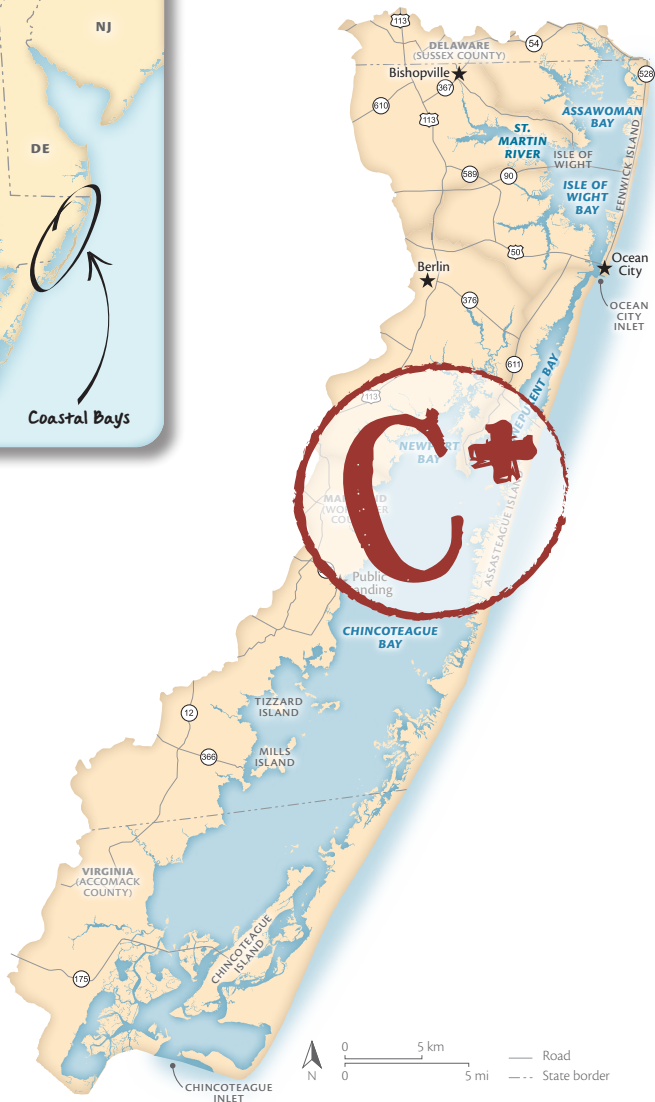


# Coastal Bays REPORT CARD 2013



This scientifically rigorous report card is to inform you of the relative health of the Coastal Bays. After reviewing the report card, see more details and register online at [www.ian.umces.edu/ecocheck](http://www.ian.umces.edu/ecocheck) to receive updates and future report cards.

# Seagrasses declined in all areas

These stories and data provide additional insights into the processes, conditions, threats, and resources in the Coastal Bays.

## Seagrass declines

Seagrass declined for the fourth year in a row in the Coastal Bays. Current acreage is only 28% of the established goal. In 2001, seagrasses peaked and met 71% of the habitat goal. In 2013, the Maryland portion of Chincoteague Bay lost the most acres (500 acres) while Assawoman and Newport Bays lost 50% of their seagrass beds. This is a significant loss since the seagrass beds are critical fish habitat especially for juvenile fish and crabs.

## Phosphorus increasing

The amount of phosphorus has been on the rise in the Coastal Bays over the past decade. Current levels exceed water quality thresholds at 35% of sites in Assawoman and Chincoteague Bays and up to 60–76% of sites in Newport and Isle of Wight Bays and St. Martin River. High phosphorus levels can increase algae levels in the bays which then shade seagrasses. Coastal Bays scientists think

the increased phosphorus is most likely due to groundwater inputs.

## Hard clams status

Coastal Bays hard clam densities remain largely unchanged for the third year in a row. After a two-fold jump in Isle of Wight Bay, the population level in this subembayment (highest of the Coastal Bays) has lingered just below the historical baseline over this period, while Chincoteague Bay clam numbers remain a fraction of what they once were. This year's exception was in Sinepuxent Bay, where there has been a steady increase to double the density of clams over the past four years.



