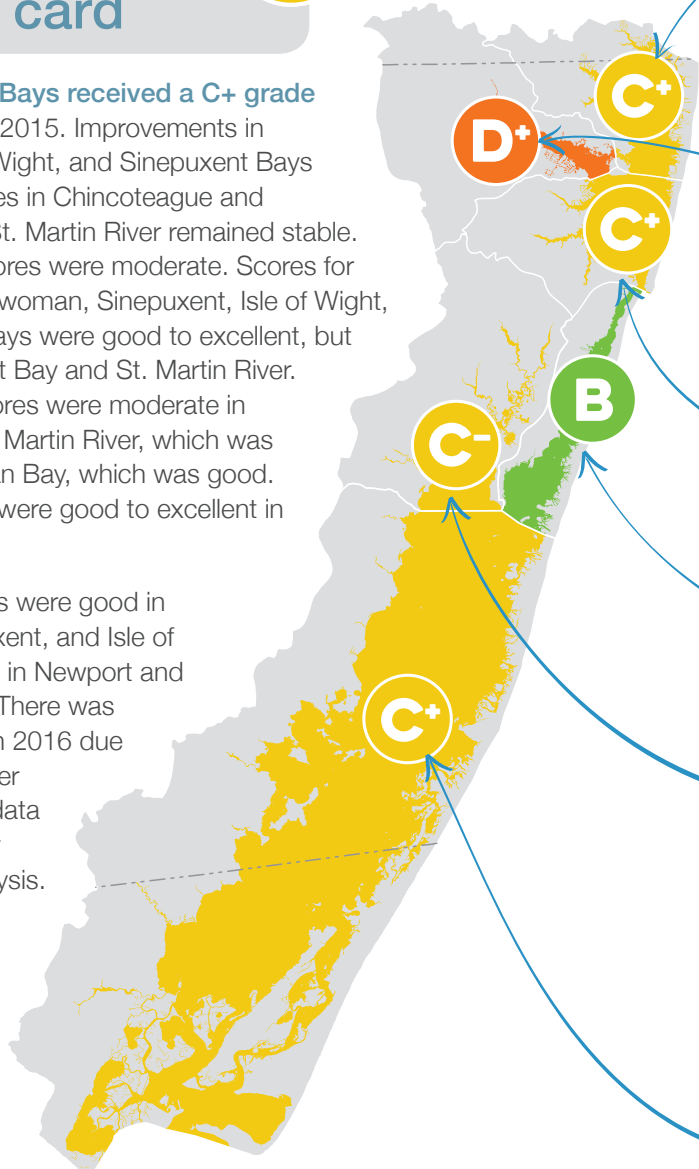
The Coastal Bays report card



Overall the Coastal Bays received a C+ grade with no change from 2015. Improvements in Assawoman, Isle of Wight, and Sinepuxent Bays were offset by declines in Chincoteague and Newport Bays. The St. Martin River remained stable. Dissolved oxygen scores were moderate. Scores for total nitrogen in Assawoman, Sinepuxent, Isle of Wight, and Chincoteague Bays were good to excellent, but were poor in Newport Bay and St. Martin River. Total phosphorus scores were moderate in all regions except St. Martin River, which was poor, and Assawoman Bay, which was good. Chlorophyll a scores were good to excellent in all regions.

Scores for hard clams were good in Assawoman, Sinepuxent, and Isle of Wight Bays and poor in Newport and Chincoteague Bays. There was no seagrass survey in 2016 due to unfavorable weather conditions. Instead, data from the 2015 survey was used in this analysis.

This assessment is a snapshot in time. It represents the status of water quality and clams in 2016 and seagrasses in 2015.



Assawoman Bay received a grade of C+, an increase from a C last year. Now placing third, this region had higher scores for phosphorus, chlorophyll a, and hard clams. However, the nitrogen score remained steady and the dissolved oxygen score declined. Most indicators scored good or very good, except dissolved oxygen, which had a moderate score, and seagrass, which had a very poor score.



