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 fisheries. Although we seek advice from other Bay scientists, ultimately the best professional judgment of CBF scientists determines the value assigned each factor.

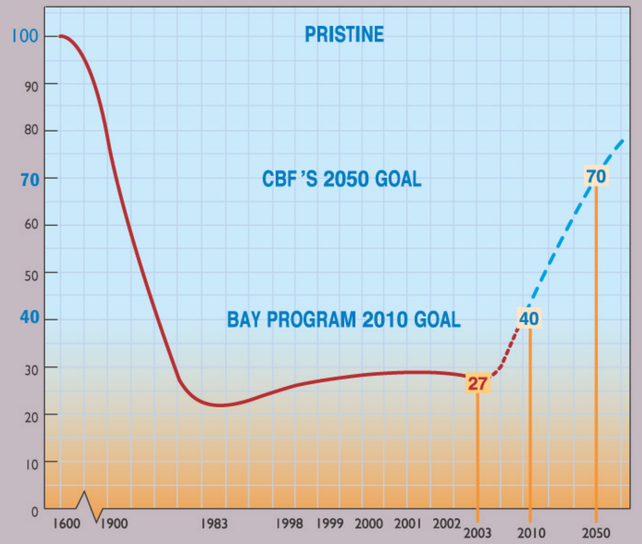
Please note that due to the latest scientific analysis, we have updated our baseline score for underwater grasses (see the grasses section under Habitat for more details). Consequently, CBF's *2002* State of the Bay Report score has been raised from a 27 to a 28 out of a possible 100.

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.

		5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100
Pollution		
Nitrogen/Phosphorus	13	▯
Dissolved Oxygen	12	▯
Water Clarity	14	▯
Toxics	28	▯
Habitat		
Forested Buffers	55	▯
Wetlands	42	▯
Underwater Grasses	22	▯
Resource Lands	29	▯
Fisheries		
Crabs	38	▯
Rockfish	75	▯
Oysters	2	▯
Shad	9	▯
Average	27	

The Bay's Health Remains Dangerously out of Balance and Is Getting Worse



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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Visit **www.cbf.org/action** and join the thousands of other online activists helping to protect and restore the Chesapeake Bay—sign up for the Chesapeake Bay Action Network today.

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The State of the Bay Report 2003

CHESAPEAKE BAY FOUNDATION
Save the Bay

The State of the Bay Report 2003

Since CBF's first State of the Bay Report in 1998, we have noted annually that the commitment and significant investments of the 30 years of the Chesapeake Bay Program have largely stemmed the steep decline of the Bay. Stabilizing the Bay has been no small accomplishment, particularly when one considers the 16 million people now packed into the Bay's 64,000 square mile watershed.

Yet, our goal is not merely to stem the decline of the Bay. Holding the line is unacceptable. CBF remains dedicated to *Saving* the Bay. Indeed, that goal has been adopted formally by federal, state, and local governments throughout the region.

Nonetheless, our Reports have pointed out that the Bay's health has languished at about one-quarter of its potential for the last six years. We have asserted that Bay restoration is stalled, particularly improvements in water quality. The Bay remains a system dangerously out of balance, and much of what little progress we have enjoyed has been the result of three years' drought or directed restoration efforts. We predicted a worsened Bay when drought relieving rains flushed excessive nonpoint source pollution into the Bay's watershed.

The past several months have borne this out.

In the 12-month period ending September 2003, the Bay region received about 50 percent more precipitation than average. While that has been good news for water tables, it has been very bad news for the Bay. During the summer, the Bay's "dead zone" was among the largest in the 20 years of Bay monitoring. We saw numerous fish kills, red tides, and harmful algal blooms, as well as beach closures.

This year, the State of the Bay score drops 1 point to a 27.

By any measure, this is dismal. And, we cannot find solace in this year's rains. Wet and dry years are cyclical, and a healthy ecosystem can accommodate natural fluctuations in weather patterns. That the Bay remains a system dangerously out of control, even getting worse, is a trend that does not bode well for a saved Bay. Scientists agree: the chief culprit degrading the Bay remains excessive nitrogen pollution, a multiplier harming most Bay life. Scientists also agree that most of the nitrogen pollution comes from three principal sources: sewage treatment facilities operating without modern technology, runoff from agricultural and developed lands, and airborne sources such as vehicles and power plants. In 2000, scientists and policy makers offered a blueprint to restore the Chesapeake Bay. While both state and federal governments have committed to implement that blueprint, water quality has worsened.

Even though the Bay continues to be degraded, the Chesapeake Bay Foundation is not discouraged. CBF is stronger than ever, armed with a bold plan of action called the Chesapeake Clean Water Campaign. In June 2003, Senators Mathias, Warner, and Sarbanes traveled throughout the watershed calling for redoubled commitments to restore the Bay. In August, CBF said if the states would not, or could not, take action to exercise their commitments, there should be a new Bay governance that would have the authority and the means to set firm limits to reduce pollution.

