## WATERED DOWN

Americans haven't figured out that pollution control is an expensive investment that prevents far greater expense. And with the fish, wildlife, recreational and health benefits that come with pollution control, it provides a huge return to society. We all want clean water but apparently not enough to pay for it.

## **By Ted Williams**

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**In 1972** congress enacted the Clean Water Act, bold legislation that was going to make all waters of the United States fishable (safe for fish eating) and swimmable by 1983, then end all pollution by 1985.

The law was born of frustration. Pollution control by state wasn't working. Municipalities were resisting modernizing their sewage-treatment plants, arguing that major investment was pointless until industrial sources were controlled. And industry argued that sewage pollution would render such expenditure a waste. In 1969 at least 41 million fish (and doubtless many more that were never seen) died in a record number of fish kills. The same year Cleveland's Cuyahoga River caught fire, providing Randy Newman with the lyrics to his memorable song "Burn On." About 65 percent of the waters in the contiguous states were neither fishable nor swimmable.

The Clean Water Act authorized the Environmental Protection Agency (EPA) to set limits on pollution by awarding discharge "permits." Under the "polluter pays" concept, industry was required to pick up the tab for treating its waste, but municipalities got huge grants to upgrade sewage plants from primary treatment (removing solids) to secondary (substantially reducing biological content).

Few Americans—least of all Congress, which passed the Clean Water Act over President Richard Nixon's veto understood water pollution in 1972, hence the law's naive goals and, even after amendments in 1977, 1981, and 1987, its thoroughly inadequate prescriptions for "non-point sources" such as runoff from streets, animal feedlots, and cropland. Still, federal regulation and appropriations got things moving. For something like two and a half decades, successes were dramatic. The Cuyahoga, for example, ceased being a fire hazard and instead became a recreational attraction, even providing spawning and nursery habitat for steelhead trout. But sometime around the mid- or maybe late 1990s, national progress ceased. Today about 45 percent of our waters flunk federal quality standards, and as our population increases and development continues, we're backsliding.

**There is no better case study** of what the Clean Water Act has and hasn't done than the fluctuating fortunes of the Blackstone River, which rises under the streets of Worcester, Massachusetts, and runs 46 miles to Rhode Island's Narragansett Bay. Because its fast current gave birth to America's industrial revolution it became the nation's first and worst polluted river. In 1986 Congress designated most of the watershed a national heritage corridor to be administered with federal appropriations by a commission comprised of elected officials and representatives from the National Park Service, state agencies, and communities. Since then the John H. Chafee Blackstone River Valley National Heritage Corridor, as it is ponderously called, has been effectively protecting and restoring open space, historic buildings, and other cultural and environmental resources. In 1998, after frenetic lobbying by the Massachusetts and Rhode Island congressional delegations, President Bill Clinton named the Blackstone one of 14 American Heritage Rivers.

In my November-December 1995 "Incite" column—basically a response to the House Republicans' effort to disappear the Clean Water Act—I noted that the cleanup of the Blackstone River "isn't finished." But with our title, "The Blackstone Now Runs Blue," we may have gotten a bit carried away with the law's early success. When the

sun is out and you're not standing in or floating on the river, it looks blue. But blue doesn't mean healthy. The Blackstone was sick in 1995, and because of increased urban runoff and inadequate sewage treatment, it's just as sick today.

Still, the long-term recovery of this aquatic ecosystem has been astonishing. When my wife and I settled beside the river in 1970, one species of fish, the white sucker, survived in the main stem. That year our insurance agent's dog frolicked in the Blackstone and died as a result; since 1995 our dogs have frolicked in it and only smelled worse (or occasionally, depending on previous activities, better). Where we had encountered only sludge worms in the 1970s and '80s, we've been seeing crayfish and turtles since the mid-1990s. Today the main stem sustains 19 species of nonmigratory fish, and because sea-run species such as blueback herring, alewives, and American shad can finally spawn again, fish ladders are going in at the lower four dams.

But like so many other urban and suburban rivers across America, the Blackstone isn't anywhere near swimmable, and while it offers superb angling, especially in its lower sections after it has been aerated by myriad waterfalls, you wouldn't want to eat a resident Blackstone River fish.

I was reminded of this fact on a warm, damp morning this past November as I inhaled the ammonia fumes wafting from the outfall of the Upper Blackstone sewage treatment plant, which serves greater Worcester. Standing beside me on the Blackstone River Bikeway (a Heritage Corridor project that will connect Worcester with Providence, Rhode Island) was the leading authority on the river and its most tireless advocate: Donna Williams, the Massachusetts Audubon Society's conservation advocacy coordinator, president of the 11-group Blackstone River Coalition, and vice chair of the Corridor Commission. Williams, a lifelong valley resident, has been probably my most reliable and certainly most accessible source on water pollution for most of the 39 years we've been married.

