

HOW WE CREATE OUR REPORT

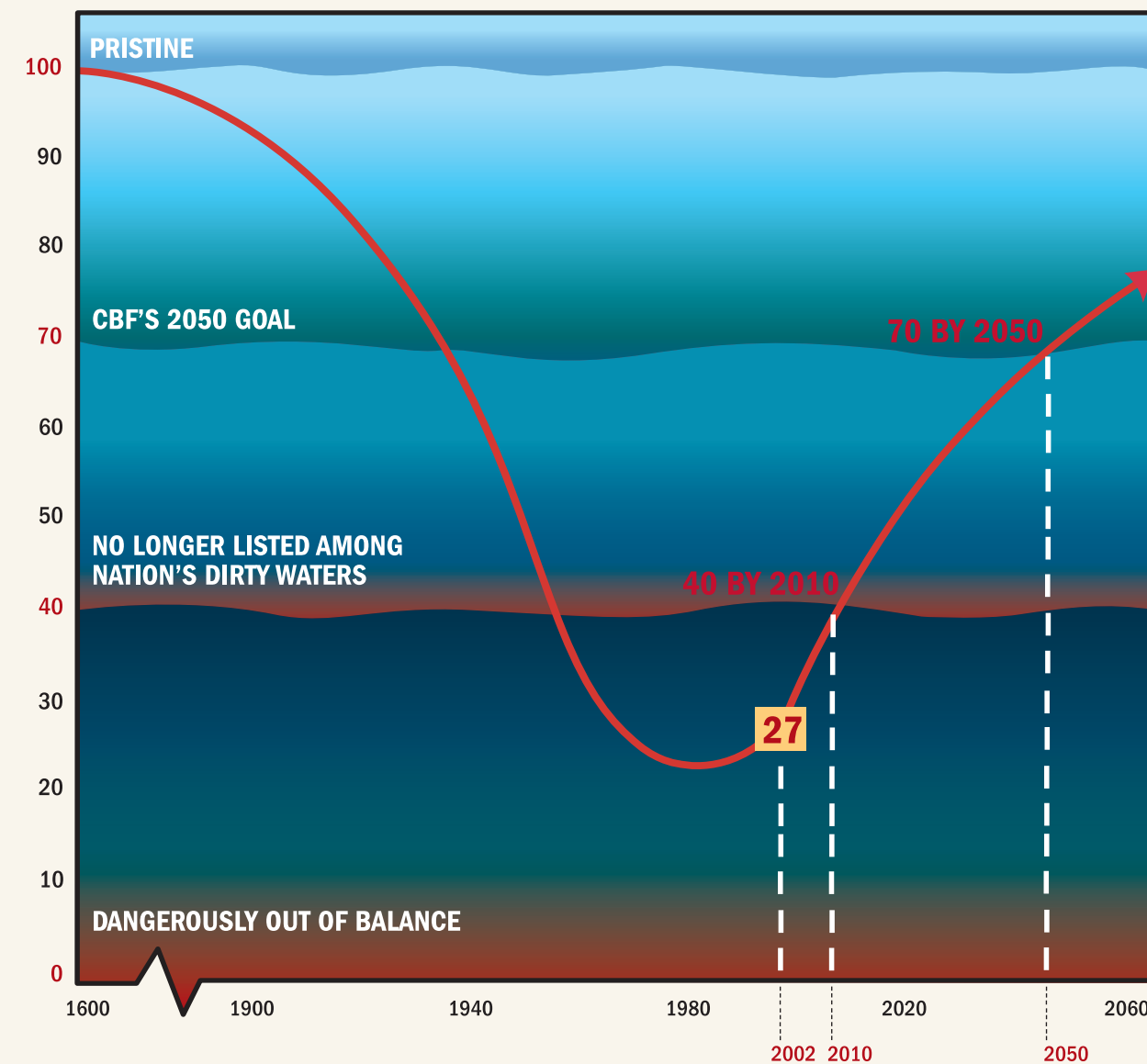
To create the State of the Bay Report, CBF scientists examine the best available current and historical information for indicators in three categories: pollution, habitat, and fish and shellfish. Although we seek advice from other Bay scientists, ultimately the best professional judgment of CBF scientists determines the value assigned each factor.