In September, the U.S. EPA confirmed that states indeed have the obligation to set permit limits that will reduce nutrient pollution in the Chesapeake Bay. "The Chesapeake Bay Foundation and the citizens of the watershed must hold our governors accountable and ensure that they enforce the laws to reduce nutrient pollution," CBF President William C. Baker said. "And if they do, we can Save the Bay."

SAVE THE BAY

Pollution

Nitrogen: 13 (-3 from 2002) *Phosphorus: 13* (-3 from 2002)

Nitrogen and phosphorus are the Chesapeake's two primary pollutants. The flows of both increased significantly in 2003 because of record heavy rainfall. In the two previous years of drought, most of the nitrogen and phosphorus applied to land from agriculture, air deposition (vehicle exhaust and power plants), and urban/suburban sources remained in place. The near record rainfall over the past 12 months mobilized those built-up nutrients, inundating the Bay ecosystem with one of the largest nutrient loads seen in 25 years.

The result is a three-point decline in both indicators. Last fall, the Chesapeake Bay Program adopted as a goal for 2010 an average annual target loading of 175 million pounds of nitrogen and 12.8 million pounds of phosphorus from all sources. To reach that goal, the Bay community must reduce nitrogen on average by 110 million pounds and phosphorus by 6 million pounds annually. To date, steps taken by Bay Program members have been insufficient to achieve these goals.

Dissolved Oxygen: 12 (-3 from 2002)

During the summer of 2003, Bay scientists found one of the largest "dead zones" ever recorded in the Chesapeake. About 40 percent of the water, stretching over 150 miles from Baltimore to the York River and covering an area of about 250 square miles in the Bay's main stem, suffered low dissolved oxygen levels in July, August, and September. Similar conditions also burdened deep-water areas and headwaters of many Bay tributaries.

In all cases, the primary cause was heavy algal blooms, fueled by the excessive levels of nitrogen and phosphorus. Nearly all of the Bay's aquatic life, from worms and crabs to perch, spot, and striped bass, depend on oxygen to survive. This dead zone took away much of their natural summertime habitat in the cooler deep waters of the Bay.

Water Clarity: 14 (-2 from 2002)

Water clarity is directly related to levels of polluted runoff and sediment washing into the Bay. The U.S. Geological Service charted above average flows this spring and near record flows this summer in the Susquehanna, the Potomac, the James, and virtually all of the Chesapeake's other tributaries.

The increased pollution of nitrogen, phosphorus, and sediment caused frequent algal blooms and significantly decreased water clarity that, in turn, caused difficult growing conditions for underwater grasses. The sediment also smothered habitat for oysters, clams, mussels, worms, and other bottom dwellers that form the base of the Bay's food web.

Toxics: 28 (no change from 2002)

Toxic impacts are the result of both decades of mishandling discharges and continued inputs. The most recently available Toxics Release Inventory (2001) identified 3.3 million pounds released into the watershed that year. This represents a modest 6 percent decline from the year before.

Meanwhile, widespread fish consumption advisories remain in place for all three states, because toxics such as PCBs and mercury, once introduced, remain in the Bay system for a very long time. These "legacy chemical" pollutants constitute a persistent problem for public health and the Bay.

Habitat

Forested Buffers: 55 (+1 from 2002)

Forested buffer restoration accelerated recently, thanks largely to a federal/state/private agricultural partnership built around programs such as the Conservation Reserve Enhancement Program (CREP), which pays landowners to establish conservation projects like forested buffers. Though final figures are not yet available for 2003, 2002 saw 1,151 miles of forest buffers installed, for a total of 2,283 miles since 1996.

Now forest buffer restoration must continue and even accelerate further. Although Chesapeake scientists estimate that an additional 30,000 miles is the minimum level necessary to restore stream health and achieve Bay restoration goals by 2010, the Bay jurisdictions are considering a goal of only 10,000 miles. This lowered goal is inadequate for the Bay's needs. The jurisdictions must provide adequate funding for additional buffers and ensure that existing buffers are protected from development impacts.

Wetlands: 42 (no change from 2002)

Although restoration programs have stemmed the overall loss of the Chesapeake watershed's wetlands, the Bay community must strengthen those efforts to significantly improve wetland resources and the water quality benefits they provide. Voluntary wetland restoration is averaging 2,500 acres a year, a pace that will meet the Bay Program goal of 25,000 acres by 2010. That replaces, however, only a small fraction of the approximately 2 million acres of historic wetlands that have been lost.

Strong wetland protection through regulatory enforcement is equally important. However, federal and state court cases and agency policies continue to threaten that protection. Virginia prevented large wetland losses by denying the King William Reservoir permit application, yet other large destructive projects in the watershed remain possibilities. Wetland losses due to sea level rise and illegal or unregulated activities offset many gains achieved through voluntary programs. Maryland's increased penalties for wetland violations may help to reduce some of these occurrences.

