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Green Guide 121 | July/August 2007

American Waters: What Hurts, What Helps

by P.W. McRandle

Whether meandering eastern brooks under heavy sunlight or rushing western streams breached by salmon, rivers and waterways are as idyllic as America gets. Even a writer as wary of sentiment as William S. Burroughs wasn't immune, noting, "What I want for dinner is a bass fished in Lake Huron in 1920." The date is key: White bass caught in Lake Huron today contain PCBs (as well as mercury and the pesticides DDT and toxaphene) in levels high enough that the Environmental Protection Agency (EPA) recommends pregnant women and children eat them no more than six times per year. Sport fishermen who regularly eat fish caught there, and in other Great Lakes, may have a harder time conceiving children, according to the Agency for Toxic Substances and Disease Registry. And Lake Huron isn't as polluted as other Great Lakes.

While we've stopped pollutants from many single sources, such as outlets from factories, we are a far cry from ending pollution from scattered sources like agricultural runoff. Can we turn back the clock to save our fish and ourselves from the toxic contaminants and invasive species we dump in our waters, not to mention preventing the waters from being siphoned to extinction by cities, agriculture and industry?

Contaminated Waterways

Aging sewer systems and small municipalities without public sewers spill untreated sewage laden with bacteria and viruses into the Iowa River and others across the country, as noted in American Rivers' recent report *America's Most Endangered Rivers 2007*. But treated sewage pouring into rivers isn't much better, especially when hormone-disrupting chemicals from pharmaceuticals and laundry detergents (see "[Virtuous Cycles](#)") sweep through treatment plants and into rivers, altering the reproductive abilities of fish. Not only can this lower their fertility, but estrogenic chemicals in the flesh and fat of fish caught downstream from waste-treatment facilities can cause human cancer cells to grow *in vitro*, as announced this April by researchers at the University of Pittsburgh Cancer Institute's Center for Environmental Oncology at the annual meeting of the American Association of Cancer Research.

Now, research into Atlantic salmon shows that hormone-disrupting chemicals may have played a major role in the near extinction of these fish. Salmon larvae exposed for 21 days to low levels of nonylphenol, which can end up in waterways from laundry detergents as well as from industrial discharge, face long-term health effects that threaten their survival. "A full year later, exposures to six parts per billion caused them to lose seawater tolerance [a critical stage in salmon development allowing them to move from freshwater to the sea]," says Steve McCormick, a research scientist with the U.S. Geological Survey (USGS), of research conducted by his graduate student Darren Lerner. "It's a very relevant concentration," McCormick adds, "and that's just one chemical, but others can interact as well at low levels."

Of course, banned polychlorinated biphenyls (PCBs) and pesticides remain threats. "Concentrations [of PCBs] are

declining, but there are hot spots," notes Sarah Gerould, program coordinator of contaminant biology at the USGS. Children of women who regularly ate PCB-riddled fish from Lake Michigan have suffered from low birth weight and smaller head circumference, traits that can diminish IQ.

One or more pesticides have been detected in 97 percent of U.S. streams in urban and farming areas, half of all shallow groundwater aquifers in similar areas and 33 percent of all major aquifers, according to a USGS survey of 51 "hydrological systems" (mostly river basins with the streams, lakes, wetlands and groundwater they encompass) published in February 2007. Five percent of the shallow wells that provide drinking water in urban areas have pesticide concentrations above EPA human-health benchmarks. And long disused organochlorine pesticides (including DDT) still show up in nearly 90 percent of fish from urban and agricultural areas. Those pesticides found in levels that exceeded human health benefits include: frog-mutating atrazine, the possible human carcinogen cyanazine and the probable human carcinogen dieldrin (now banned) in agricultural areas; and dieldrin and diazinon, associated with lower birth weights, in urban streams. That doesn't boost confidence in swimming in the old water hole or tubing down the rapids.

Endangered Species

Just keeping water running naturally downstream can require court action. "The Endangered Species Act has been one of the most effective acts to maintain instream flows [water running at adequate levels]," says David Katz, lecturer at the Porter School of Environmental Studies at Tel Aviv University. But instream flows, a vital element of aquatic habitats, aren't always a priority. "[The act] focuses on preserving a species instead of a habitat," he notes. For example, the endangered silver minnow population of the Rio Grande, which reaches the Gulf of Mexico as a trickle because of overextraction, has simply been netted and moved upstream rather than officials restoring water to proper levels.

