2005 State of the Bay

27

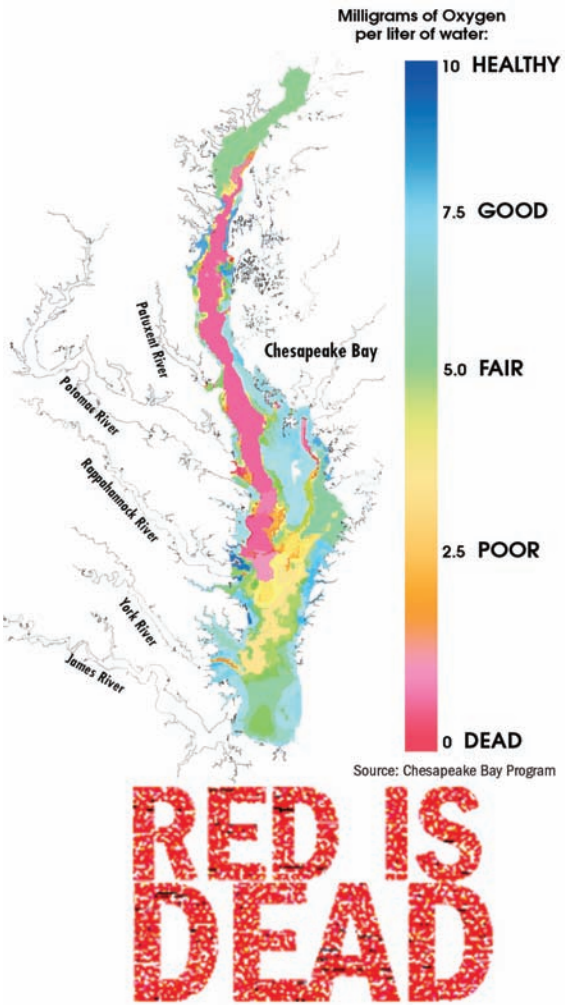
Health Index

CHESAPEAKE BAY FOUNDATION

Save the Bay

Record Dead Zone

The Chesapeake Bay and its rivers and streams are a national treasure. They are dying. As a result of pollution, the Bay, its tidal tributaries, and thousands of miles of rivers and streams in Maryland, Virginia, and Pennsylvania are on the notorious "dirty waters" list. The sixteen million people that live in the region and the diverse wildlife that depends on the Bay suffer as a result.



In August 2005, 41 percent of the Bay's main stem had too little oxygen to support a healthy ecosystem.

In June 2000, our region's leaders committed to saving the Bay by signing the landmark Chesapeake 2000 Agreement. The agreement called for a science-based plan to restore the Bay by 2010. River specific tributary strategies—roadmaps for reducing pollution—were developed for the 36 major basins in the watershed.

These plans are comprehensive. They are measurable. And, if implemented, they will save the Bay, leaving a Chesapeake teeming with life, full of fish and crabs that are safe to eat; a Bay fed by clean, clear water from rivers and streams; a source of beauty, recreation, and economic vitality for our children and grandchildren.

We should not lose sight of the fact that modest progress in saving the Bay has been made since its nadir in 1983. The pace of improvement is glacial, however, and has stalled, slipping a point from a high of 28 in 2000 and again in 2002.

This year, the state of the Bay remains unchanged at 27.

Without question, the Bay is in crisis. 2005 has been a year plagued by signs of bad water in the Bay and its rivers and streams. Fish consumption advisories remained in effect throughout the watershed once again, with Virginia issuing new

advisories for PCBs and mercury. The dead zone continues to damage critical resources. The amount of water with no oxygen in the Bay's main stem was among the worst on record this year, and more than 40 percent had low dissolved oxygen levels that were harmful to many types of aquatic life.

While underwater grasses increased in some areas of the watershed, inconsistencies in the resurgence suggest it is too early to mark a trend of long-term recovery. And though we saw more than one example of the potential for successful, large-scale restoration of our native oyster, elected officials have failed to provide the leadership and resources for restoration that is broad enough to make a systemic difference.

At this point in time, decades since the launching of the federal government's Chesapeake Bay Program, we should be seeing significantly improved water quality, not historic lows. CBF is committed to holding all levels of government accountable for fulfilling the signed commitments to clean water and providing the resources to attain it.