Underwater Grasses: 22 (adjusted for a new baseline—no change from 2002)

In previous years, CBF has based its State of the Bay score for underwater grasses on a widely accepted 600,000-acre baseline estimate of historic areas of those grasses. However, new analysis of past grass coverage and discussions with leading scientists have caused us to change the baseline for the Bay's maximum potential grass area to approximately 400,000 acres (estimates among experts range from around 200,000 to above 600,000).

Using the new scale, the score for underwater grasses this year remains unchanged. Many of the new grass beds seen over the last several years survived for part of this year but have struggled from the stress of increased pollution and sediment delivered by heavy rainwater runoff. The Bay Program's new goal for underwater grass recovery is 185,000 acres by 2010. The Program has defined water quality standards necessary in each tributary to meet this standard and has set a goal of planting 1,000 acres of underwater grasses by 2008 to jump-start recovery in selected areas.

Resource Lands: 29 (-1 from 2002)

Sprawl and the resulting loss of farms and forests to housing and commercial construction have continued around every urban area over the past year. Despite slow economic conditions, the Baltimore-Washington metropolitan region is one of the fastest-growing areas in the country. With the exception of one local jurisdiction in Northern Virginia, there have been no new governmental efforts to slow consumption of open lands in Virginia. Meanwhile, reductions in staff and priorities may threaten the viability of Maryland's Smart Growth programs.

In *Chesapeake 2000*, the Bay states committed to permanently conserve 20 percent (7.8 million acres) of the watershed by 2010. The vast majority was already preserved, but some 800,000 acres must still be protected from development. Recent budget cuts threaten to derail the effort. In Maryland, the land conservation budget was reduced by 34 percent. Virginia's lack of consistent funding for land conservation could account for shortfalls there in coming years. The Bay states' current indifference to curbing sprawl and projected difficulty in conserving resource lands to preserve the watershed's pollution-filtering capacity threatens to sabotage other water quality restoration efforts.

Fisheries

Crabs: 38 (-2 from 2002)

The blue crab fishery hovers near its historic low with a fourth consecutive year of poor harvests. Actions by the states to reduce the fishing rate have not yet yielded significant results. The spawning stock of mature female crabs increased slightly but is still well below the long-term average. Survey results indicate that reproduction has been poor for four years. The data suggest that this downturn is not a natural fluctuation. The risk to the crab stock under these conditions remains high.

Meanwhile, widespread low levels of dissolved oxygen in 2003 caused substantial losses of crab habitat. Numerous reports of dead crabs in pots suggest significant environmental impacts. Even more discouraging this year was the disbanding of the Bi-state Blue Crab Advisory Committee (BBCAC), which developed a landmark Bay-wide crab management strategy that has not yet been fully implemented. Crab recovery in the future will depend heavily on the states re-committing to a science-based, collaborative approach.

Rockfish: 75 (no change from 2002)

Rockfish (striped bass) continue to provide a success story with numbers and spawning stock biomass at historic highs. The very good reproductive success of the last decade shows every sign of continuing.

The main ongoing concern is the lack of large, very old fish, a condition that decreases the stability of the population. Though rockfish can live as long as 30 years, most of the spawning stock is 14 years old or younger. In addition, the ongoing health of the population seems to be limited by habitat, in particular poor water quality (chiefly due to low dissolved oxygen) and low availability of forage (especially menhaden). These stresses appear to have hampered rockfish growth and may contribute to the high incidence of *mycobacteriosis*, a wasting disease that is usually fatal to fish in aquaculture but whose significance in the wild is still unknown.

Oysters: 2 (no change from 2002)

While *Chesapeake 2000* set a goal to achieve a tenfold increase in native oysters by 2010, oysters continue to hover at historically low levels. Drought-induced high salinities in 2002 and continued transplanting of diseased seed oysters spread the disease Dermo to virtually all of Maryland's public oyster bars. As a result, upper Bay oysters suffered high mortality last year, but this year's wet weather may have moderated the disease threat. Upper Bay harvest reserve and sanctuary areas where disease-free seed oysters were isolated from diseased oysters show good survival and growth.

Despite last year's heightened salinities in Virginia waters, oyster disease mortality was modest compared to expectations. Spat set (production of young oysters) was very good in most areas and concentrated around sanctuary reefs. This "reproductive signal" and the disease management approach in Maryland suggest that larger scale restoration employing these techniques holds promise.

Shad: 9 (+2 from 2002)

Shad numbers are increasing in all the Bay's major tributaries, a sure sign that ongoing restoration efforts throughout the watershed are bearing fruit. The Susquehanna continues to lead the pack with its third best spring run in the three-decade-old program. Most notable this year is that several other rivers are showing similar upturns. The James and the Potomac both had surprisingly improved numbers of fish.

While the shad stock in the Bay is still a shadow of what it once was, it is clearly growing. This trend validates the restoration formula of improved fish passage and hatchery stocking, combined with reduced ocean harvest. Continued stocking programs, plans to remove Embrey Dam on the Rappahannock (which would reopen that river to spawning migrations), and the impending closure of the ocean intercept fishery bode very well for the fishes' future.