"Look at all the macrophytes," she declared, pointing to the treatment-plant effluent entering the river to our left.

"Remind me what those are," I said. She explained that they're rooted aquatic weeds, that they shouldn't be here, and that they're a symptom of gross manmade fertilization. The main fertilizers (nutrients) issuing from this plant and similar facilities across the nation are phosphorous and nitrogen, and they kill aquatic ecosystems in the way that a massive injection of adrenaline would kill a human. The nutrient cycle slams into fast-forward, vegetation proliferates, and bacteria break it down, exhausting oxygen. In freshwater, phosphorous does most of the damage; in saltwater, it's nitrogen. The bilious, undulating mat extended from the outfall as far downriver as we could see, but above the outfall the river bottom was bare gravel.

Sewage treatment plants have done a decent job controlling solids, fecal coliform bacteria, viruses, and heavy metals. But removing phosphorous and nitrogen requires expensive new equipment. When the EPA was doling out lavish construction grants, municipalities couldn't wait to renovate their plants. But that enthusiasm dried up in the late 1980s along with Congressional appropriations. "Worcester is no worse than lots of cities," Williams told me. With that, she drove me to her office at Massachusetts Audubon's Broad Meadow Brook Wildlife Sanctuary in Worcester and turned me loose on her voluminous files, from which I unearthed a chronology of the Clean Water Act's fizzle on the Blackstone microcosm.

In 1991 the EPA had issued Worcester's treatment plant a pollution permit that didn't cover nutrients. The slightly stricter permit, due in 1997, wasn't issued until 1999, at which point the city appealed it. After three years of negotiating and compromising, the EPA issued a modified version. Although this gave the plant a continued free pass on nitrogen, it did require a modest cap on phosphorous of .75 milligrams per liter, but not until 2009.

In 2008—even as the environmental community scolded the Bush administration for transmogrifying bizarre Supreme Court decisions into an end run around the Clean Water Act—Bob Varney, administrator of the EPA's New England office, stood tall for fish and wildlife, issuing the Worcester plant yet another permit that required a cut in phosphorous to .1 milligrams per liter and, for the first time, imposed a nitrogen limit (5 milligrams per liter). "There's no deadline, because the city is appealing this permit, too," Williams said. "I wouldn't expect this second set of upgrades to be online before 2020."

For outraged city fathers, the preferred date is never. "It's totally illogical to impose more stringent limits when we are only halfway through the [first] upgrade," the public works commissioner, Bob Moylan, told the *Worcester Telegram and Gazette,* neglecting to point out that the reason they were only halfway through the first upgrade was because they'd fought it. And city manager Michael O'Brien chimed in with: "Enough is enough. This cannot be passed on to the Worcester taxpayer." Why not? one might ask. The average Massachusetts household pays \$440 a year for sewer services, while the average Worcester household pays \$381.

As Moylan correctly observes in prefacing long "but" clauses, "everyone wants clean water." It's just that in Worcester, as in many cities and towns across America, they don't want it enough to pay for it. And what's truly unfair is that who pays the costs of this misfeasance are downstream communities like greater Providence—which has embraced Clean Water Act caps on nitrogen at its two sewage treatment plants and has just completed a \$400 million system to catch and treat stormwater runoff.

Also paying for Worcester's dereliction is Narragansett Bay. It takes the tide almost two weeks to flush the 25-milelong, 10-mile-wide bay, so nitrogen wreaks havoc in the upper section that otherwise would be the most productive. Salt marshes are suffering. Eelgrass, important to fish and wildlife, has declined from perhaps 16,000 acres before 1930 to roughly 300 acres. Smelt, shad, herring, flounder, alewives, and eels have been decimated, and die-offs of shellfish, crabs, and fish have become a summer tradition. This past August, for example, the upper bay rippled with juvenile flounder vainly trying to leap out of the deoxygenated dead zone created by nitrogen. Soon their rotting carcasses lined the scum-crusted shore.

What's more, climate change is magnifying the pollution woes of rivers like the Blackstone and estuaries like Narragansett Bay. Precipitation is more frequent and severe, and runoff has increased with the steady spread of asphalt and cement. In the Upper Blackstone watershed, 25-year floods now send as much polluted water downriver as 100-year floods used to. Global warming is also speeding the rate at which bacteria deplete dissolved oxygen, and rising sea level is creating more saltwater intrusion—a catastrophe for wetlands, estuaries, and the rich life they sustain. During the past 50 years the average temperature of Narragansett Bay has increased four degrees. That doesn't sound like a lot, but it's huge if you're a gill breather.

