

Coastal Bays REPORT CARD 2011



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 to receive updates and future report cards.

Water quality was still degraded in 2011

These stories and data provide additional insights into the processes, conditions, threats, and resources in the Coastal Bays. A grade can tell you how an indicator is doing, but does not explain why.

Unseen groundwater haunts Eastern Shore

As part of the water cycle, rain and snowmelt continually percolate through the soil and recharge underground reservoirs. This groundwater eventually makes its way to streams, deep aquifers, and the Coastal Bays. Across Delmarva, nitrogen (a common contaminant and nutrient found in fertilizers) in groundwater has been increasing over the last 30 years. Due to the slow-moving nature of these systems, it will take years to decades for these reservoirs to respond to current efforts to reduce nitrogen contamination of groundwater. *Even if levels of fertilizer application were capped or reduced today, nitrogen input to our streams and bays from groundwater could continue to increase in the near term and could take decades to decline.* A recent study by the US Geological Survey shows that groundwater

discharge to streams may take 20–30 years before showing substantial changes in nitrogen resulting from best practices in farming. Further study is needed to determine if this is linked to trends in Chincoteague Bay.

Seagrass loss

Seagrass abundance in Maryland's Coastal Bays decreased by 35 percent in 2011 to levels not seen since the 1990s. The sharp decline is believed to be the result of degraded water quality combined with an especially hot summer in 2010 – when large declines were also seen in the lower Chesapeake Bay.

Clam increases

Despite the improvement in Isle of Wight Bay, hard clam densities remain well below historic benchmarks in all regions of the Coastal Bays. The causes of these poor density conditions have not been determined. Low density could result from unfavorable water quality conditions for hard clam survival (such as brown tide blooms) and possible increased predation by blue crabs and other predators such as cow-nose rays.

Indicators used in the report card

The aim of this report card is to provide a transparent, timely, and geographically detailed assessment of 2011 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/2011/>.

TN Total nitrogen

TP Total phosphorus

The Coastal Bays report card

C

Overall, the Coastal Bays received a grade of **C**, with little change since 2010. Scores for total nitrogen in Isle of Wight, Sinepuxent, and Chincoteague Bays were good to excellent, and were moderate to poor elsewhere. Total phosphorus was mostly moderate to poor except in Sinepuxent and Assawoman Bays, which were good. Dissolved oxygen scores were split between moderate and poor with the highest and lowest scores in Chincoteague and Sinepuxent Bays, respectively. Chlorophyll *a* was good to excellent in all regions of the Coastal Bays. Seagrass and hard clam scores were moderate to very poor, except for clams in Isle of Wight Bay, which were good. This assessment is a snapshot in time. It represents the status of water quality, seagrasses, and clams in 2011. The high spring runoff, followed by a hot, dry summer punctuated by Hurricane Irene and Tropical Storm Lee led to declines in Chesapeake Bay report card scores in 2011 but fortunately, the Coastal Bays were not as negatively affected.

Assawoman Bay received a grade of **C**. Placing fourth, Assawoman saw the biggest decline since 2010. While there were improvements in nitrogen, phosphorus, and chlorophyll *a*, declines in dissolved oxygen, clams, and a major reduction in seagrasses brought down the scores in 2011. While graded a low C in 2011, this region was nearly a C+ in 2010.

C

St. Martin River received a **D+** grade. Similar to 2010, this region had lower scores for phosphorus, chlorophyll *a*, and seagrasses than any other region. This region received the worst grade of any reporting region in 2011, with all indicators scoring poor or very poor except chlorophyll *a*, which was good. Overall, this region had the same grade as the previous year.

D+

Isle of Wight Bay received a grade of **C**. Hard clams bounced back from moderate in 2010 to good with nearly 80% attainment in 2011. However, this was balanced by large declines in seagrasses, which are now very poor. The grade of this region was a C in 2010 and showed little improvement from the previous year.

C

Newport Bay received a grade of **D+**. While still the second lowest scoring region, Newport Bay did have the greatest single year improvement. Seagrasses declined, but there were slight improvements in each of the other indicators. The grade of this region was a D+ 2010.