The current state of the Bay is measured against the healthiest Chesapeake we can describe—the rich and balanced Bay that Captain John Smith described in his exploration narratives of the early 1600s, supplemented by accounts of other early seventeenth-century visitors and some sophisticated scientific detective work. Smith explored the Chesapeake when clear water revealed meadows of underwater grasses, oyster reefs so prodigious they posed threats to navigation, and abundant fish. The Bay that John Smith saw, which was basically uninfluenced by human actions, rates 100 and is our benchmark.

The State of the Bay Report tells us how far we have fallen from Smith's Bay and how great our challenge is to create a "saved" Bay. With your help, and commitment from our political leaders, we will see a Bay that reaches 40 by 2010 and 70 by 2050.

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Average	27

THE BAY'S HEALTH REMAINS DANGEROUSLY OUT OF BALANCE



The Chesapeake Bay is listed among the nation's "impaired waters" because too much nitrogen and phosphorus pollute the entire Bay ecosystem. CBF is promoting efforts to halve the amount of nitrogen that enters the Bay through improved sewage treatment and methods to reduce nitrogen from running off farmland. CBF's plan would help the Bay reach a score of 40 by 2010. Reaching our goal would provide tremendous benefits to the plants, animals, and humans that depend on the Bay.



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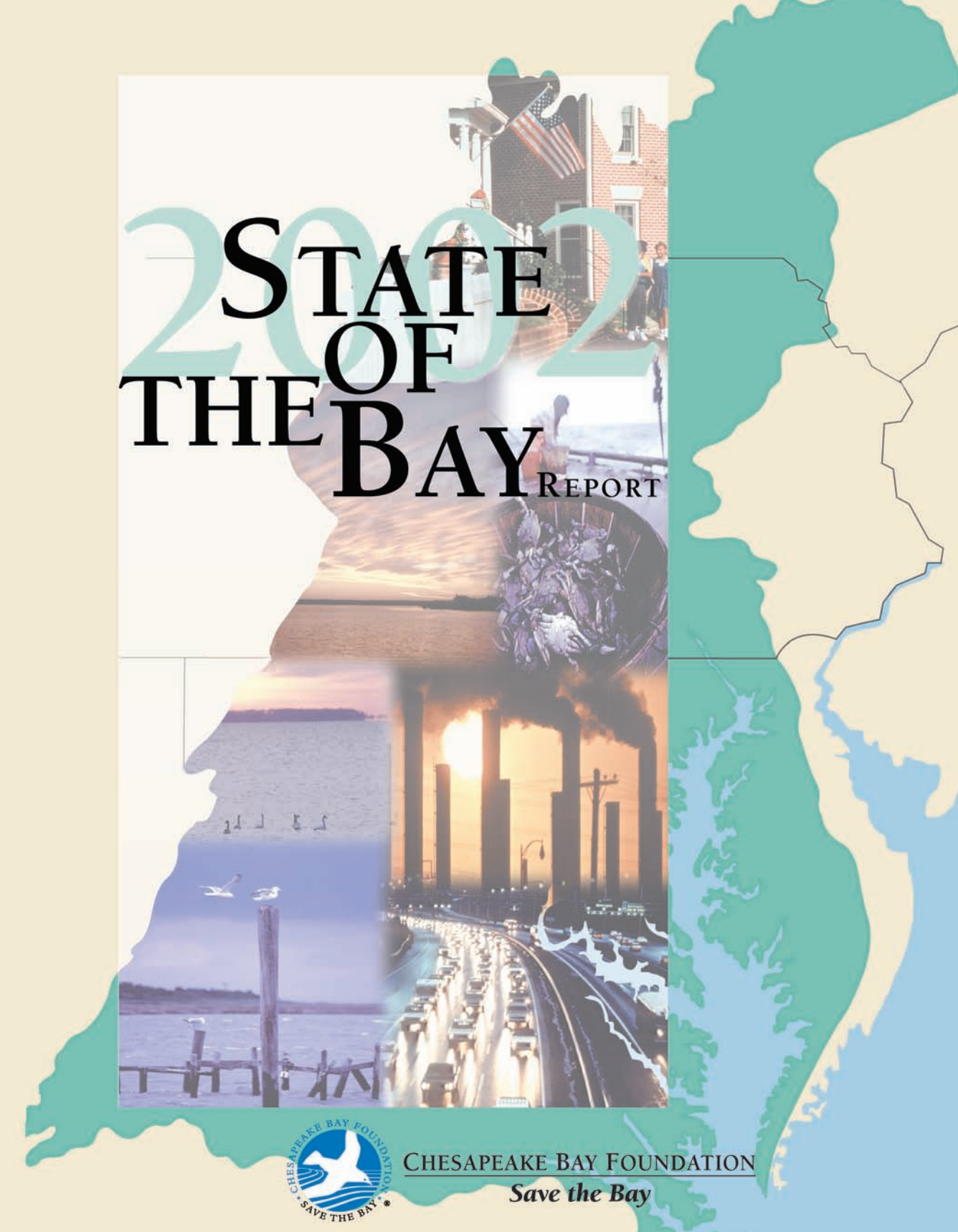
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HELP SAVE THE BAY, TAKE THE CHESAPEAKE CLEAN WATER PLEDGE TODAY

