

# 2025

## Chesapeake Bay and Watershed Report Card



# About the report card

The Chesapeake Bay and Watershed Report Card includes seven bay indicators and twelve watershed indicators. The bay indicators assess aquatic ecosystem health, while the watershed indicators cover ecological, societal, and economic conditions. The bay indicators use 2024 data, except for Aquatic Grasses, which uses 2023 data. Watershed indicators use data from different years, depending on what was available.

For more information on the data used, please visit [ChesapeakeBayReportCard.org](https://ChesapeakeBayReportCard.org).

## Bay indicators



**Total Phosphorus** measures the amount of phosphorus in bay waters.



**Total Nitrogen** measures the amount of nitrogen in bay waters.



**Dissolved Oxygen** measures how much oxygen is present at different depths in the bay.



**Benthic Community** measures the condition of organisms living in or on the bottom areas of the bay.



**Water Clarity** is a measure of how deep light penetrates through the water column.



**Chlorophyll  $a$**  is used as a measure of phytoplankton (microalgae) biomass.



**Aquatic Grasses**, or submerged aquatic vegetation, measures the area of grass beds in bay regions.

## Watershed indicators



**Protected Lands** measures the amount of all lands protected in the watershed.



**Water Quality** index includes metrics for total phosphorus, total nitrogen, turbidity, and conductivity.



**Fish Community** index, developed by the EPA, examines river health by assessing native species and pollution tolerance.



**Benthic Community** measures the condition of the organisms living on the bottom of streams.



**Temperature Stress** measures if summer water temperatures are too hot for many aquatic organisms.



**Heat Vulnerability** index uses metrics for tree canopy, impervious surfaces, air temperature, and households in poverty to assess vulnerability to heat.



**Social Index** uses data about social vulnerability from the U.S. Census and measures how a community can respond to hazardous events.



**Walkability** measures how many people can walk to a park in 10 minutes from where they live.



**Household Income** measures the amount of money people are receiving through their employment.



**Jobs Growth** measures the percentage of jobs gained or lost (net) from 2021 to 2022.



**Income Equality** measures disparity between low and high earners.



**Affordable Housing** measures how much housing is available at a cost that is less than 30% of people's income.

Ecology

Society

Economy

# Bay health declined from the previous year but is still improving over time

The Chesapeake Bay’s overall score was a C (50%), a 5-point decrease from last year’s C+ (55%). Eleven out of fifteen region scores decreased. These decreases are unfortunate but not surprising, considering weather conditions in 2024.

Last year was the hottest year on record and there were extreme rainfall patterns. While parts of the watershed experienced drought, brief but intense downpours also caused runoff into Bay waters. These downpours can cause water to flow over the ground rather than soak into it, increasing the fertilizer, dirt, and debris carried into waterways.

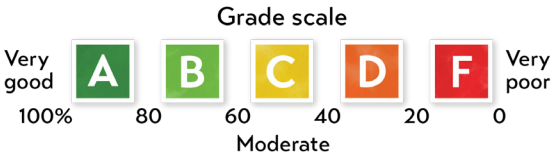
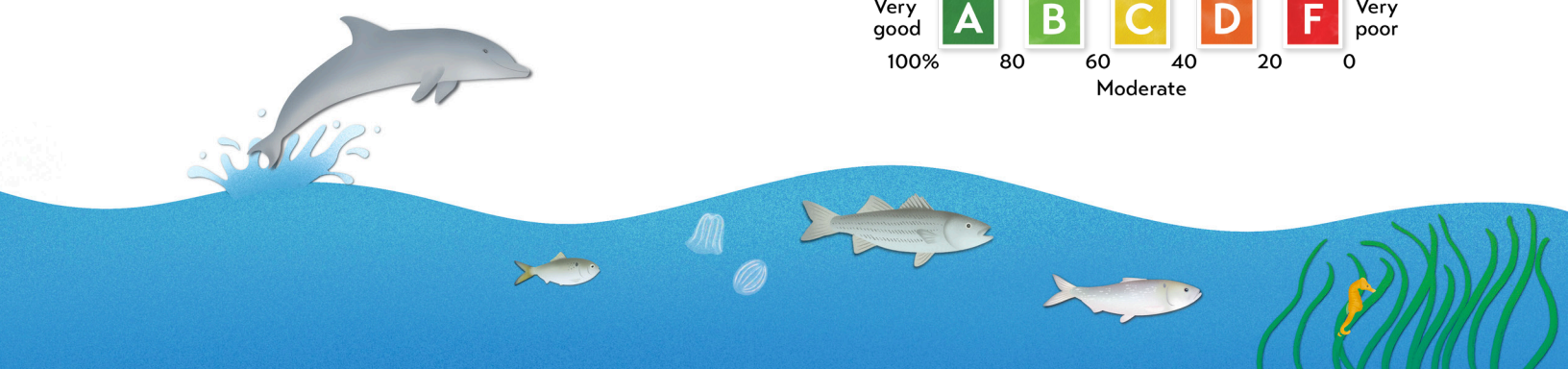
Even with a decrease in the score compared to last year, the Bay continues to improve since the 1980s. Six reporting regions have improving long-term trends, including the Elizabeth, James, Patapsco and Back Rivers, Upper Western Shore, Upper Bay, and Lower Bay. Only the Upper Eastern Shore has a declining trend.

