Bay Barometer

Health and Restoration in the Chesapeake Bay Watershed (2014 to 2015)

What is it?

- Annual report on watershed health and restoration
- Retrospective summary of previously published indicators

Who is it for?

- Chesapeake Bay Program partners
- The interested public (especially students and teachers)

What does it look like?

- Clean design and simple structure
  - Watershed Agreement themes: Abundant Life, Clean Water, Protected Lands, Engaged Communities and Climate Change
- Two published pieces
  - Rack card (students and teachers)
  - Full report (partners)
- Comprehensive coverage of Watershed Agreement outcomes
  - Twelve are addressed with traditional indicators
  - Where indicators are not available, outcomes are addressed with highlights from the year's news

What does it say on the micro scale?

- Positive Trends:
  - Nitrogen, phosphorus and sediment loads (monitored data) and reducing nitrogen, phosphorus and sediment pollution (modeled data)
  - Attaining water quality standards (according to preliminary data)
  - Underwater grass abundance
  - Blue crab, American shad and juvenile striped bass abundance
  - Restoring fish passage, restoring wetlands, protecting lands and establishing public access sites

What does it say on the micro scale?

- Negative Trends:
  - Planting forest buffers

What does it say on the micro scale?

- News Stories:
  - Stream health and healthy watersheds
  - Forage fish and oysters
  - Toxic contaminants
  - Environmental literacy, citizen stewardship, diversity and local leadership
  - Climate change

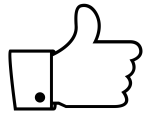
What does it say on the macro scale?

- The Chesapeake Bay is a complex and interconnected ecosystem.
- We have set ten priorities in our work to protect and restore the watershed. Making progress toward one goal will influence progress toward another.
  - Ex) Improvements in water quality can mean healthier fish and shellfish
  - Ex) A rise in environmental literacy can foster stewardship among citizens
  - Ex) Building resilience against climate change can create stronger communities for people and wildlife
- At times, our progress may appear slow. But it will take a steady effort from the entire partnership to save the nation's largest estuary.

Abundant Life: Habitats

Underwater Grasses

In 2014, there were an estimated 75,835 acres of underwater grasses in the Chesapeake Bay. This marks an increase of more than 16,000 acres since 2013 and an achievement of 41 percent of the 185,000-acre goal.



Wetlands

Between 2010 and 2014, 6,191 acres of wetlands were created or reestablished on agricultural lands. This marks a seven percent achievement of the 85,000-acre restoration goal.

Abundant Life: Habitats

Fish Passage

Progress toward the goal to restore historical fish migration routes is measured against a 2011 baseline of 2,510 stream miles open to the migration of fish. Between 2011 and 2013, 215 additional miles were opened to fish passage. This marks a 21.5 percent achievement of the 1,000-mile goal.

Forest Buffers

Between July 2013 and June 2014, about 114 miles of forest buffers were planted along the Chesapeake Bay watershed's rivers and streams. This is 786 miles below the 900-mile-per-year goal and the lowest restoration total of the last 15 years.

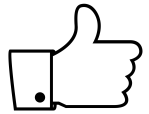
Abundant Life: Habitats

ⓘ Stream Health

Streamside fencing benefits livestock, waterways.

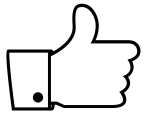
Preventing livestock from entering streams can improve the health of both animals and waterways. According to a report from the Chesapeake Bay Commission, practicing livestock exclusion reduces the amount of sediment and animal waste entering streams and of disease and injuries reported in livestock herds.

Abundant Life: Fish and Shellfish



Blue Crab Abundance

Between 2014 and 2015, the abundance of adult female blue crabs in the Chesapeake Bay increased from 68.5 million to 101 million. This number is above the 70 million overfishing threshold but below the 215 million target that would support a sustainable blue crab stock.



Shad Abundance

Between 2000 and 2014, American shad abundance as measured in the Chesapeake Bay increased from 11 percent to 44 percent of the goal. The Potomac River has shown the most consistent rise in returning shad, and the Rappahannock has also demonstrated notable highs.

Abundant Life: Fish and Shellfish

Juvenile Striped Bass Abundance

Between 2014 and 2015, the relative abundance of juvenile striped bass in the Chesapeake Bay increased. In Maryland waters, the abundance index rose from 4.06 to 10.67; in Virginia waters, the index rose from 11.37 to 12.

Abundant Life: Fish and Shellfish

ⓘ Forage Fish

Food for fish: Improving the forage base in the Chesapeake Bay.

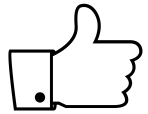
According to a report from our Scientific and Technical Advisory Committee, a better understanding of the aquatic forage base--which includes the bay anchovy, the mantis shrimp and several kinds of small, underwater invertebrates--could better support the management of predator species and of the Chesapeake Bay ecosystem as a whole.

ⓘ Oyster Restoration

Construction complete at Harris Creek oyster reef.