I pledge to take the following steps to support Chesapeake Bay Foundation's campaign to reduce the Bay's number one problem, nitrogen pollution.

- n When the Chesapeake Bay Foundation asks for my help, I will contact my local legislators or other decision makers (by e-mail, phone, or letter) at least three times in the coming year to urge them to support reducing nitrogen pollution.
- n I will take action in the coming year to reduce nitrogen pollution around my home by conserving electricity, driving less, and using less (or no) fertilizer.
- n I will join the growing movement of BaySavers by signing up for CBF's on-line Chesapeake Bay Action Network at savethebay.cbf.org.
- n I will encourage three of my friends to take the Chesapeake Clean Water pledge.

SAVE THE BAY



NITROGEN POLLUTION PREVENTS BAY IMPROVEMENTS

Each year, roughly 300 million pounds of nitrogen overload the Chesapeake Bay's waterways. Nitrogen enters the Bay system mainly through farmland runoff, airborne and land-based sources (power plants, vehicles, and sprawling development), urban and suburban runoff, and outdated sewage treatment plants that discharge nitrogen in concentrations six times what scientists say is healthy for the Bay.

Nitrogen pollution affects most of the Chesapeake Bay Foundation's (CBF's) thirteen Bay health index indicators. While this year's extreme drought slowed the flow of nitrogen to the Chesapeake, nitrogen pollution will again increase with normal rainfall because regulators and Bay states have not yet taken meaningful, long-term steps to fix the problem. **More than any other single factor, excess nitrogen is the reason that, in 2002, the Bay's health index showed no improvement.** The score remains at 27, the same as in CBF's 2001 State of the Bay Report and one point lower than in both 1999 and 2000.

In 2000, Bay leaders pledged to reduce nitrogen pollution sufficiently to remove the Bay from the U.S. EPA's list of impaired waters by 2010. CBF's best science estimates that nitrogen will have to be reduced by roughly 150 million pounds a year to hit that goal, which would result in a health index of 40.

"That a global treasure like the Chesapeake Bay is on the EPA's dirty waters list is a tragedy and a national embarrassment," said CBF President William C. Baker. "Now is the time for our leaders—and especially the U.S. EPA and signatory jurisdictions—to demonstrate their true commitment to bringing back the Bay. They should begin by aggressively supporting efforts to clean up our sewage plants and to reduce pollution from agriculture."

