



CHESAPEAKE BAY FOUNDATION

The State of the

CHESAPEAKE

Bay Report 1999

Save the Bay

The Bay makes modest gains in 1999

“How’s the Chesapeake Bay doing?” It’s a question we are frequently asked. Our answer is that the Bay shows encouraging signs of improving health, yet it remains a system dangerously out of balance. Key systems are distressed and it operates at barely more than one-fourth of its historical potential.

This year the health of rockfish, shad, and oyster populations improved. But the blue crab population showed increased stress and the acreage of wetlands declined alarmingly. The devastating drought that parched the region dramatically reduced runoff from lawns and fields, reducing pollution. On a scale of 0 to 100, the Bay’s health rates a 28, a point better than it did in 1998.

The Bay’s health relies on intricate natural systems that filter water and provide habitats that sustain diverse and abundant life. CBF scientists measure its health by observing key components of these systems. They examine the best available historical and current information for factors in three categories: pollution, habitat, and fish and shellfish. Although they seek advice from other scientists who study the Bay, ultimately the best professional judgment of CBF scientists determines the value assigned each factor.

The Bay we know is measured against the healthiest Chesapeake we can describe—the rich and balanced Bay that Captain John Smith told of in his exploration narratives of the early 1600s. Smith explored the Chesapeake when clear water revealed meadows of underwater grasses, prodigious oyster reefs that posed a threat to navigation, and abundant fish. Ancient forests canopied rivers and streams. Native Americans lived lightly on the land. Modern science confirms many of Smith’s observations. Smith’s Bay, rating 100, is our benchmark.

When CBF first asked the citizens of the watershed to help save the Bay 32 years ago, our estuary was in trouble. Even as we worked to make improvements, the Bay’s health declined, bottoming out around 1983 with a rating near 23. The work of public agencies, private groups, and tens of thousands of volunteers has turned the tide. The success stories, such as the restoration of rockfish, are encouraging. Yet continued declines, such as the loss of more than 60 percent of Tangier Sound’s underwater grasses in just seven years, demonstrate how complex restoring the Bay is.

The State of the Bay Report provides a reference for how far we have fallen from Smith’s Bay and how far we must go to reach a “saved” Bay. A saved Bay is resilient enough to withstand the storms of nature and of humankind, and rich enough to nurture diverse cultures and contribute abundantly to our economy. We will never again see the Chesapeake as it was three centuries ago, with an index of 100; yet, we think a Bay with an index of 70 is achievable by 2050. We must remember how rich our Chesapeake Bay was, even 40 years ago, and not settle for a small fraction of what it can be.

Habitat



Wetlands

42 (-1 from 1998)

Basis: In 1998, wetlands covered approximately 43% of their acreage before European settlement.

Losses resulting from ditching in Virginia in the past year have reduced the index to 42.

Observations: Thousands of acres of wetlands have been destroyed in Virginia since last fall as a result of a court ruling (the "Tulloch" decision) that re-opened a loophole allowing the ditching and draining of wetlands. Hundreds of thousands more acres are at risk throughout the state. The ditching has erased encouraging restoration gains.



Forested Buffers

53 (no change from 1998)

Basis: Based on information from the Chesapeake Bay Program, CBF estimates that riparian forests buffer 53% of the basin's 110,000 miles of streams and shorelines.

Observations: Although hundreds of miles of streamside buffers have been restored through the efforts of many groups, including CBF, development continues to destroy streamside buffers. Inadequate laws and inadequate enforcement of existing laws contribute to the loss of buffers. Therefore, CBF believes that there is no evidence to justify an increase in the forested buffer index. Current restoration efforts can only succeed if there is additional effort made to preserve buffers.



Underwater Grasses

12 (no change from 1998)

Basis: Although the Chesapeake Bay Program's annual survey showed that underwater grasses covered approximately 11% of historical acreage in 1998 (down from 1997, with particular losses in Tangier Sound), that figure is tempered by field observations this summer that show strong grass increases in the Bay.