D+

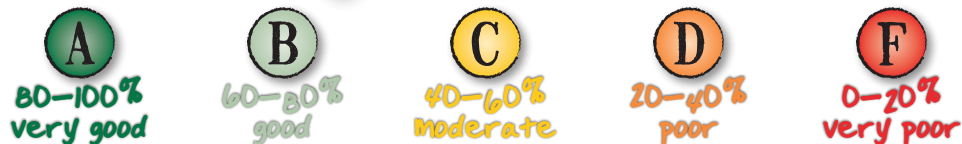
Sinepuxent Bay received a **B-** grade. While Sinepuxent Bay again received the highest grade of all the regions, it declined by the second-largest amount in 2011 due to declining scores in dissolved oxygen and seagrasses. Maintaining good to very good scores for nutrients (nitrogen and phosphorus) and chlorophyll *a*, this region has room for improvement in dissolved oxygen, clams, and seagrasses. The bay grade declined slightly from a B the previous year.

B-

Chincoteague Bay received a **C+** grade. Rebounding slightly from 2010 declines, Chincoteague Bay saw improvements in all indicators except for seagrasses. This region continues to receive the lowest score for hard clams which may be a result of recurring brown tides. The recent grades for this region were B- in 2008-2009 and a C in 2010.

C+

Coastal Bays Health Index



Chlorophyll *a*



O₂ Dissolved oxygen



Seagrasses



Hard clams

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.

- ★ **Maryland Coastal Bays Water Quality Monitoring Volunteers** were honored with the Worcester County You Are Beautiful award and the Governor's Service Award 2011. This program has been continuous with most of the same volunteers since 1997. In nearly 14 years, volunteers have logged over 3,000 hours. The data collected is integral to each Report Card.
- ★ **The State Highway Administration** completed the conversion of an abandoned gravel mine into a sand seepage wetland with 30 acres of Atlantic White Cedar. This area, known as Lizard Hill in Bishopville, will improve water quality flowing into St. Martin River and provide improved habitat.
- ★ **The Maryland Department of Natural Resources** partnered with the **Coastal Bays Program, the Ocean City Fishing Center, Hi-Tide Marine, Worcester County, U.S. Army Corps of Engineers, and Maryland Department of the Environment** to replenish Skimmer Island, the only known nesting habitat in the state for black skimmers and royal terns.
- ★ **Ocean City** sponsored 2011's Earth Day Clean Up that fielded 127 volunteers who removed 1,700 pounds of trash from beach dunes and bayside wetlands. Some finds included a plastic banana, a political yard sign, and deer vertebrae.
- ★ **Worcester County Tourism** created an interpretive sign for the West Ocean City Commercial Fishing Harbor acknowledging local maritime culture and traditions, including both commercial and sport fishing. Harbor Day At The Docks—an annual festival focusing on the contributions of these groups to our community—celebrates this heritage.
- ★ **The Rackliffe House Trust** has restored and transformed the 1752 plantation house into a museum that tracks the settlement of Maryland's Coastal Bays. This million-dollar restoration and attraction is adjacent to Sinepuxent Bay, near the Assateague National Seashore's visitor center.
- ★ **The Town of Berlin** was honored in 2011 with the Clean, Safe, and Green award from Main Street Maryland for efforts to promote commercial recycling, reusable shopping bags, and partnering with Grow Berlin Green. Only five cities received this recognition.



S. SMITH

In 2011, the Worcester County Commissioners honored water quality volunteers for their service to the community.



B. HUBICK

In 1985, as many as 300 pairs of Black Skimmers nested in Maryland. The population has dropped to as few as 25 pairs. Island restoration is vitally important for this endangered species.



**We're
Going
Green!**

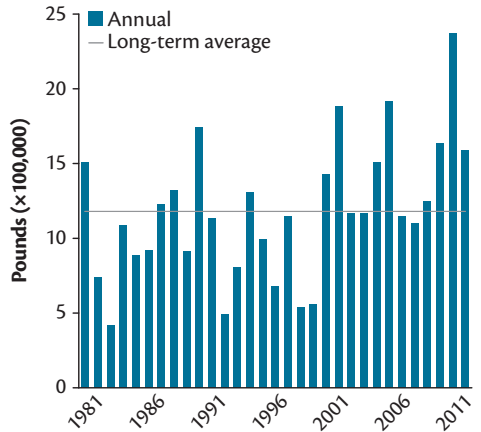
Berlin was designated in 2011 as a Be Smart Community by the State of Maryland for an energy efficiency loan program for homes and businesses.

Blue crabs

Blue crab landings in 2011 were above average for the 4th year in a row. Even though landings declined from an all-time high in 2010, they remained in the 75th percentile of the 32-year landings record.



C. ROBINSON



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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mdcoastalbays.org



www.nps.gov



www.dnr.state.md.us
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.