Reasons for Hope

In the nearly forty years that the Chesapeake Bay Foundation has been in existence, the population of the Bay has more than doubled from under eight million to over sixteen million people, with each person using more land to live than his predecessors. Yet, we have successfully stemmed the Bay's steady decline and have achieved modest improvement in the system.

Throughout the watershed, the efforts of upstream farmers and other landowners to plant riparian buffers and cover crops and fence livestock out of streams show early signs of improved water clarity downstream.

We have seen this year that public demand inspires political action. With the help of our 140,000 members across the watershed, CBF played an important role in several legislative victories which began in 2004 and accelerated in 2005. The passage of legislation to restore funding for open space protection in Maryland, upgrade sewage treatment plants Baywide, and help farmers address water quality problems in Pennsylvania represents the critical first steps in reducing the torrent of pollution poisoning the Chesapeake Bay and its rivers.

There is an enormous amount of work ahead if the goal of removing the Bay from the Clean Water Act's "dirty waters" list is to be attained. But one thing is certain. The Bay can be saved. Science has provided a blueprint for Bay restoration; the technology is available; and the public consistently voices its support. Saving the Bay is affordable and achievable in our lifetimes. When we succeed, the Chesapeake Bay will be a model of restoration for other complex environmental systems worldwide.

State of the Bay in 2005

POLLUTION

F/D
N P
N Score=13
P Score=20

F
Score=15

F
Score=12

D
Score=27

HABITAT

B+
Score=55

D-
Score=20

C+
Score=42

D
Score=29

FISHERIES

A+
Score=71

F
Score=3

C
Score=38

F
Score=12

27

A	EXCELLENT
B	GOOD
C	FAIR
D	POOR
F	CRITICAL

F 13 ↑ Nitrogen

+1 from 2004

D 20 ↑ Phosphorus

+4 from 2004

Nitrogen and phosphorus are the Bay's two primary pollutants, fueling enormous algal blooms that result in oxygen-deprived waters unable to support aquatic life. While the 2005 spring loads of nitrogen and phosphorus pollution in several river systems—particularly the Susquehanna—were higher than last year, pollution decreased enough during the summer to result in an overall improvement in our indicator scores for these pollutants.

The score for phosphorus improved more than the score for nitrogen because springtime pollutant loads were dominated by the Susquehanna River, which delivers relatively more nitrogen than phosphorus to the Bay. The primary sources of nitrogen and phosphorus pollution are agricultural, urban, and suburban runoff; sewage treatment facilities; and air deposition. Until there are the necessary resources and policies to reduce pollution from these sources, low scores for these indicators will continue to be the norm.

F 12 ↓ Dissolved Oxygen

-1 from 2004

In May of 2005, scientists predicted the Chesapeake would suffer one of the worst dead zones on record during the summer, based on the large amounts of nitrogen and phosphorus pollution that washed into the Bay this spring. Those predictions proved accurate. EPA reports show the volume of the Bay that was anoxic—having no oxygen—was among the largest in 21 years of monitoring. The dead zone extended further south than in most years, nearly reaching the mouth of Virginia's York River. Water with no oxygen will kill most aquatic animals.

2005 was also the third worst year on record for low oxygen levels. Low dissolved oxygen levels can impair growth and reproduction and stress fish, crabs, and other important species, making them vulnerable to disease.

To increase dissolved oxygen levels in the Bay and its rivers and streams and to decrease the size and frequency of dead zones, nitrogen pollution from major sources—chief among them are sewage treatment plants, runoff from agriculture and urban areas, and power plants—must be substantially reduced.

F 15 ⟷

Water Clarity

no change from 2004

Water clarity is measured by the amount of sunlight that can penetrate into the water. Ample sunlight is critical to the growth and survival of underwater grasses, which provide shelter for fish and crabs and food for migrating waterfowl. Poor water clarity is caused by sediment, algae, and other particles suspended in the water column. In spring 2005, high flows of polluted runoff resulted in below average water clarity, clouding the water along the main stem of the Bay to Kent Island.

During the summer, however, clarity improved enough in the Chesapeake and its major tributaries to keep the overall score unchanged from last year. Meeting the Bay states' 2010 water quality standards and a CBF health index that reflects a healthy ecosystem remain unattained goals.