A BLUEPRINT FOR BAY IMPROVEMENT

Our vision for the future is a Bay watershed that is broadly recognized as a national treasure, is highly productive, and is in good health—as measured by water clarity, lack of toxic contaminants, and an abundance of natural filters in the water and on the land. To make this dream a reality, CBF has put together a "blueprint" for a saved Bay. We define that Bay as one with a health index of 70 and hope to reach it by 2050. As an interim goal, we see a substantive improvement from today's score of 27 to 40 by 2010 as ambitious but attainable.

To reach 40 by 2010 and 70 by 2050, CBF will lead the way to improve water quality, mainly by reducing nitrogen pollution as well as toxics. We must also preserve and protect our forests, farms, and wetlands, as well as important Bay fisheries such as rockfish, crabs, oysters, and shad. We must educate the next generation of Bay stewards and mobilize citizens throughout the watershed to act on the Bay's behalf.

While keeping in mind this comprehensive plan, one that restores natural filters as it tackles water pollution, CBF is now focusing on reducing nitrogen pollution. The way to do this is through sewage treatment upgrades—the first and easiest step to decrease nitrogen loads—and by working with farmers to reduce pollution from agriculture, the overall largest single source of nitrogen in the watershed.

With true commitment from all, we believe we can save the Bay by reaching our goals of 40 by 2010 and 70 by 2050. Our greatest gift to our children and the generations that follow them will be to invest in restoring our precious Bay. We should settle for nothing less.

HABITAT



Wetlands

42

[no change from 2001]

According to an authoritative review of historical wetland losses, the three Bay states have lost roughly 58 percent of their wetlands since colonial times. Despite stepped-up wetland restoration efforts in recent years, the wetland index has not increased over the past year due to continued threats from sea-level rise and from development, particularly in Virginia where the new nontidal wetland law has been hampered by bad court decisions.



Forested Buffers

54

[no change from 2001]

Roughly 54 percent of the basin's 110,000 miles of streams and shorelines are buffered by riparian forests. Restoration efforts have succeeded in reaching the Chesapeake Bay Program's initial 2010 goal for streamside forests, but the pace must be increased to see substantial progress in this index and benefits to the Bay. The extent of already established forest buffers lost to development or land clearing remains unknown and of much concern.



Underwater Grasses

12

[no change from 2001]

This index value indicates that 12 percent of the Bay's historical acreage is currently covered by underwater grass. This year's drought has reduced runoff, improved water clarity, and produced strong underwater grass growth in several areas of the Bay, such as the Severn River and Mobjack Bay. But the acreage of underwater grasses Bay-wide has not increased significantly enough to merit raising the index and is still minuscule relative to historic levels.



Resource Lands

30

[no change from 2001]

Estimates suggest that the loss of resource lands in the watershed are continuing at the fastest rate in history. Consequently, land that used to filter pollution is now funneling it into waterways and the Bay. In the Chesapeake 2000 agreement, Pennsylvania, Maryland, and Virginia agreed to reduce the annual loss of forest and farmland to harmful sprawl by 30 percent by 2012. Programs and policies to accomplish this goal have yet to be developed, adopted, or implemented Bay-wide, and the funding to permanently preserve 20 percent of the watershed from development by 2010 is endangered by budget shortfalls.

POLLUTION



Toxics

28

[-2 from 2001]

Among all threats to the Bay, toxic chemicals are the most difficult to measure. The index dropped this year because of the substantial increase in actual releases of chemicals to waterways in Virginia and Maryland (as reported by the EPA's *Toxics Release Inventory*) and the increased number of health advisories limiting fish consumption throughout the watershed due to toxic contaminants. The index value of 28 indicates that the Bay is deeply degraded due to chemical contaminants and is far from our goal of a toxics-free Bay.