Still, perhaps there's hope for Washington state's Snake and Columbia rivers. In order to return to their native streams from the Pacific Ocean for spawning, salmon must climb past eight dams, a feat so few finish that Snake River sockeye have ended up on the endangered list. Under pressure from Judge James A. Redden of the Federal District Court in Portland to save the sockeye and other threatened Snake River salmon, local authorities are considering removing the dams to restore the natural flow of the river.

Invasives

Non-native animals, plants and diseases pose another threat to waterway ecosystems. Two years ago, fish caught in Lake Ontario were found to have been infected with viral hemorrhagic septicemia (VHS), a virus previously known in European farmed fish. Spreading to other Great Lakes and eastwards, VHS has caused numerous die-offs and now poses a threat to over 40 species of fish, though not to humans. A coalition of 90 environmental groups argues that VHS came to the U.S. via transatlantic freighter, as did zebra mussels, and has called for a ban on ocean vessels in the Great Lakes.

Such quick action is called for. It only took a decade for zebra mussels to spread to all five Great Lakes and to the Mississippi, Tennessee, Hudson and Ohio river basins. Having brought about the near extinction of native unionid clams, the mussels now threaten larval fish and some invertebrates.

An invader of another sort plagues the East Coast: saltwater intrusion in underground aquifers as city wells pull up too much water from the ground. In Florida, Broward and Palm Beach counties are cutting lawn watering to once a week and may have to shut down some wells. Although the problem isn't new, the rising East Coast population is placing added pressure on groundwater systems, forcing some communities to build reverse-osmosis plants to strip the salt out of the water.

Being mindful of these concerns, however,

doesn't require avoiding the fun of fishing, boating or swimming. Just check for advisories and leave behind you nothing but clean water and riverbanks.

What You Can Do

* Before you fish, check for advisories at <http://map1.epa.gov>.

- * Don't transport invasives: When boating and fishing, drain live wells, clean vegetation off trailers, remove mussels from hulls and don't dump bait into lakes or rivers. Discard aquarium contents in garbage bags, not in storm drains.
- * Don't waste water: Trim your showers to five minutes; for help bring an hourglass shower timer with you (\$4.95; www.greenfeet.com). In addition to low-flow showerheads and faucet aerators, fix leaking taps indoors and out, and check your pipes for leaks (see www.thegreenguide.com/green_home).
- * When refurbishing, purchase water-conserving appliances. Bathroom: **Kohler** Escalade dual-flush, 0.8 gal./1.6 gallon toilets (\$918; www.kohler.com, 800-456-4537); go water-free with a composting toilet such as **Envirolet** (\$1,300 and up; www.envirolet.com, 800-387-5126) or **MullToa 60** (\$2,213; www.greenhomewellness.com, 613-698-6709). For more, see our Water Saving Appliances Product Report at www.thegreenguide.com/reports.
- * Drink tap rather than bottled water, which depletes watersheds. Find out if your water contains any contaminants by asking your local water utility or go to www.epa.gov/safewater/dwinfo.htm. If necessary, filter; see "[Three Steps to Clean, Safe Drinking Water](#)".
- * Choose non-polluting laundry products (see "[Virtuous Cycles](#)") and use organic lawn and garden practices (see "[Grass Roots](#)").

Resources

- * National Water-Quality Assessment Program, <http://water.usgs.gov/nawqa>
- * America's Most Endangered Rivers of 2007, www.americanrivers.org

TAKE ACTION: Show the Seas You Care

Next time you order seafood at a restaurant or the market, steer clear of the large predators, especially shark, tuna, Chilean sea bass and swordfish, which play a critical role in marine ecosystems. Instead, select low-mercury wild fish from well-managed fisheries and U.S. farmed catfish or tilapia instead. See our [Fish Picks card](#) for better choices.

Be vigilant about farmed fish. Melamine-contaminated feed, the contaminant implicated in recent pet food recalls, has shown up in aquaculture operations in Washington state and Hawaii. As recently as May 30, the FDA issued a voluntary recall of animal and fish feed contaminated not only with melamine but also with urea formaldehyde. See www.thegreenguide.com for recall updates.

In This Week's Green Guide to Go (July 18, 2007)

Sturgeon General's Advice

Guest Editor Sylvia Earle on giving wildlife a break.

Tapped Out: The True Cost of Bottled Water

Paying thousands of times more for bottled water, and damaging the environment while you're at it, simply makes no sense. Take your own reusable bottle.

American Waters: What Hurts, What Helps

Fishing and swimming are our classic summer pastimes and we'd do well to preserve them from contaminants, invasive species and other threats.

Picking the Right Rechargeables

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