D 27 ⟷

Toxics

no change from 2004

Watershed-wide, ongoing fish advisories warn people to limit their consumption of fish due to PCB and/or mercury contamination, an unsettling reminder that toxic chemicals continue to be a serious problem in the Bay watershed. Although federal law has banned PCBs since the 1970s, they still enter our waterways, primarily via stormwater runoff. Releases of mercury are ongoing with the largest source being air pollution from coal-fired power plants. Recent actions at the federal level targeted at reducing mercury pollution from power plants fall far short of what is needed to make our fish safe to eat. Consequently, CBF, other environmental groups, and several states have taken legal action to achieve more stringent standards.

According to the most recent data (2003) from the EPA, toxic chemicals released by industry directly to surface waters in the Bay watershed have decreased. Without additional steps to reduce the amount of toxic chemicals from all sources, however—principally air deposition, urban stormwater runoff, and industrial sources—chemical contamination will continue to degrade the Bay and its rivers and threaten human health.

B+ 55 ⟷ Riparian Forest Buffers

no change from 2004

Between 1996 and August 2004, approximately 3,800 miles of riparian forested buffers were restored in the Bay watershed. In 2005, thousands of volunteers, students, and teachers participated in restoration projects, including CBF's Farm Stewardship Program.

Unfortunately, these advances are offset by the haphazard development that continues to destroy protective buffers, allowing polluted runoff to damage streams. An extensive study conducted in key watersheds within the Chesapeake basin showed a small but ongoing loss of riparian forest buffers, underscoring the urgent need to ramp up protection and restoration of these crucial pollution filters.

C+ 42 ⟷ Wetlands

no change from 2004

In 2000, the Bay states committed to a "no net loss" of wetlands in their regulatory programs, which has helped stem the permitted losses of wetlands in the Chesapeake watershed. In addition, voluntary restoration programs have countered some of the wetland destruction occurring through illegal activities, such as improper delineation of wetlands, and environmental factors, including rising sea level.

In the future, major construction projects throughout the Bay region threaten hundreds of wetland acres. In Maryland, the Intercounty Connector, a proposed 18-mile freeway segment, would destroy almost 70 acres of high quality wetlands, much of those in the already stressed Anacostia watershed. In Virginia, the Army Corps of Engineers announced in July 2005 that it intends to issue the federal permit for the ill-conceived King William Reservoir. If this project moves forward, it would destroy more than 400 acres of pollution-fighting wetlands, making it the largest authorized wetland loss in the Chesapeake watershed in more than 30 years.

D- 20 ↑ Underwater Grasses

+2 from 2004

Last year, underwater grass acreage increased in northern Bay waters, from the Susquehanna to the Chester and Magothy Rivers. Evidence in 2005 suggests grass beds in the mid- and upper-Bay are dense and have continued to expand. In particular, scientists report an explosion of grasses on the Susquehanna Flats—an abundance not seen in that area since before Hurricane Agnes in 1972.

Meanwhile, lower Chesapeake grass beds continued to decline. Grass acreage in areas such as Mobjack Bay, for example, plummeted in 2004 to the lowest levels recorded since 1987. 2005 shows little evidence of improvement over the previous year's record low, and experts are raising new concerns of a prolonged eelgrass die-off.

While the overall increase in grass acreage Baywide is encouraging, the slow recovery of grasses in the southern sections of the Bay remains cause for concern because this area is critical habitat for blue crabs and a nursery for many species of fish.

D 29 ↔ Resource Lands

no change from 2004

Development of rural lands and open space continues to be a significant problem throughout the watershed. The consumption of working farmland and filtering forests by unmitigated sprawl—taking place in south-central Pennsylvania, Virginia's Shenandoah Valley and Piedmont regions, and Maryland's Cecil County, for example—continues at an alarming rate. The good news is that funding for land conservation received budget boosts in key Bay states, which should result in more protection for resource lands.

Specifically, Pennsylvania's Growing Greener II provided $297 million over six years for environmental programs, including land conservation. Maryland increased Program Open Space monies by $84 million for 2006, while Virginia set aside $10 million for land conservation. These investments must be matched by state and local public policy changes that would better manage growth and conserve open space and working farms.

A+ 71

Rockfish

-2 from 2004

Chesapeake rockfish (striped bass) were officially declared recovered in 1995. Today, their population is very strong and, therefore, receives the highest score of any of CBF's health indices. But the score has dropped for the second year in a row because of continuing signs that the condition of the population and the health of individual fish are impaired. The limited availability of menhaden, the preferred prey of rockfish, and habitat problems are likely contributors to the ill health of striped bass.