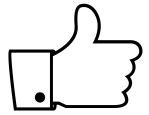
More than two billion oysters have been planted in Maryland's Harris Creek, marking the final phase of one of the largest oyster restoration projects in the world. Harris Creek is the first of ten waterways to be selected for oyster restoration under the Chesapeake Bay Watershed Agreement.

Clean Water



Nitrogen, Phosphorus and Sediment Loads

During the 2014 water year (October 2013 to September 2014), approximately 285 million pounds of nitrogen, 17.5 million pounds of phosphorus and 3.62 million tons of sediment reached the Chesapeake Bay. This is below the long-term average of both nutrient and sediment loads.



Estimated Pollution Reduced

Computer simulations show that pollution controls put in place in the Chesapeake Bay watershed between July 2009 and June 2014 lowered nitrogen loads delivered to the Bay by six percent, phosphorus loads 18 percent and sediment loads four percent.

Clean Water

Water Quality Standards Achieved

Results of the 2012-2014 assessment period indicate that 34 percent of the Chesapeake Bay and its tidal tributaries met water quality standards for dissolved oxygen, water clarity/underwater grasses and chlorophyll *a* during this time.

Clean Water

ⓘ Toxic Contaminants

PCBs widespread in watershed

According to data submitted in 2012 to the U.S. Environmental Protection Agency, 74 percent of the Chesapeake Bay's tidal waters are partially or fully impaired by toxic contaminants. A technical report shows polychlorinated biphenyls (PCBs) and mercury are particularly problematic in the region, and are considered widespread in severity and extent.

ⓘ Healthy Watersheds

Protecting forests invaluable in meeting pollution diet

Research conducted in Virginia and funded by the Chesapeake Bay Program's Healthy Watersheds Goal Implementation Team confirmed forests are highly valuable when it comes to meeting the Bay's "pollution diet." The study found that more than $100 million could be saved in the Rappahannock region if additional provisions to protect forests are put in place.

Protected Lands

Protected Lands

Between 2010 and 2013, close to 572,000 acres of land in the Chesapeake Bay watershed were permanently protected from development. This marks an achievement of 29 percent of the goal to protect an additional two million acres from the 2010 baseline, and brings the total amount of protected land in the watershed to 8.37 million acres.

Engaged Communities

Public Access Sites

Between 2010 and 2014, 86 public access sites were opened in the Chesapeake Bay watershed. This marks a 29 percent achievement of the goal to add 300 new access sites to the region, and brings the total number of access sites in the watershed to 1,225.

Engaged Communities

ⓘ Environmental Literacy

More than $1M spent on environmental education

In 2015, the National Oceanic and Atmospheric Administration directed almost $1.1 million toward environmental education in the Chesapeake Bay watershed. Fifteen projects received this funding through the Bay Watershed Education and Training (B-WET) program, and will offer experiential learning experiences in the classroom and outdoors to students in kindergarten through twelfth grade.

ⓘ Citizen Stewardship, Diversity and Local Leadership

New tool maps areas with potential environmental justice concerns

In June, the U.S. Environmental Protection Agency released a mapping tool that helps identify communities that may face a high risk of environmental harm. Called EJSCREEN, the tool combines demographic and environmental data to relate hazards like air pollution and toxic waste to factors like the percentage of a population that is low-income or minority. In its support of environmental justice, it could better target programs, policies and funding.

Climate Change

- Climate Monitoring and Assessment and Adaptation

Scientists improve predictions of climate's impact on streams.

New modeling techniques have allowed U.S. Geological Survey scientists to better predict how climate change will affect rivers and streams. Previous modeling techniques assumed water temperatures in rivers and streams would rise in a uniform manner, but new methods account for the effect that cool groundwater could have on warmer surface water.

Public Release Plan

- Media advisory and release
- Blog post and social media messages
- Printed copies mailed or otherwise distributed to:
  - Management Board
  - GIT and Advisory Committee Chairs, Coordinators and Staffers
  - Communications Workgroup
  - Education Workgroup

Date	Task	Person or Group Responsible
~~Nov. 19 to Dec. 1~~	~~Review text~~	~~Leadership, GITs~~
~~Dec. 1 to Dec. 9~~	~~Review text~~	~~MB, Comm. Workgroup~~
~~Dec. 3~~	~~Present to Comm. Workgroup~~	~~Margaret~~
Dec. 10	Present to MB	Margaret
Dec. 10	Final text to Stephanie	Catherine
Dec. 11 to 18	Draft first design	Stephanie
Dec. 21 to Jan. 4	Review first design	Leadership, GITs, Comm. Workgroup and Comm. Team
Jan. 4 to 6	Draft final design	Stephanie
Jan. 6 to 11	Review final design	Leadership and Comm. Team
Jan. 11 to 12	Incorporate final edits	Stephanie
Jan. 12 to 15	Prepare files and send to printer	Stephanie
Jan. 19 to 20	Review and approve proof	Leadership and Comm. Team
Jan. 20 to 22	Printing	
Jan. 26	Public release	