Most indicators are also improving over time. Dissolved Oxygen, Aquatic Grasses, Total Phosphorus, and Total Nitrogen scores are improving. Chlorophyll *a* and Water Clarity scores have declining long-term trends.

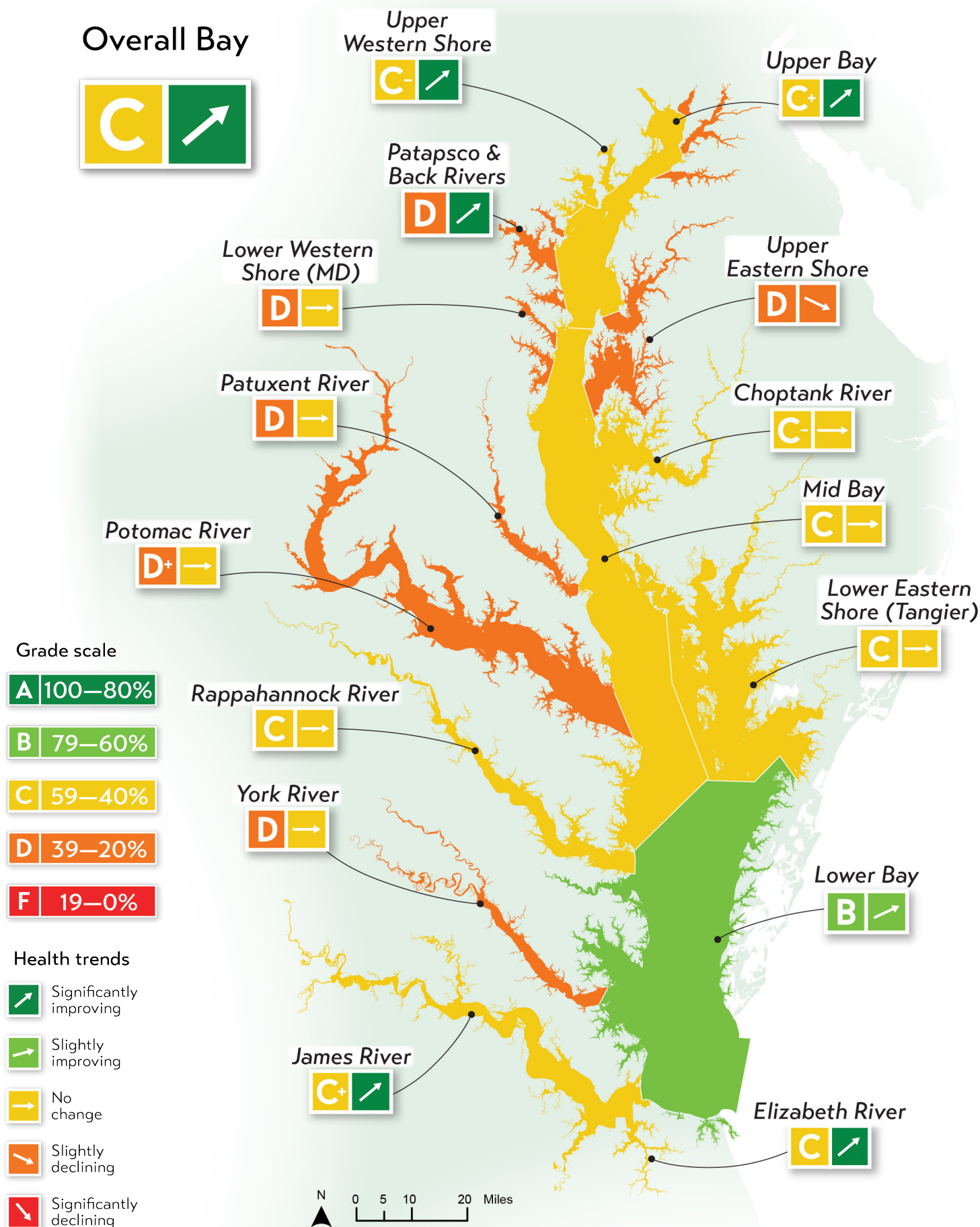
Improving trends can be attributed to management and restoration efforts at the regional, state, and local levels. Regionally, wastewater treatment plants have been upgraded, and programs have been put in place to reduce nutrient and sediment input. State efforts include seagrass restoration, oyster plantings, and watershed planning. Communities play a huge role in improving Bay health by managing their local resources.