Observations: Although underwater grasses have increased substantially from the historic low levels of the early 1980s, the Bay has not regained the recent high set in 1993, and experienced significant losses in key areas last year. Gains made in upper Bay tributaries in 1998 were offset by the drastic decreases in Tangier Sound, which has lost 62% of its beds since 1992. This summer's observation shows better grass growth, presumably a result of the drought of 1999 which has reduced runoff. Underwater grass restoration, which is critical to the health of the blue crab fishery, depends directly on efforts to reduce excess nutrients and sediments.



Resource Lands

33 (no change from 1998)

Basis: This index is based on the current development rate in the watershed, with "100" the value at John Smith's time (when no development was occurring) and "0" representing an almost unimaginably rapid rate of development of 135,000 acres per year (a rate that, if it had been going on since John Smith's time, would have resulted in the entire 64,000 square mile watershed being developed by 1998). Currently, CBF estimates that we lose 90,000 acres of farmland and open space annually, which accounts for an index value of 33.

Observations: Despite recent efforts to conserve and protect essential lands, including more than 76,000 acres of wetlands and forests in Delaware and on Maryland and Virginia's Eastern Shore, the Bay's watershed is being converted from open space to developed land at an alarming rate. We face the challenge of ensuring that programs like Smart Growth are implemented effectively and advanced with new initiatives in all the watershed states.

Fisheries



Rockfish 75

(+5 from 1998)

Basis: Rockfish (striped bass) numbers and spawning stock biomass are higher than they have been since the 1960s (the dawn of relatively good record keeping), and greater age diversity is primarily responsible for the increased rating in this year's report. Nonetheless, concerns remain.

Observations: The striped bass population has recovered from near collapse in the mid-1980s due to cooperative, coastwide controls on harvest. Yet, questions about changes in rockfish's forage base remain because the number of menhaden, a main food source for rockfish, has decreased. This potential food web imbalance has led to concerns about malnutrition (a persistent disease afflicts many of the fish). Also, scientists gauging the age diversity of striped bass believe that greater numbers of older, larger fish are needed to maximize spawning potential. Pressure from recreational and commercial fishermen remains high, so continued vigilance is needed to ensure that rockfish populations are never again overfished.



Crabs 48

(-2 from 1998)

Basis: The Bay's blue crab population is far below its pre-exploitation level for two reasons: extremely heavy fishing and extremely reduced levels of the underwater grass habitat critical to the crab's life cycle.

Observations: As CBF reported last year, the excessive effort by crabbers threatens to further destabilize the last great Chesapeake Bay fishery. Only the crab's natural resilience prevents a lower number, and without a Baywide effort to significantly reduce the fishing effort, concern over the health of crabs will continue to grow. The excessive level of harvesting effort increases the risk from poor production of young crabs, and declines in underwater grasses also hinder the survival rate of juvenile crabs. Widely varying abundance from season to season and a smaller average crab size reduce the fishery's value.



Shad 3

(+1 from 1998)

Basis: The Bay's shad population remains severely depleted, despite the small increase from last year's rating. The index value of 3 indicates a population almost, but not quite, as depleted as oysters; for example, the current population of shad in the Susquehanna is only 3% of the restoration target for the river, let alone pre-exploitation levels.

Observations: Encouraging, modest improvements in shad numbers in the upper Bay and York River contrast with historic lows in most other areas. Increased interest in restoration (fish passages on the Susquehanna and James Rivers and volunteer efforts to jump-start spawning stock) and a planned phase-out of the ocean fishery give cause for guarded optimism.



Oysters 2

(+1 from 1998)

Basis: The Bay's oyster population is less than 2% of its abundance in John Smith's time.

Observations: Overall, the Bay's oyster population continues to suffer from disease, irregular reproduction, and a lack of suitable habitat. Yet, in 1999 CBF and its partners made encouraging progress to restore oysters in Maryland and Virginia by growing and transplanting more than 10 million oysters onto reefs throughout the Bay. This year's rating of 2 reflects those efforts. Partnerships among state and federal resource agencies, private conservation groups, and citizen participation in oyster restoration represent the best hope to increase oysters and restore reefs as well as raise awareness about the value of oysters to the Bay system.