As a result of this growing concern, the multi-jurisdictional Atlantic States Marine Fisheries Commission recommended in August 2005—for the first time ever in the Chesapeake Bay—that limits be placed on the industrial menhaden fishery. Additionally, low dissolved oxygen and other water quality problems contribute to the physiological stresses affecting rockfish. Anglers are catching increasing numbers of underweight and/or sick stripers while monitoring reveals increasing percentages of fish infected with an often fatal wasting disease known as *Mycobacteriosis*.

C 38

Blue Crabs

no change from 2004

For the last few years, the Chesapeake's blue crab population has remained at the same relatively low level. Measures used to evaluate status and long-term stability of the crab population present a mixed picture. The spawning stock is below average and little progress has been made toward the 2000 goal set by the Bi-state Blue Crab Advisory Committee to double the spawning stock. Yet, reproductive success was above average in 2004 and while the harvest rate has come down slightly in the last few years, it is still above the target level.

Crabbing restrictions adopted two years ago have helped the population, but the risk of reproductive failure and stock collapse remains high. The lack of an organized Baywide body to coordinate management of this species is a major concern. Reduced underwater grass habitat, particularly in the lower Bay, may be contributing to higher consumption of crabs by striped bass and other predators. Low summer levels of dissolved oxygen also reduce crab habitat and make them more vulnerable to predation and harvest.

F 3

Oysters

+1 from 2004

Baywide, restoration programs have demonstrated promise, and commercial oyster harvests in both states increased dramatically in 2005. The improved harvest suggests an increase in oyster numbers. The spike is most likely weather-related: good reproduction in 2002 due to lack of rain and high salinity followed by improved survival due to wet weather and low salinity in 2003 and 2004. It is not yet known how these oysters will fare during the next dry spell, when diseases that have hampered oyster recovery become more widespread.

Scientists believe lower Bay oysters may be showing increased disease tolerance. The Lynnhaven, Lafayette, and Elizabeth Rivers in Virginia have established reef populations that have reproduced well in certain years. In Maryland, oyster survival has been high when direct disease management techniques have been applied in restoration programs. The prospects for oyster recovery in both states will improve if these successful techniques are applied on a larger scale.