**Like virtually all rivers,** the Blackstone is fed by wetlands and small streams, some of which appear "isolated" and/or dry up in summer. No one even vaguely familiar with flooding and groundwater flow would contend that any are truly isolated from the river. And the fact that some dry up makes them more—not less—important to wildlife. Consider the vernal pool in Sutton, Massachusetts, where one spring afternoon Donna Williams showed me wood frogs, spotted salamanders, and a blizzard of fairy shrimp. The frogs, salamanders, and shrimp survive because fish, which otherwise would eat them, can't. Consider also my secret fishing spot in central Massachusetts, a tiny rill I call Hyla Brook. You won't find much of it in high summer because, as Robert Frost wrote of his Hyla Brook, "Its bed is left a faded paper sheet/ Of dead leaves stuck together by the heat/ A brook to none but who remember long . . ." But with fall rains, gaudy native trout ease up into Hyla Brook to spawn, and it provides them refuge when winter spates and snowmelt send silt and road salt into the perennial Blackstone tributary that collects it.

These types of habitats—half of all stream miles in the contiguous states and about 20 million acres of wetlands were placed in jeopardy not by the 2001 Supreme Court decision known as SWANCC (for the Solid Waste Agency of Northern Cook County, which sought to discharge into Illinois wetlands) but by the Bush administration's intentional misreading of that decision. The court had merely ruled that a nonnavigable water completely in one state could not be protected by the Clean Water Act simply because migratory birds used it. But there were other reasons the feds could have protected waters that appear to be isolated. "Those reasons," reports Bob Perciasepe, National Audubon's chief operating officer, "include holding of floodwater that can cause interstate damage; holding of pollutants that can cause interstate damage; harboring of endangered species, which have federal jurisdiction; even the hydrologic cycle [interstate transfer of water via evaporation, precipitation, and ground flow]." During President Clinton's first term, when Perciasepe served as the EPA's assistant administrator for water, he and his staff worked from the policy memo for the migratory-bird litmus test. "We only chose that one," he says, "because it was simple and easy to establish."

Obviously, sewage pumped from honey trucks into the dry bed of Hyla Brook would find its way to the Blackstone with the first big rain. No sane, sober person who wasn't fronting for special interests would contend that the framers of the Clean Water Act intended to exempt polluters who foul streams or wetlands that, for part or all of the year, feed navigable waters. But with its 2003 "guidance" document, the Bush administration essentially instructed EPA and U.S. Army Corps of Engineers enforcement personnel to do exactly this.

The 2006 Supreme Court decision known as Rapanos—involving two Michigan developers who sought to build shopping malls on wetlands—opened the door for more mischief. Four justices contended that the Clean Water Act didn't apply unless a wetland abutted a nonnavigable water body that fed a navigable one; four disagreed; and one divined that there needed to be a "significant nexus" (whatever that meant) between wetland and water body. So by court precedent, the significant-nexus rule became primary, and the Corps was left to apply it on a case-by-case basis. Today, with no intelligible guidance, the rule festers in fog, and developers have seized it as an excuse to plunder. In an internal memo, leaked to Greenpeace, Granta Nakayama, the EPA's assistant administrator for enforcement and compliance assurance, reported that between July 2006 and December 2007 his agency refused to enforce the Clean Water Act against apparent violators 304 times "because of jurisdictional uncertainty" allegedly created by Rapanos.

As Perciasepe puts it, "A perfect storm of government ambivalence, aggressive polluter activism, and a split Supreme Court have subverted the original intent of the Clean Water Act." Clearly Congress needs to insulate from banal and/or malicious misinterpretation its obvious aim of controlling *all* pollution whether or not waters delivering that pollution can float a boat. The Clean Water Restoration Act, sponsored by Representative James Oberstar (D-MN) and Senator Russ Feingold (D-WI), would have done this by specifically including isolated wetlands, headwaters, vernal pools, intermittent and ephemeral streams, and—even though the original text never states or implies that cleanup should be limited to navigable waters—by deleting the word *navigable*.

This reform, filed and spiked every session since 2003, did no better when the Democrats took control of Congress. "The bill couldn't even get a hearing when the Republicans had the majority," explains Jan Goldman-Carter, a National Wildlife Federation attorney for wetlands and water. "This last session [2007 and 2008] we were finally able to engage in the debate, but because we were having success in getting hearings and the attention of Congress, the Farm Bureau and the homebuilders came out of the woodwork. We feel pretty good about our ability to move the bill in the next [111th] Congress." She went on to note that during the campaign, Barack Obama, through his spokespeople, pledged support for such legislation and that the bill will save money by reducing all the confusion and resulting workload generated by the Bush guidance.

**On the Blackstone River** Bikeway, about a mile upstream from the treatment plant, I noticed trash festooning branches at least six feet above the flow. Massachusetts Audubon's Williams explained that it had been hung there by the October 2005 flood that overwhelmed the facility to the point that 120 million gallons of raw effluent spilled into the river. Aging plants like Worcester's can't handle big slugs of stormwater when it overflows into ancient, porous sewage pipes. But the 1987 amendments to the Clean Water Act provide only marginal regulations for urban runoff.

