

WASHINGTON, D.C. — Bullfrogs thrum. Dragonflies sizzle. An osprey glides over the tall marsh grass.

A slice of Eden? Hardly. This 30-acre river marsh was created last spring by the Army Corps of Engineers. It's still a tentative assemblage of dredge soil and nursery-grown marsh plants, held together with stakes, wire and piles of hay.

Nature may never adopt Kenilworth Marsh, but this small improvement on the otherwise silt-smothered Anacostia River, a tributary of the better-known Potomac, represents a new commitment to go beyond cleaning up polluted water and restore some of

America's rivers and streams to their pre-Industrial Age quality.

"Kenilworth Marsh is the first positive change in the ecological balance of this river," says Robert Boone, an Anacostia advocate.

Dozens of waterway restoration projects are under way around the country. So far they have tended to be small — a new curve for a creek straightened years ago, a stand of willows for an eroded embankment.

But recovery plans for this summer's rampaging Mississippi River may give the movement new urgency and scale.

"People remember when they were kids. They could swim in rivers, drink the water, catch fish,"

says Jay West, of the Izaak Walton League of America, who teaches people how to restore waterways.

Those people are seeing the consequences of damming rivers, channeling water through concrete culverts and draining wetlands. Bottoms silt up, banks erode, fish and wildlife disappear. "Their river stinks, it's full of sediment, nothing lives in it," says West.

Many of the nation's 3.2 million miles of rivers and countless more miles of smaller streams have been altered to control floods, drain land for other uses or produce electric power. Only 2 percent of river miles are natural and free-flowing enough to qualify as wild and scenic under the federal definition.

"People don't like what they see," West says. "They're taking back their rivers and streams."

Residents along Clear Creek, which tumbles out of Colorado's Rocky Mountains, have decided

their beloved waterway has been abused long enough.

A coalition is looking for money to stop toxic leaks from abandoned mines and is negotiating irrigation schedules with farmers so that the creek won't dry up in the summer. A brewery in Golden, Colo., has created a mile-long fly-fishing run, complete with riffles and pools for trout, from what was a section that had flowed through a man-made channel.

"Thanks to so many volunteers, it'll cost only \$170,000," says Jack Hibbert, who planned the project for the Adolph Coors Co.

Restorations can be expensive — Kenilworth Marsh cost taxpayers more than \$2 million. But problems in small waterways often can be solved with low-cost "soft engineering" techniques.

At the Izaak Walton League's demonstration project on Dunloop Creek in West Virginia, erosion has been stopped by trees cabled to bare embankments. A home for new plant life has been created with bundles of willow branches anchored in the creek bottom.

Pools for fish have been scoured out by the pressure of current forced around logs placed at right angles to the shore.

"These techniques were used in biblical times. We're just rediscovering them," West tells National Geographic.

Dams that cut off fish migrations have become a major focus of the river restoration movement. At least a third of American native fish species are extinct or declining, a frequent price of cheap hydroelectric power, says Randy Showstack, of American Rivers, a national conservation organization.

No one knows how many dams block the nation's rivers. Estimates vary from 64,000 to 80,000. Conservationists are trying to alter or remove some of them.

After the Woolen Mills Dam was knocked down on Wisconsin's Milwaukee River, bass and pike returned. Activists are campaigning to have the Gilnes Canyon Dam removed from the Elwha River in Washington state, a spawning ground for all five native species of Pacific salmon.

As 230 hydroelectric dams come up for federal relicensing over the next year, conservationists will argue that the dams should either be knocked down or equipped with ladders and screens to protect fish.

River activists emphasize the importance of the riparian zone, the biologically rich strip of land along waterways.

Communities along Oregon's Willamette River have preserved 255 miles of riverfront greenway for wildlife and recreation. Denver and other cities have created smaller greenways along urban rivers.

Arizona has lost 90 percent of its riparian zone to development or flood-control projects. To make the point, wildlife activists distributed what came to be known as the "bunny map," showing the diversity of life in the remaining undeveloped riparian zone along the Santa Cruz River and its tributaries.

The map caught the public's eye. Tucson, Ariz., now protects buffer zones around waterways. Massachusetts is considering a similar law.

River ecologists argue that lasting benefits require skillful management of entire river systems, which sometimes span many states. The issue figures in deliberations on how to restore the flood-damaged levee system on the upper Mississippi in states such as Minnesota and Iowa.

"Out of this disaster can come an enormous opportunity to restore the basin," says Randy Showstack.

Law requires the Corps of Engineers to rebuild the levees under its jurisdiction. But conservationists, including some in the agency, argue that some recovery dollars would be better spent buying flood rights from farmers.

Stretches of land unaltered by levees would, they say, slow future floods and restore riparian zones.

The only systemic river restoration in the country, a massive re-vamping of the Kissimmee River to restore Florida's Everglades, is still in the planning stage. The corps will put curves back in the river, which the agency straightened with channels three decades ago to drain the huge swamp for development.

"Like everybody else, we're on a learning curve," admits George Halford, a spokesman for the engineers. "But we're trying."

Straitjacketed into a canal for flood control between 1961 and 1971, the meandering Kissimmee River in south Florida lost half its length and most of its marshes. Now, in the first reversal of a U.S. Army Corps of Engineers project, the river is slated to regain its curves, some already reflooded by test weirs.

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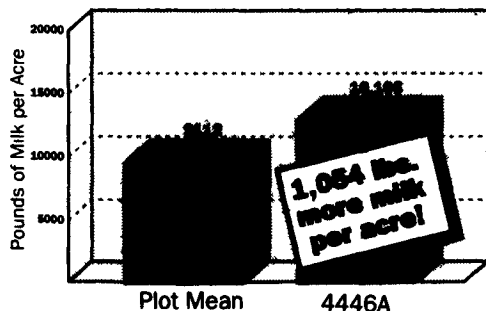
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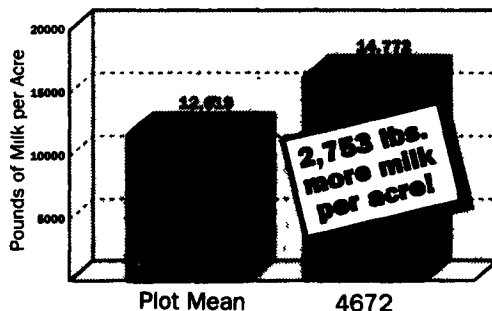
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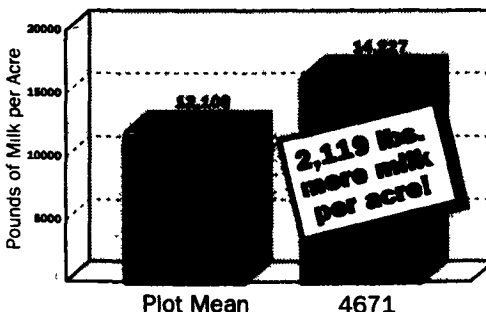
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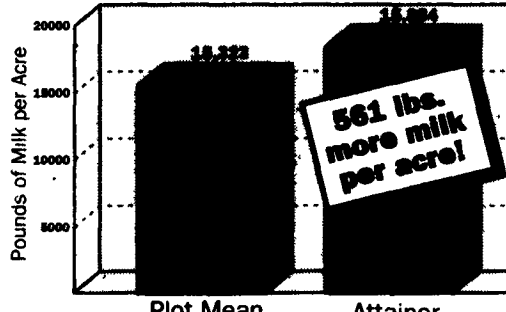
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