



CHESAPEAKE BAY FOUNDATION
Saving a National Treasure

REPORTS



Angling for Healthier Rivers

The Link Between Smallmouth Bass Mortality and Disease
and the Need to Reduce Water Pollution in Chesapeake Bay Tributaries

Summary May 2013



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This is a summary of CBF's April 2013 report, *Angling for Healthier Rivers*. The full report can be found online at cbf.org/smallmouthbass.

A “perfect storm” of pollution, parasites, warming water temperatures, and endocrine-disrupting chemicals is threatening one of the Chesapeake Bay region’s most popular sport fish, smallmouth bass.

CBF’s recent report, *Angling for Healthier Rivers*, details how smallmouth bass have suffered disease, die-offs, and sexual abnormalities over the last decade in five Bay tributaries: the Susquehanna River in Pennsylvania; the Monocacy River in Maryland; the South Branch of the Potomac River in West Virginia; and the Shenandoah and Cowpasture Rivers in Virginia.

Smallmouth bass are beloved by freshwater anglers because they are spectacular fighters. They are beautiful fish, often with a shimmering bronze or golden color, red eyes, vertical stripes, and sunburst patterns on the side of their heads.

“Smallmouth bass is one of the great sport fisheries,” said CBF President Will Baker. “But in the Susquehanna and other rivers in the region, smallmouth bass are in serious trouble. The good news is that implementing the Chesapeake Clean Water Blueprint can make a difference.”

Although the problems afflicting smallmouth bass are complex and still only partially understood, one factor is clear and can be controlled. Reducing phosphorus and nitrogen pollution to meet the Clean Water Blueprint will help reduce stress on smallmouth bass and other fish, even as it improves water quality for everyone who enjoys the Bay’s rivers and streams.

Fishing for smallmouth bass is important for the region’s economy, responsible for about

5,700 jobs and \$630 million annually in sales of boats, fishing gear, and other goods in Pennsylvania, Maryland, Virginia, and West Virginia, according to the report.

The report explains that smallmouth bass are intolerant of pollution, and as such are often likened to a “canary in a coal mine” by providing scientists with a reliable gauge of water quality.

John Arway, Executive Director of the Pennsylvania Fish and Boat Commission, said that other freshwater fish might also be suffering die-offs like the smallmouth bass. But fisheries managers wouldn’t necessarily

know about the problems in these other species, because they are not as popular among anglers and therefore as closely monitored as smallmouth bass.

“I am truly concerned that I’ll be Director when the last bass is caught out of the (Susquehanna) River,” said Arway, in the CBF report.

Catch rates of smallmouth bass in the middle Susquehanna River fell by 80 percent between 2001 and 2005, and have not recovered since. This is largely because smallmouth less than a year old are dying at high rates, according to the report.



A. SHIELDS/PENNSYLVANIA FISH AND BOAT COMMISSION

Nitrogen and phosphorus pollution contribute to a “perfect storm” of problems that are killing smallmouth bass. This smallmouth bass, caught in Pennsylvania, suffered from gill erosion.

CBF joined with the Pennsylvania Fish and Boat Commission and other allies in calling on the Pennsylvania Department of Environmental Protection and U.S. Environmental Protection Agency to designate the Susquehanna River as “impaired” with pollution under the federal Clean Water Act. This designation would prioritize federal and state resources on creating a plan to clean up the river and save the bass.

Research Fisheries Biologist, Dr. Vicki Blazer, who helped with the report, concluded that phosphorus and nitrogen pollution, rising water temperatures, and a variety of endocrine (hormone)-disrupting chemicals appear to be playing roles in weakening the immune systems of the fish, making them more vulnerable to naturally occurring bacteria, viruses, and parasites.

“It’s almost like you reach the perfect storm situation,” said Dr. Blazer in the CBF report. “There have been stressors and smallmouth bass have been able to overcome them or deal with them. But eventually, they get to a point where they cannot deal with them anymore.”

Some of the worst problems with the fish have been in the Susquehanna River. Twelve of 24 monitoring stations along the river and its tributaries had average levels of phosphorus pollution between 2007 and 2011 that were among the worst in the Chesapeake Bay watershed. Eleven of the sites had nitrogen pollution levels that were also high, according to the CBF report.

Scientists believe that phosphorus and nitrogen pollution may be contributing to fish deaths and diseases in two ways. The first is by spurring the growth of parasites (myxozoans and trematodes) and their hosts (worms and snails). The second is by feeding algal blooms that raise pH levels and lower oxygen concentrations, stressing smallmouth bass.

Fortunately, state and local governments can reduce these pollutants by investing in stormwater-control projects, upgrades to wastewater treatment plants, and programs to fence cattle out of streams. Cleaner rivers will give these valuable sportfish a sporting chance to live.

▶ To read the report, visit cbf.org/smallmouthbass.



Smallmouth bass live in many rivers and streams. Above in red are waterways in the Chesapeake Bay region where the fish have suffered fish kills, disease, and sexual abnormalities over the last decade.



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HOW THE REPORT WAS COMPILED:

Chesapeake Bay Foundation Senior Writer and Investigative Reporter Tom Pelton wrote the report after interviewing smallmouth bass biologists and anglers, reading scientific journal articles, and reviewing reports and data from federal and state agencies. The report was then reviewed by Dr. Vicki Blazer, Research Fisheries Biologist with the U.S. Geological Survey; John Mullican, Western Region, District II Manager, Inland Fisheries Division of the Maryland Department of Natural Resources; and Geoff Smith, Susquehanna River Biologist with the Pennsylvania Fish and Boat Commission. Thanks also to Michael Langland and Scott Phillips of the U.S. Geological Survey for water pollution data and to Dr. Douglas Lipton, Program Leader of Sea Grant Programs at the University of Maryland College of Agriculture and Natural Resources, for guidance on economic impact figures. (Designed by Chelsea Hachey.)

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The Chesapeake Bay's 64,000-square-mile watershed covers parts of six states and is home to more than 17 million people.