Pollution



Toxics 30

(no change from 1998)

Basis: The index of 30 indicates a degraded Bay, far from the toxics-free benchmark.

Observations: During the past 15 years the tonnage of reportable industrial discharges of toxic materials from industries has declined. However, there is no evidence of a Baywide trend towards lower toxics levels. New reports from the Chesapeake Bay Program indicate that the impacts of toxic chemicals are more widespread than previously thought. Overall, regulatory and monitoring systems remain insufficient to achieve significant reductions. CBF believes that both widespread adoption of “zero discharge” goals and commitments to actual reductions in the use of toxic compounds are needed to significantly reduce the Bay’s levels of toxics.



Nitrogen 16 Phosphorus 16

(both up +1 from 1998)

Basis: Last year’s index was based on the estimate that nutrient loading to the Bay is currently 7 times what it was in pre-colonial times. This year, our ratings for both nitrogen and phosphorus have improved slightly because the drought has reduced runoff and stream flows, resulting in less nitrogen and phosphorus reaching the Bay. This improvement is likely to reverse, however, when rains come and nutrients, now held in the dry soils, quickly enter the Bay.

Observations: The Bay’s health is compromised by pollution from nitrogen and phosphorus from a variety of sources, including air pollution, sewage treatment plants, and agriculture. CBF is encouraged by a new law in Virginia designed to reduce the flow of nitrogen and phosphorus from large-scale poultry operations and by nutrient management laws in Pennsylvania and Maryland. But despite this year’s slight improvement, there is not yet a Baywide trend towards reduced nitrogen and phosphorus levels.



Water Clarity 16

(+1 from 1998)

Basis: The index of 16, despite a drought-driven increase of 1 point, indicates poor water clarity; as an example of how far water clarity has declined, there are reliable reports of widespread underwater grasses that grew in 9 feet of water as recently as a century ago.

Observations: Water clarity is an indicator of nutrient and sediment loading to the Bay. Excess nitrogen and phosphorus levels in the Bay result in unbalanced algae growth that clouds the water. Nutrient reduction is critical to the improvement of water clarity. This year’s drought has reduced runoff and resulted in clearer water in some places. Yet despite this sort of variation from year to year, water clarity continues to show no trend to improvement. Although erosion and sediment control programs are in place, they are not adequately enforced. In addition, losses in the Bay’s forested buffers, wetlands, and underwater grasses have reduced the Bay’s ability to filter nutrients.



Dissolved Oxygen 15

(no change from 1998)

Basis: Today’s widespread areas of anoxia (no oxygen) and hypoxia (low oxygen) reflect both excessive nutrient inputs and consequences of river flows that were probably changed forever by land clearing.

Observations: Average dissolved oxygen levels are still severely degraded due to excessive nutrient loads. Although variations in weather patterns from year to year can lead to larger or smaller “dead zones” in the Bay, there is no evidence of any trend towards Baywide improvement. Fish kills associated with the drought of 1999 serve to remind us of the direct link between reducing nutrient pollution in the Bay and

CBF's Goals for a Healthier Bay by 2010

As the new century begins, a fundamental rethinking of the efforts to restore the Bay is underway. Are the goals, programs, policies, laws, and regulations in place that are necessary to save the Bay? The Chesapeake Bay Program, the government partnership working to clean up the Bay, recently asked the public what it would take to restore the Bay, focusing on the next decade. CBF called on the Bay program to set the following goals for the elements of our report card, goals that we believe would take the Bay's health to at least a score of 50. We also provided them a plan of action that we believe is needed to achieve these goals. These 2010 goals advance goals set by CBF for 2005. For copies of our action plan and goals, please contact the Chesapeake Bay Foundation at 1-888-SAVE BAY.

Wetlands 2010 GOAL: The annual loss of existing wetlands should be reduced by 75%, and 125,000 acres of wetlands should be restored, using 1995 as a baseline.

Forest Buffers 2010 GOAL: The annual loss of existing streamside forest buffers should be reduced by 75%, and 5,000 additional miles should be restored, using 1995 as a baseline.

Underwater Grasses 2010 GOAL: Underwater grasses should cover 225,000 acres in the Bay and its tributaries.