DAVE WILSON

## Indicators used in the report card

The aim of this report card is to provide a transparent, timely, and geographically detailed assessment of 2013 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 <http://ian.umces.edu/ecocheck/report-cards/maryland-coastal-bays/2013>

**TN** Total nitrogen

**TP** Total phosphorus

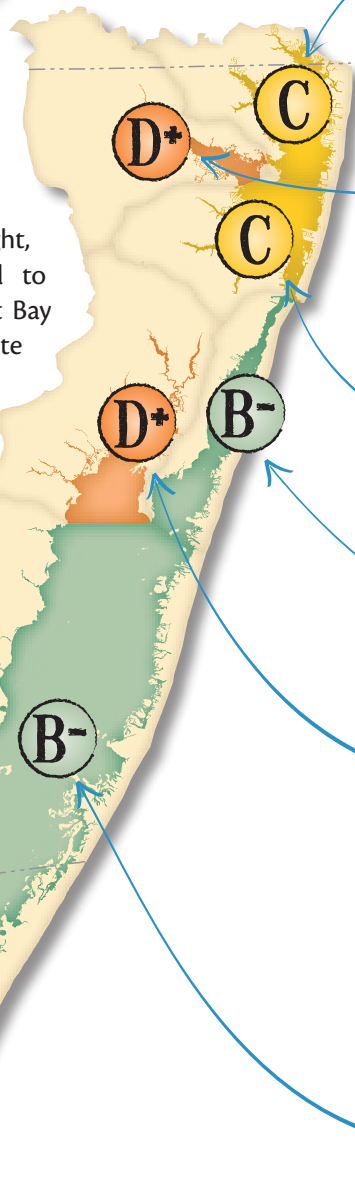
# The Coastal Bays report card

**C+**

Overall, the Coastal Bays received a grade of **C+**, the same as 2012, but with a slight improvement since last year, which was mostly driven by water quality improvements in Chincoteague Bay. Scores for total nitrogen in Assawoman, Isle of Wight, Sinepuxent, and Chincoteague Bays were good to excellent, and were moderate to poor in Newport Bay and St. Martin River. Total phosphorus was moderate to poor except in Assawoman and Chincoteague Bays which were good. Dissolved oxygen scores were moderate to poor except Chincoteague Bay which was good. Chlorophyll *a* was good to excellent in all regions of the Coastal Bays.

Scores for hard clams were moderate to very poor except Isle of Wight Bay which was very good. Clam scores also improved in Sinepuxent Bay. Seagrass scores were moderate to very poor in all subembayments and there was a decline in seagrass in every area. This assessment is a snapshot in time. It represents the status of water quality, seagrasses, and clams in 2013.

## Coastal Bays Health Index



**Assawoman Bay** received a grade of **C**, which was the same grade it received in 2012. Placing fourth, Assawoman showed a slight improvement since 2012. While there were improvements in dissolved oxygen and hard clams, declines in phosphorus, chlorophyll *a*, and seagrass scores impacted 2013.

**St. Martin River** received a **D+** grade. With a similar score to 2012, this region had lower scores for nitrogen, phosphorus, chlorophyll *a*, and seagrasses than any other region. St. Martin River received the second-lowest grade of any reporting region in 2013, with most indicators scoring poor or very poor except chlorophyll *a* which was good and dissolved oxygen which was moderate. This region showed the largest decline of all regions in 2013.

**Isle of Wight Bay** received a grade of **C**. Improvements in dissolved oxygen and chlorophyll *a*, were offset by declines in phosphorus, hard clams, and seagrass scores. Nitrogen, chlorophyll *a*, and hard clams were good to very good while dissolved oxygen, phosphorus and seagrasses were poor to very poor.

**Newport Bay** received a grade of **D+**. Newport Bay again received the lowest score of all the subembayments. Improvements in nitrogen, chlorophyll *a*, and hard clams were offset by declines in dissolved oxygen, phosphorus, and seagrass.

**Sinepuxent Bay** received a **B-** grade. Sinepuxent Bay again received the highest grade of all the regions. Nitrogen and chlorophyll *a* were both excellent, while dissolved oxygen, phosphorus, hard clams, and seagrass were moderate. Hard clams improved from a poor score last year.

**Chincoteague Bay** received a **B-** grade. Small declines in chlorophyll *a*, hard clams, and seagrass were offset by larger improvements in dissolved oxygen, nitrogen, and phosphorus. This region continues to receive the lowest score for hard clams which may be a result of recurring brown tides.



