

BAD SIGN. Algae in Clear Creek are caused by pollution.

Very troubled waters

Despite the Clean Water Act, the quality of rivers worsens

BY PENNY LOEB

The water in the small stream meandering alongside a cattle pasture near Fayetteville, Ark., was clear on a spring morning. Lush green plants framed the rippling water. Yet the stream's clarity belied a sad truth: Life in it is actually near extinction.

Art Brown, a stream ecologist at the University of Arkansas, first brought his students here to collect specimens in the early 1980s. They found the water surprisingly abundant with streambed larvae and other insects. By 1996, though, other students found little alive in the stream except a few small algae-feeding fish. And a visit last spring confirmed Brown's fear that pollution was killing life in the stream.

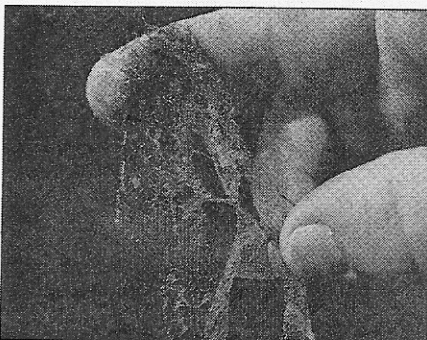
This stream feeds into Clear Creek,

which is also nearly devoid of life. Ten miles later, Clear Creek meets the Illinois River. The Illinois crosses into Oklahoma and travels south to Lake Tenkiller, near Tahlequah, the capital of the Cherokee Nation, in the northeast corner of the

state. Fed by tributaries like Clear Creek, the Illinois is ailing badly.

Indeed, repeated studies have documented a decline in its water quality since the early 1980s. The Illinois is assaulted by nutrient-rich runoff from poultry, hog, and cow manure. It is poisoned by herbicides and pesticides from farms and lawns. It swallows millions of gallons of treated waste water from eight cities, is loaded with thousands of tons of dirt during highway construction, is polluted by private septic systems, and is even mined for its unique gravel.

Unfortunately, these problems are not unique to the Illinois River. It has been nearly 26 years since the passage of the Clean Water Act, and that act made monumental progress in cleaning up American rivers. In 1972, only 30 to 40 percent of the rivers were suitable for fishing and



ALGAE. Water problem of the '90s

swimming; now about 60 percent are. But in the past decade, progress has stagnated, possibly even backslid.

A *U.S. News* examination of Environmental Protection Agency data and state reports on thousands of rivers from 1984 to 1998 finds that the percentage of rivers designated as "impaired" has grown from 26 percent in 1986 to 36 percent in the most recent reports. Rivers are classified as impaired when they can't support aquatic life or are unsafe for fishing or swimming. Pesticides and bacteria are a serious problem in Mississippi; metals and salt in Arizona; trash and fertilizers in Georgia; and nutrients and siltation in California. Water in one fourth of the wells in many agricultural areas has become unsafe to drink because of high levels of bacteria and nitrates. And public water systems that serve several hundred towns and cities in the Midwest are contaminated by herbicides from river water.

Not envisioned. While the Clean Water Act greatly reduced pollution from industrial plants and city sewers, its drafters did not envision many of today's pollutants: silt, bacteria, oxygen-depleting substances, and pesticides. These mainly derive from farm fields, city streets, and other "nonpoint sources" that the act did not specifically address. In theory, the EPA and the states that enforce the law might have used their broad water quality control powers to attack these sources of pollution. But such an aggressive approach to enforcement, officials say, would have met great political resistance in the states and in Congress. Now, environmental officials say a real cleanup would require new stringent state and federal laws designed to stop pollutants from entering rivers, an army of tough inspectors, and a cooperative effort from citizens and industry.

Last week, in a move hailed by the Clinton administration, the EPA and the U.S.

IMMERSED. Art Brown, an ecologist at the University of Arkansas, has studied the Illinois River

Department of Agriculture released draft regulations aimed at controlling runoff from farms with more than 100,000 chickens or more than 1,000 cows—about 4 percent of all operations. These are part of the five-year, \$2.3 billion Clean Water Action plan proposed by President Clinton early this year—a plan that EPA officials hoped might finally reduce nonpoint pollution. But already Congress has balked at funding the USDA portion, though it is expected to support most of the EPA request. Pressure to weaken the regulations is coming from the agricultural industry, especially the poultry producers. And states like Arkansas are woe-

fully understaffed anyway. The state has only 14 inspectors to check on water polluters. Hog farms, which are regulated now, get only one check every three years. When, inspectors ask, would they have time to check 2,000 more poultry farms?

None of this escapes Brown, who has studied the Illinois basin for 30 years. The burly, bearded professor parks his Chevrolet pickup at a point where Clear Creek runs swiftly under a bridge. There, thick clumps of green spirogyra algae sprout from the rocks like a bad toupee. The last time he visited, there were no algae here, he says. The algae, which deplete the water of dissolved oxygen, are fed by an un-

Ravaged rivers

State reports say that an increasing number of U.S. rivers are impaired—meaning they can't support aquatic life and are unsafe for swimming or fishing. The figures in red represent the portion of all impaired rivers affected by each source shown.