Dissolved Oxygen 2010 GOAL: Dissolved oxygen levels should be adequate to support underwater life in all parts of the Bay. This means an oxygen level of at least 5 parts per million in spawning and nursery areas and at least 3 parts per million in other areas.

Resource Lands 2010 GOAL: The current rate of land development should be reduced by 50 percent—from an estimated 90,000 acres per year to 45,000 acres per year; 500,000 additional acres of farms and forests should be protected from development forever.

Toxics 2010 GOAL: The amount of toxic substances entering the Bay from all sources should be reduced by 50% from 1995 levels.

Water Clarity 2010 GOAL: Water should be clear enough to support underwater grasses at a depth of 6 feet.

Nitrogen and Phosphorus 2010 GOAL: Total nitrogen and phosphorus loading to the Bay (including air deposition) should be permanently reduced by at least 50% from 1985 levels.

Blue Crabs 2010 GOAL: The Chesapeake Bay blue crab population should be restored to the size and composition of the 1960s, when there were substantially greater numbers of larger and older crabs.

Rockfish 2010 GOAL: The current, restored level of the Chesapeake Bay striped bass population should be maintained, but the number of larger, older fish should be increased so that a balanced, natural age-class distribution is achieved and spawning potential is maximized.

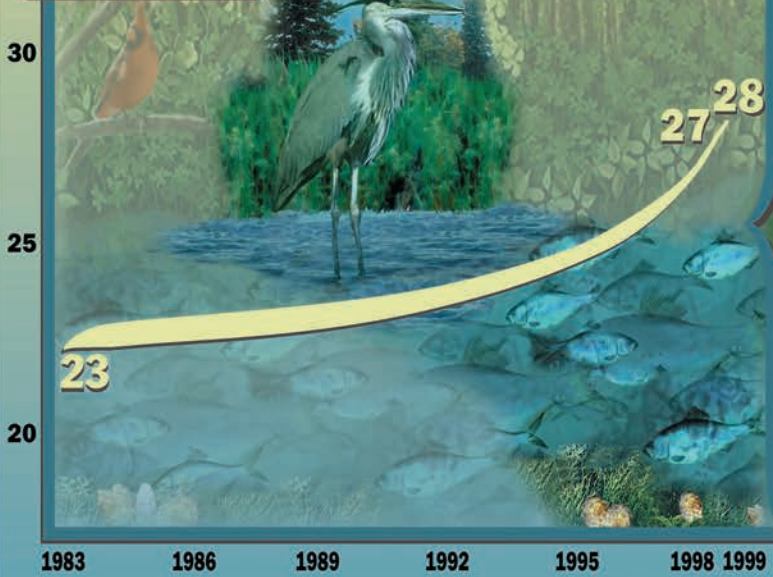
Oysters 2010 GOAL: 10% of the Bay's traditional oyster grounds should be set aside as sanctuaries that incorporate 1,000 acres of rebuilt three-dimensional reefs. Another 10,000 acres of oyster grounds in the vicinity of the sanctuaries should be rehabilitated as harvest bars open to watermen.

Shad 2010 GOAL: The ten largest Chesapeake Bay tributaries should each have spring shad runs sufficient to support fisheries without jeopardizing the continued growth of shad populations.

The State of the Bay 1999



Today



Rockfish	75
Forested Buffers	53
Crabs	48
Wetlands	42
Resource Lands	33
Toxics	30
Phosphorus	16
Nitrogen	16
Water Clarity	16
Dissolved Oxygen	15
SAV	12
Shad	3
Oysters	2

This State of the Bay Report is intended to provide a reference point for how far we have fallen from the old Bay, and how far we have to go to reach the saved Bay.

With more than 80,000 members, the Chesapeake Bay Foundation (CBF) is the largest nonprofit conservation organization working solely to Save the Bay. Founded in 1967, CBF employs a staff of 150 and is headquartered in Annapolis, Maryland. It has state offices in Maryland, Pennsylvania, and Virginia. CBF's programs focus on environmental education and resource protection and restoration.

For more information contact CBF's Public Affairs office at 1-888-SAVEBAY.



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