And there are no effective regulations for agricultural runoff. Ethanol production—a publicly financed net energy loss perpetrated by agribusiness (see "Drunk on Ethanol," July-August 2004)—is converting wildlife habitat to corn, which requires more fertilizers and pesticides and creates more soil erosion than any other crop. Just as Worcester's inadequately treated sewage helps create a dead zone in Narragansett Bay, runoff from the Corn Belt helps create one in the Gulf of Mexico. This past July the Gulf's dead zone was the second biggest ever recorded, covering 5.1 million acres.

"The politics of agriculture are baffling," comments Nancy Stoner, a water program director for the Natural Resources Defense Council. "There are lots of farmers who are good stewards and many good organizations representing them, but the Farm Bureau Federation reduces them to their lowest common denominator. Most pollution controls can easily be incorporated into farm practices without a loss of revenue. It's very simple stuff— spring fertilization [so more nutrients will be taken up by crops instead of needlessly washing into water bodies during fall and winter], stream buffers, fencing cows out of streams. None of this is required, because the Farm Bureau has blocked it for decades. It has even prevented regulation of factory farms, which produce about three times as much [waste] pollution as humans. It's as if we're in a third-world country."

Under the 1987 Clean Water Act amendments, the EPA is requiring communities to implement modest bylaws to reduce stormwater. But there's stiff resistance. My town of Grafton, Massachusetts, is typical. It missed its May 2008 deadline to consider a bylaw, and development interests stayed at the October town meeting until 11:45 p.m. to vote it down. Ironically, good stormwater bylaws would save developers money. Curbing, for example, should be eliminated so water can flow into low, vegetated swales instead of storm drains. Cul-de-sac islands should be low and vegetated, the roads one-lane and one-way to reduce runoff. Driveways should be short and narrow. Houses should be clustered, open space maximized. And there is no reason, financial or otherwise, not to require pervious with crushed stone, concrete blocks, or any of the brands of porous cement and asphalt.

But the public shouldn't expect regulations to take care of everything. Home-owners can do a great deal on their own. For example, one inch of rain sends 832 gallons off the roof of the average American house. Instead of shunting that water down the storm-drain system to foul the nearest stream, you can redirect it to your lawn, woodlot, or garden. Cars should be washed on lawns, not driveways. Septic systems should be maintained, phosphate-free soap used in dishwashers, lawn fertilizers and pesticides reduced or eliminated, dogs encouraged to do their business on vegetated surfaces.

In addition to providing clean water, these kinds of commonsense reforms invigorate the economy. Audubon and 16 other environmental organizations have sent the Obama team a list of 80 projects and proposals for investing in water and other resources that could create 3.6 million jobs. Floods, for example, cause about \$5 billion of damage each year. But they can be controlled and water simultaneously cleansed by protecting and restoring floodplains and wetlands that filter and store water. New York City has saved \$6 billion by preserving land around its reservoirs. By shunting stormwater into wetlands and woods, Indianapolis is saving about \$300 million. And by returning the Napa River to its natural, wetland-bound channel, the city of Napa, California, annually prevents \$26 million in flood damage. The Alliance for Water Efficiency estimates that investing \$10 billion in such water conservation methods as replacing leaking pipes, using runoff for irrigation, and installing efficient toilets, showers, and washing machines would boost U.S. gross domestic product by as much as \$15 billion.

After I'd raided Donna Williams's files, she showed me Massachusetts Audubon's new rain garden, which collects roof runoff. Proliferating in the lowest parts were such water-tolerant species as highbush blueberry, sweet pepperbush, winterberry holly, turtlehead, swamp milkweed, and joe-pye weed. Higher, drier sections grew purple coneflower, bee balm, lowbush blueberry, fall-blooming aster, black-eyed Susan, deutzia, yarrow, sea oats, and redstem dogwood.

Here was a treatment plant anyone can build in a day, one that prevents pollution even as it produces beautiful, native flowers and berries relished by birds. Suddenly I felt the return of the appetite I'd lost as I stood in the ammonia-scented breeze, staring down at the bilious, undulating mat of macrophytes. And I took my wife to lunch.

## What You Can Do

Urge your lawmakers to support the Clean Water Restoration Act. For information on how to join the fight for clean water, visit Audubon's clean water campaign (<u>www.audubon.org/%20campaign/cleanWater2.htm</u>). To learn how you can reduce stormwater flowing into drains, download "A Homeowner's Guide to Protecting Water Quality in the Blackstone River

Watershed" (http://zaptheblackstone.org/whatwedoing/WQ\_Owner\_Guides/Homeowner\_Guide.pdf).