F 12

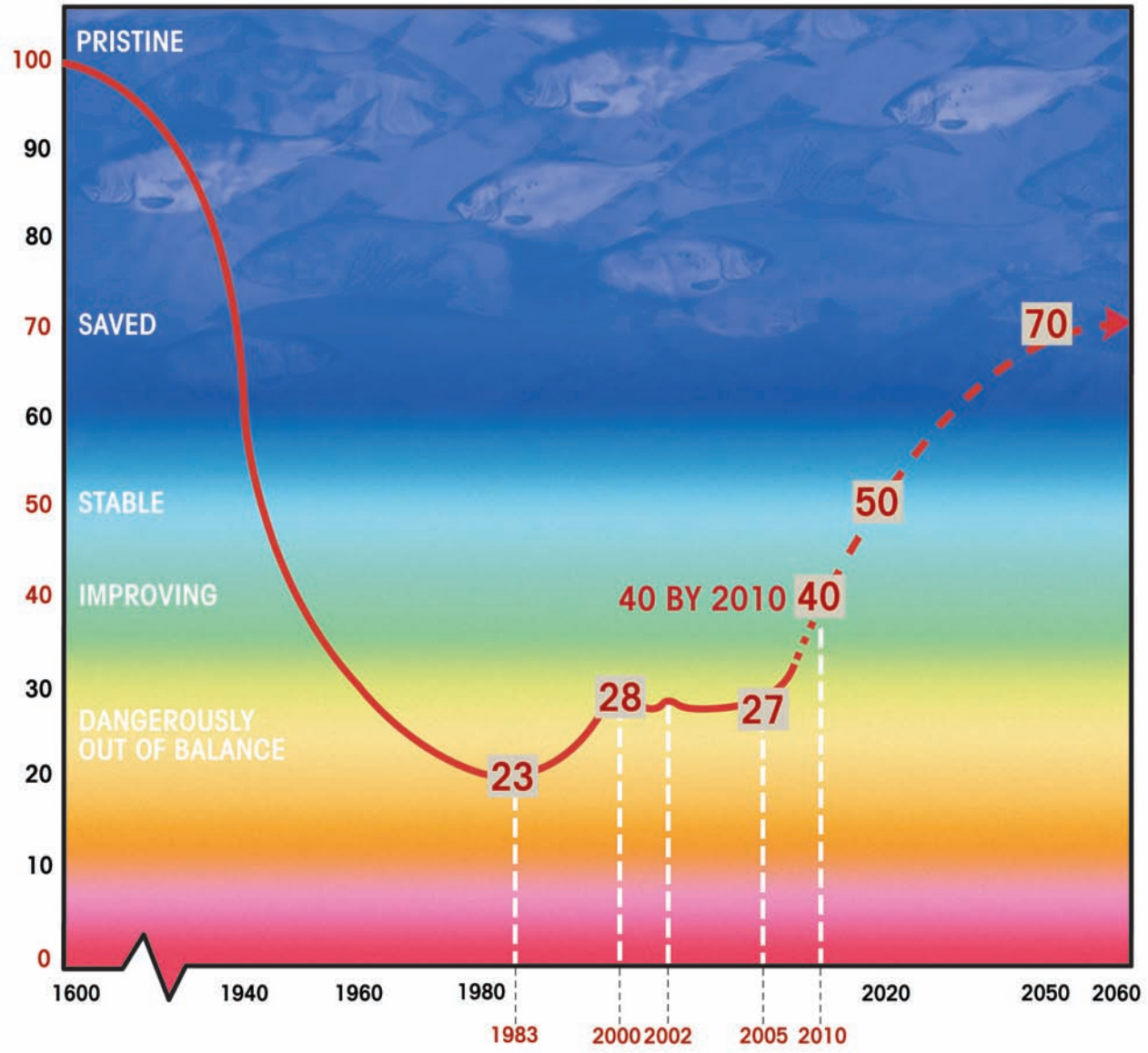
Shad

+2 from 2004

Shad restoration in Bay tributaries continues to show steady progress. While shad stocks are still dramatically below historic levels, new fish passages combined with stocking and management programs have played key roles in this evolving restoration success story. Each year, the state/federal fish passage program opens up additional historic spawning grounds in Chesapeake rivers and government biologists produce shad larvae in hatcheries for release in Bay tributaries.

Prohibiting the harvesting of shad in downstream waters, including the Atlantic Ocean, has aided recovery. In 2005, scientists observed a drop in numbers of returning adult shad to the Conowingo Dam, but this is likely due to natural population fluctuations. More troubling is the recent decline in the early 2000s in the percentage of wild shad counted in the returns, indicating increasing reliance on hatchery production. The Maryland juvenile finfish seine survey, however, showed substantial improvement in wild shad spawning in 2004 and 2005, which bodes well for the future.

The Chesapeake Bay Remains Dangerously Out of Balance



The health of the Chesapeake Bay is dangerously out of balance and has been for over three decades. This lack of progress in more than 30 years is especially staggering in the context of the public resources and attention focused on Bay health during this time. Clearly, what public officials have done to date is far from enough. Now is the time to hold government accountable for its failure to significantly reduce pollution, remove the Bay from the nation's list of "dirty waters," and restore our national treasure.

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How We Create Our Report

The State of the Bay Report is based on the best available information about the Chesapeake for indicators representing three major categories: pollution, habitat, and fisheries. Monitoring data serve as the primary foundation for the report, supplemented by in-the-field observations.

We measure the current state of the Bay against the healthiest Chesapeake we can describe—the Bay Captain John Smith depicted in his exploration narratives from the early 1600s, a theoretical 100.

Our number scores correlate with letter grades as follows:

70 or better	**A+**
60–69	**A**
50–59	**B+**
45–49	**B**
40–44	**C+**
35–39	**C**
30–34	**D+**
25–29	**D**
20–25	**D-**
Below 20	**F**

CBF is grateful to Aveda for its funding in support of the 2005 State of the Bay Report.

About the cover: A single rainstorm in April 2005 generated enough polluted runoff to cloud miles of rivers and streams and a vast portion of the Chesapeake Bay.

Satellite image courtesy of NASA, MODIS Rapid Response at GSFC
Watershed image courtesy of U.S. Department of Interior, U.S. Geological Survey (USGS)

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