Chlorophyll *a*



O<sub>2</sub> Dissolved oxygen



Seagrasses



Hard clams

# Modeling nutrients, assessing climate vulnerabilities, and promoting environmental justice

Land use decisions have impacts on how much excess nutrients will be delivered to the region's coastal lagoons. The Maryland Coastal Bays Program (MCBP) is working with Sea Grant and researchers at the University of Maryland to develop a computer model that will address this relationship, estimating how land use changes might influence the water quality of the Coastal Bays. Such a model can help communities develop land-use plans that protect and improve water quality. The Nitrogen Loading Model will be used to predict changes in nitrogen loads to the Delmarva lagoons as a function of changes in land use, population sizes, and agricultural activities across the landscape.

MCBP is working with the EPA Climate Ready Estuaries (CRE) program to: (1) assess climate change vulnerabilities, (2) develop and implement adaptation strategies, and (3) engage and educate stakeholders. The effort will help ensure the viability of our water quality and wildlife goals in the face of sea level rise and climate change. As the impacts of climate change continue to be seen, changing conditions may greatly impact our ability to produce results on identified goals. By assessing potential risks in advance, we will be better prepared as a program to deliver upon our goals. In addition, MCBP's efforts also serve to prepare us as an intermediary with our local jurisdictions, ensuring they have access to the tools they need to prepare Worcester County, our communities, parks, farmlands, and the Coastal Bays ecosystem for the evolving impacts of carbon pollution.

For the past five years, MCBP has been recruiting and hiring local high school and college students as Coastal Stewards. During this summer youth employment program, these students develop job skills and receive special training in interpretation, outreach, and natural resource restoration. Coastal Stewards are given work experience—in green jobs—conducting programs and projects at local parks, natural areas, museums, and heritage sites. Funding from EPA allowed for a crew of 15 Coastal Stewards to be hired for summers 2011, 2012, and 2013. The program, made possible with help from Assateague State Park and the National Seashore, is a model for green jobs and relevancy, diversity, and inclusion.



JANE THOMAS

*Land use in the Coastal Bays watershed affects water quality.*



TOWN OF OCEAN CITY

*Flooding in Ocean City during Hurricane Sandy.*



CAROL CAIN

*Coastal Stewards join MCBP staff scientist Dr. Roman Jesien to sample Coastal Bays' tributary water quality.*



# Lawn fertilizer law helps homeowners be better stewards

Maryland's lawn fertilizer law is a big step in the right direction to help protect the Coastal Bays from excess nutrients from a variety of urban sources, including golf courses, parks, recreation areas, athletic fields, businesses, and residential lawns. Maryland's lawn fertilizer law took effect October 1, 2013 and calls for reformulation of lawn fertilizer products, certification of lawn care professionals, and fertilizer restrictions for homeowners and professionals. Restrictions on fertilizer use have been in place for farmers since 2001. Everyone is asked to do their part to protect and restore the Coastal Bays.

The West St. stormwater project in Berlin is designed to reduce flooding in that area as well as improve water quality by slowing the water velocity through channel improvements and plantings of native vegetation. Funding was provided by the Town of Berlin, Assateague Coastal Trust, MCBP, and the Chesapeake Bay Trust Fund. Additional stormwater projects will be made possible through funds generated by the Stormwater Utility initiated in 2013.



ROMAN JESSEN

## The Maryland Coastal Bays Program

Part of the National Estuary Program, the Maryland Coastal Bays Program is a non-profit partnership between 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.

One of only 28 such programs nationwide, the goal of the Maryland Coastal Bays Program is to protect and enhance the watershed, which includes Ocean City, Ocean Pines and Berlin, and Assateague Island National Seashore. The 175-square mile watershed is home to the treasured resources of St. Martin River, Newport Bay, Assawoman Bay, Isle of Wight Bay, Sinepuxent Bay, and Chincoteague Bay.

## Acknowledgements

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[www.ian.umces.edu](http://www.ian.umces.edu)



[mdcoastalbays.org](http://mdcoastalbays.org)



[www.dnr.state.md.us](http://www.dnr.state.md.us)



[www.nps.gov](http://www.nps.gov)



[www.vims.edu](http://www.vims.edu)

The data and methods underpinning this report card represent the collective effort of many individuals and organizations working within the Coastal Bays scientific and management community. The following organizations contributed significantly to the development of the report card: Maryland Coastal Bays Program, University of Maryland Center for Environmental Science, National Oceanic and Atmospheric Administration, Maryland Department of Natural Resources, the National Park Service, and Virginia Institute of Marine Science.