St. Martin River received a D+ grade. With the same grade as 2015, this region continued to have the lowest scores for nitrogen, phosphorus, and chlorophyll a than any other region. St. Martin River also received the lowest grade of any reporting region. Most indicators scored poor or very poor, except chlorophyll a, which had a good score, and dissolved oxygen, which had a moderate score.



Isle of Wight Bay received a grade of C+, an increase from a C last year. There were improvements in nitrogen, phosphorus, chlorophyll a, and hard clam scores. Hard clams, chlorophyll a, and nitrogen were good to very good, while dissolved oxygen and phosphorus were moderate.



Newport Bay received a grade of C-, the same as last year. Phosphorus and dissolved oxygen improved, while hard clams and chlorophyll a declined. Chlorophyll a was very good, dissolved oxygen and phosphorus were moderate, while hard clams and nitrogen were poor.



Sinepuxent Bay received a B grade, the same as last year. This continues to be the highest-scoring region. Scores were variable: nitrogen and chlorophyll a were excellent, hard clams had a good score, while dissolved oxygen and phosphorus were moderate.



Chincoteague Bay received a C+ grade, the same as last year. The region slightly declined from 2015. Dissolved oxygen and chlorophyll a declined while the other indicators improved. Nitrogen, and chlorophyll a were very good, phosphorus and dissolved oxygen were moderate, while hard clams were poor.



What do the scores mean?

- A**
81–100%
very good
- B**
61–80%
good
- C**
41–60%
moderate
- D**
21–40%
poor
- F**
0–20%
very poor



Seal Stewards

The Seal Stewards were established in 2012 through a partnership of the National Aquarium and the Maryland Coastal Bays Program. Their goal is to provide outreach and education on marine mammals in Mid-Atlantic waters, with a primary focus on responsible viewing. The Stewards now have 63 volunteers that have responded to over 30 haul outs.

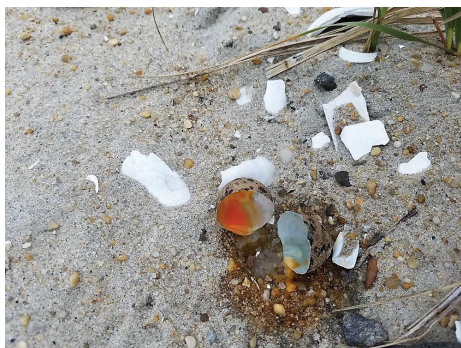


Tom Erbe

This grey seal hauled out onto the beach for much needed rest.

Bird Islands

The islands and shallow waters of the Coastal Bays have historically provided wonderful habitat for colonial waterbirds. However, the islands are eroding at a rapid rate and more birds are squeezed into smaller areas, which causes increased predation pressure. Island restoration is more important than ever to keep the terns and skimmers on our shores.



Katherine Phillips

A state-endangered common tern egg broken due to human disturbance on the islands.

The Maryland Coastal Bays Program

The Maryland Coastal Bays Program is part of the National Estuary Program and is a non-profit partnership among the towns of Ocean City and Berlin, the National Park Service, Worcester County, the U.S. Environmental Protection Agency, and the Maryland Departments of Natural Resources, Agriculture, Environment & Planning. The Program goal is to protect and enhance the watershed and waters of the Maryland Coastal Bays.

Acknowledgements

This report card was produced in December 2017 by the University of Maryland Center for Environmental Science, Maryland Department of Natural Resources, and the Maryland Coastal Bays Program. The following additional organizations contributed significantly to the development of the report card: National Oceanic and Atmospheric Administration, the National Park Service, and Virginia Institute of Marine Science.

This publication was developed under Cooperative Agreement CE-9863209-12-1 awarded by the U.S. EPA to Maryland Coastal Bays Program. It has not been formally reviewed by U.S. EPA. The views expressed in this document are solely those of the authors and do not necessarily reflect those of the Agency.

Cover photo by Robert Banach.

ian.umces.edu