■ Agriculture

Hog, poultry, and cattle farm runoff contains manure, dirt, and chemical fertilizers. 70 percent

■ City sewage systems

State regulators rarely set maximum limits on the nitrogen and phosphorus content of treated sewage. 14 percent

■ Industry

Despite aggressive monitoring, nearly 200 million pounds of toxic industrial chemicals are dumped into rivers each year. 9 percent

natural oversupply of nitrogen and phosphorus. Not far from the bridge over Clear Creek lies one source of pollution. Several neat, 400-foot-long, low, silver-colored barns sit on a hillside. Each houses about 20,000 broiler chickens. Arkansas produces 1.4 billion chickens and turkeys a year, and they generate tons of phosphorus.

Most poultry waste is dry. It is called litter. Once or twice a year, the litter is scraped off the barn floors and hauled to fertilize nearby fields. "Litter made this area," said Beverly Whiteside, who has lived in the Maysville area nearly 40 years. The grass grows high, and the area produces the most beef cattle in the state. But excess litter is washed into the Illinois.

Poultry is not the only source of nutrient overloading. Bumping along a gravel road along Clear Creek,

Brown points to a house in a clump of trees. "I wanted to buy that, maybe rent it out to some students," he said. "But its septic system is there on the stream banks." The area hosts hundreds of new rural and vacation homes, but the Clean Water Act never empowered the EPA to regulate private septic systems.

No limits. Even public waste systems contribute to the nutrient problem in the Illinois River basin. Many states regulate bacteria and many toxic chemicals, but they usually do not limit phosphorus and nitrogen discharged from sewer systems. Studies estimate that 15 to 30 percent of the nutrients in the Illinois come from five

waste treatment plants. Rogers, a 34,000-population city at the northeastern tip of the river basin and about 20 miles from Clear Creek, dumps its treated sewage into Osage Creek, a tributary of the Illinois. The plant handles residential waste, plus that of 18 industrial plants. Three of those are poultry processors. Tyson Foods' two plants send 10 million gallons of waste water a month through the Rogers system, according to manager Tom McAlister. While industries must meet stringent pretreatment standards, poultry plants were exempted from regulations written in the early 1980s. A study by the Arkansas Department of Pollution Control and Ecology found that the Rogers plant sent about 16 tons last year of phosphorus and 30 tons of nitrogen into Osage Creek.

To get rid of the phosphorus, Rogers would have to spend nearly \$4 million for a new treatment system. In the mid-1980s, the federal government stopped giving grants for updating municipal waste treatment systems. The EPA says it would take \$128 billion to upgrade all systems nationwide. "From my standpoint, the city of Rogers is already doing its share," McAlister said, noting sewer bills average \$35 per household a month. "Sure poultry plants are a major contributor. But if we didn't have the plants, we wouldn't have the jobs."

In the fast-developing Fayetteville area, the building of roads and bridges adds sediment to streams. Silt smothers the insects that live in the riverbed, depriving fish of food and making streams more susceptible to flooding. In northern Arkansas, road construction has brought something else: in-stream gravel mining. Small backhoes can be seen in many back

yards of those who live along the streams. A ton of stream gravel brings about \$8, which provides much-needed income for people like Randy Lawson, who lives on Clear Creek and is a friend of Brown's. But the removal of gravel changes the stream hydraulics. Banks cave in and the trees and shrubs that once formed a barrier to runoff disappear. In such places, runoff may contain a chemical stew of herbicides and pesticides from farms, lawns, and golf courses. Runoff from none of these is specifically controlled by the Clean Water Act.

Four of the most prevalent herbicides—atrazine, simazine, alachlor, and metolachlor—are applied nationwide and grain

belt states receive large shares of the estimated 135 million pounds that is used annually. Agricultural pesticide use jumped 10 percent between 1993 and 1995, and the U.S. Geological Survey increasingly finds the chemicals in river water. Several studies by the Environmental Working Group,

which advocates tougher environmental laws, have found that 14 million Americans drink public water that contains the four major herbicides found in rivers.

The new sources of river pollution pose a daunting challenge for environmental officials. Improvement, they say, can come only from a major change in public attitudes and priorities. Says Ed Fite, administrator of the Oklahoma Scenic Rivers Commission, which monitors the Illinois River in that state: "It takes a total buy-in from all people who live within the basin. It has to be a concerted effort."

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Urban and suburban runoff

Antiquated city storm sewers fail to curb runoff containing sediment, trash, and chemicals such as lawn fertilizers.
13 percent

Mining

Waste and other chemical byproducts of mining find their way into rivers.
13 percent

Construction

When a bridge is built over a river or construction alters its shape, displaced sediment can build up in the water.
37 percent

Pollutants

Silt

Results from bridge construction, farming, and dirt from city streets
51 percent

Bacteria

Released by leaking septic systems, malfunctioning municipal systems, and agriculture
32 percent

Nutrients

Byproducts of farming and municipal systems promote algae growth.
40 percent

Pesticides

Usage increased from 700 million pounds in 1993 to nearly 800 million pounds in 1996.
21 percent

Note: Total does not equal 100 percent because more than one pollutant may impair a river.

Sources: Environmental Protection Agency, U.S. Public Interest Research Group