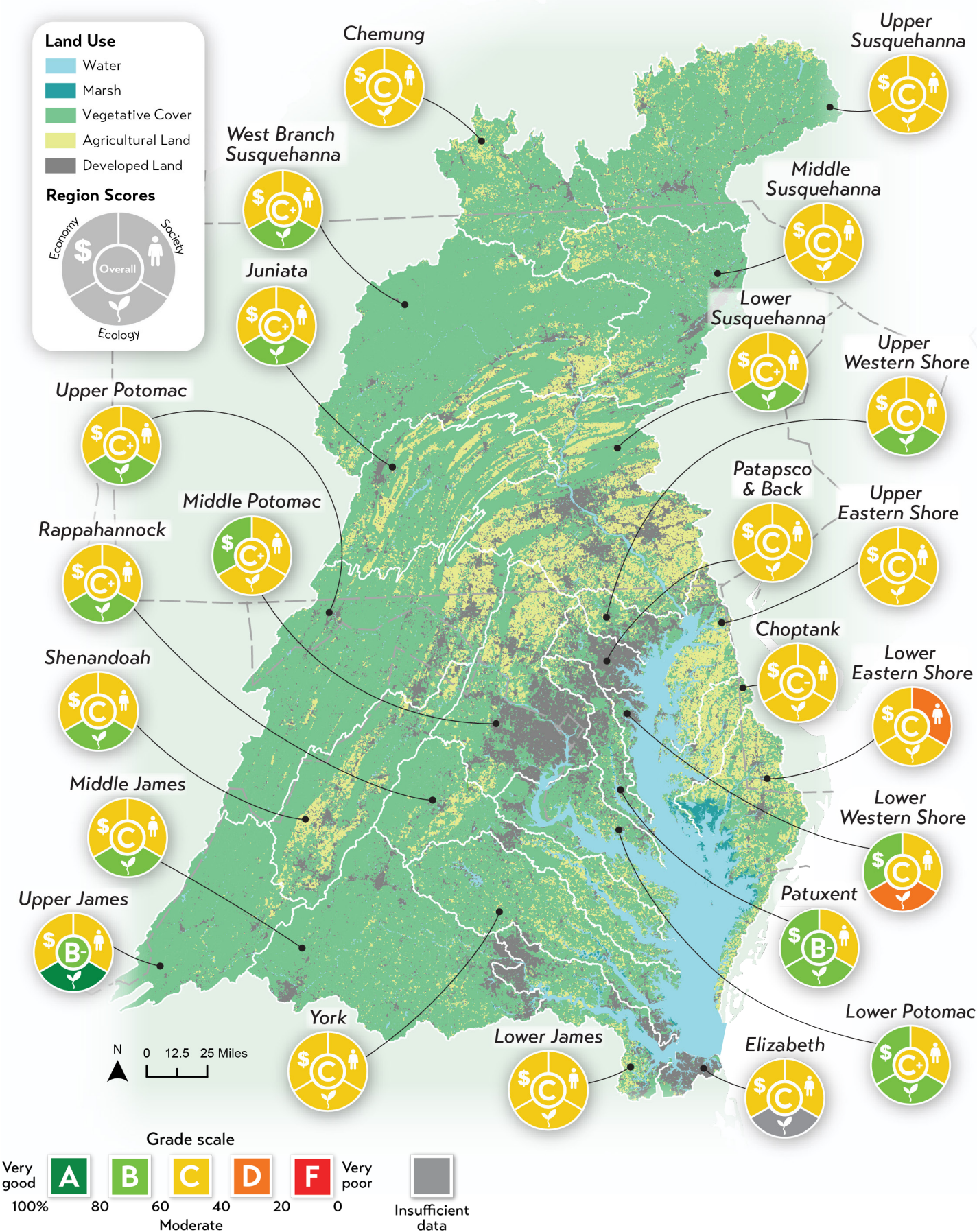
|                                                                                     | Indicator            | Score | Grade | Trend                                                                                 |
|-------------------------------------------------------------------------------------|----------------------|-------|-------|---------------------------------------------------------------------------------------|
|  | Dissolved Oxygen     | 90%   | A     |  |
|  | Chlorophyll <i>a</i> | 22%   | D-    |  |
|  | Benthic Community    | 45%   | C     |  |
|  | Aquatic Grasses      | 38%   | D+    |  |
|  | Total Phosphorus     | 80%   | A-    |  |
|  | Total Nitrogen       | 56%   | C+    |  |
|  | Water Clarity        | 18%   | F     |  |