Dissolved Oxygen

15

[no change from 2001]

The levels of *anoxia* (no oxygen) and *hypoxia* (extremely low levels of oxygen) we see today reflect both nutrient pollution and consequences of river flows that were probably changed forever following land clearing in the watershed. The index of 15 reflects the severely degraded levels of dissolved oxygen in the Bay watershed. Despite drought-driven nutrient improvements, the Bay's overall dissolved oxygen levels have not improved, and the Bay's "dead zone" may in fact be growing.



Water Clarity

16

[+ 1 from 2001]

The index of 16 indicates seriously degraded water quality when compared to the Bay of 400 years ago. Reliable reports of widespread underwater grasses that grew in nine feet of water only half a century ago are a sign of this deterioration. The increase of one point this year is due to a short-term, drought-driven improvement in water clarity. Experts agree that the Bay's water is as clear as it has been in recent years, but as soon as the rains come, nutrients and sediment will run off and adversely affect water clarity.



Nitrogen 16 Phosphorus 16

[both +1 from 2001]

CBF's original health index score of 15 for nitrogen and phosphorus was based on estimates that placed nitrogen loading to the Bay at seven times what it was in pre-colonial times. As a result of this year's drought, nutrient pollution loads to the Bay have decreased. Pollutants continue to be deposited on the land and will, of course, enter the Bay when the area receives rain. Based upon USGS trend analysis of nutrient loads to the Bay between 1985 and 1999, there is a downward trend in total nutrient loads. Nonetheless, the Bay still suffers from extreme pollution, and Bay-wide nitrogen reduction efforts have yet to produce new reduction goals that point to a long-term solution.

FISHERIES



Crabs

40

[-2 from 2001]

The Bay's blue crab fishery is suffering through its third consecutive year of poor harvest levels. With the crab spawning stock near a historic low and reproductive success continuing to decline, the crab population continues to be stressed by extremely heavy fishing and low levels of the underwater grass habitat critical to the species' life cycle. The scientific consensus is that the risk to the population is high and increasing. The poor status is tempered somewhat by optimism that the continuing implementation of the Bi-state Blue Crab Advisory Committee recovery strategy and an upturn in underwater grasses will start to boost the stock this year.

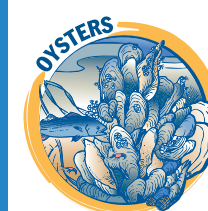


Rockfish

75

[no change from 2001]

Rockfish (striped bass) numbers and spawning stock biomass are higher than they've been since relatively good records started being kept in the 1960s. With each passing year, more older, mature fish broaden the population. A good year class in 2001 reinforces the positive assessment that the stock continues in a recovered condition. Still, there are few fish over 13 years old (rockfish can live for 30 years), meaning the stock is not fully stabilized. And a limited abundance of menhaden, a favorite food, appears to hamper fish growth. Lack of food and poor water quality are both factors in a troublingly persistent outbreak of *mycobacteriosis* in the population.



Oysters

2

[no change from 2001]

Although no definitive data exists, it has been estimated that oyster biomass in the late 1980s was only 1 percent of what it was before the heavy oyster harvest in the late 1800s; numbers of oysters in the Bay, at least as indicated by harvest, have declined since the late 1980s. Today's index of 2 represents an oyster population of less than 2 percent of its abundance in John Smith's time. Continuing restoration progress in some areas has been encouraging, but in others it has been hampered by disease mortality. The drought's elevated salinity levels caused oyster parasites to move farther up the Bay and its tributaries, so even modest survival in disease-plagued areas is encouraging. And the higher salinity promises to stimulate good reproduction in some areas. Although progress is being made on a Bay-wide oyster assessment, no reliable measure of the total population is yet in hand.



Shad

7

[+1 from 2001]

In the past year, encouraging spawning runs in several Bay tributaries reinforced optimism for continued recovery of Chesapeake shad stocks. Continuation of stocking efforts, achievement of the goal to reopen over 1,300 miles of Bay tributaries to migratory fish passage, and plans to open another 400 miles by 2010 all bode well for the future. The ongoing phase-out of the coastal intercept fishery is an important complement to restoration. Despite these positive trends, however, the Bay's shad population remains severely depleted.