# Moderate and poor conditions for most regions



# Chesapeake Bay Watershed scores C+



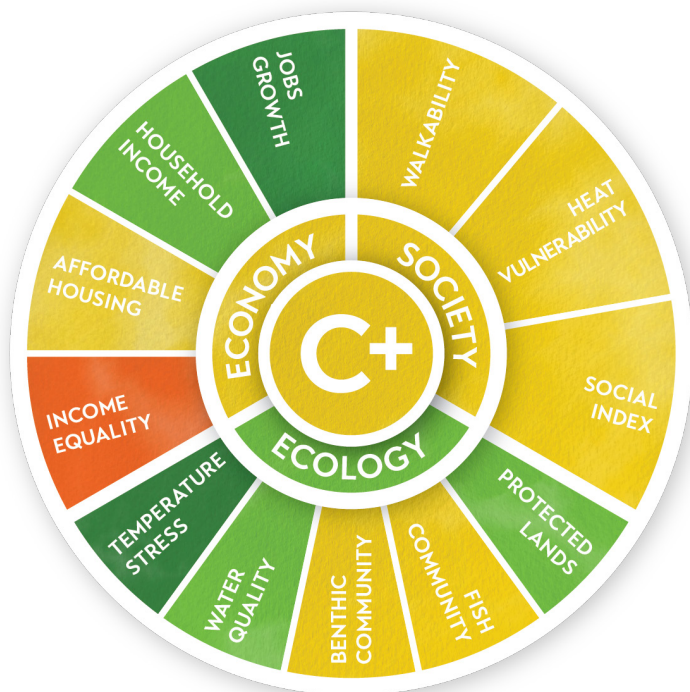
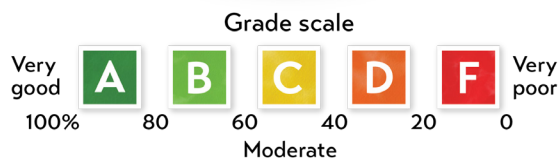
# Ecology scores well, but Economy and Society scores need improvement

Overall, the Chesapeake Bay Watershed scored a C+ (57%). This score is made up of indicators in three categories: Ecology, Society, and Economy. The highest-scoring category was Ecology, with a B- (64%). The Economy category followed with a C+ (55%). The lowest scoring category was Society, with a C (52%).

Most regions had C scores, with two regions scoring in the B range. The highest-scoring region was the Upper James, with a B- (61%). The Patuxent was the only other region with a B- score (60%). The two lowest-scoring regions were both on the Eastern Shore of Maryland: the Lower Eastern Shore region, which scored a C (45%), and the Choptank, with a C- (42%).

The lowest-scoring indicator was Income Equality, which scored a D (25%). The highest-scoring indicator was Jobs Growth with an A (87%). This means that although there are more jobs across the watershed, there are still strong disparities in the amount of income people are earning. The other Economy indicators were good and moderate. Household Income scored a B (65%) and Affordable Housing scored a C- (43%).

Society indicators were moderate overall; all three had C scores. Heat Vulnerability scored a C- (42%). This is a concern, because it means that communities may be under heat stress due to hotter air temperatures, less tree canopy cover, and more paved surfaces. Regions where there are cities had worse scores, such as the Elizabeth, Patapsco and Back, and Middle Potomac. Walkability and the Social Index did better both scoring a C+ (55% and 58%, respectively).



Indicators in the Ecology category had scores ranging from A- to C. The highest-scoring indicator was Temperature Stress, which scored an A- (84%). This new indicator for 2025 evaluates the suitability of water temperatures for fish and other aquatic species, and in most regions, conditions are good or very good. A few regions are experiencing Temperature Stress, such as the Juniata and the Middle Susquehanna. These regions support species that need colder water, such as brook trout. Fish Community was the lowest-scoring Ecology indicator, with a C (48%), the same as the previous year. The Water Quality index was updated in 2025 to include Total Nitrogen, Total Phosphorus, Turbidity, and Conductivity.



# Reinvigorating collaboration across the Watershed



The University of Maryland Center for Environmental Science (UMCES) and the Chesapeake Bay Foundation (CBF) convened a meeting to advance a shared vision for more inclusive, responsive, and collaborative socio-environmental reporting across the Watershed. The meeting served as a foundation to align scientific assessment with community priorities while promoting accountability and fostering connections among Bay leaders, practitioners, and knowledge holders. This network will leverage the credibility of longstanding report card frameworks and the creativity and lived experience of the community.

Moving forward, UMCES, CBF, and other partners are exploring new and collaborative approaches to the report card. We welcome others to join this effort to co-develop a more connected and actionable approach to restore the Chesapeake Bay. Contact [ian@umces.edu](mailto:ian@umces.edu) to get involved.

## The future of freshwater looks salty

There are over 100,000 miles of streams and millions of acres of wetlands, lakes, and reservoirs in the Chesapeake Bay region. These freshwaters supply drinking water; provide water for industry, power generation, and farming; and are home to a stunning diversity of plants and animals. However, these precious freshwater resources are at risk from a surprising source: salt.

The Chesapeake Bay Watershed's freshwater is becoming saltier. This issue, known as freshwater salinization, is caused by human activities, changes in rainfall patterns, drought, and sea level rise. Freshwater salinization is already widespread in the watershed, but is expected to get worse with increasing population and changing environmental conditions, like extreme weather.

The report card includes a conductivity metric in the Water Quality index this year, which can be a measure of salt. You can take action by using eco- and pet-friendly de-icers when preparing for snow. Salting roads and sidewalks is a significant source of freshwater salinization. You can also get involved in monitoring salt in your local freshwater through programs like Salt Watch with the Izaak Walton League of America ([iwla.org](http://iwla.org)).



## How can you help?



**In your home,** try eating invasive fish species like blue catfish and snakehead. Find ways to reduce and reuse household items by checking out resources at your library.



**On your property,** plant native plants, reduce fertilizer use, and use less salt on walkways in the winter.



**In your community,** connect with your neighbors and reach out to your elected officials about protecting the Bay.

## More research and support are needed to restore the Bay

The Bay and its watershed are a complex, interconnected system where changes in one area can have impacts hundreds of miles downstream. In addition to the well-understood threats, new challenges are emerging that must be understood before they can be addressed. For instance, water clarity has been declining over time, despite improvements in nutrient pollution. One potential cause is extreme weather, and understanding how storms affect the region will help managers make informed decisions.

Another area of research is the relationship between nutrients and water quality on the Delmarva peninsula. UMCES scientists are working with the Delmarva Land and Litter Cooperative to better understand these dynamics.

Continued support for the efforts of the Chesapeake Bay Program, researchers, community groups, and conservation organizations is vital to manage, protect, and restore the Bay and Watershed.



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The Chesapeake Bay Watershed is the land of many Native peoples, including the Chickahominy, Mattaponi, Monacan, Nansemond, Pamunkey, Rappahannock, Cheroenka (Nottoway), Patawomeck, Accohannock, Assateague, Nause-Waiwash, Piscataway, Pocomoke, Nentego (Nanticoke), Susquehannock, Shawnee, and Lenape.

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