13-1 Undoing the Damage to Florida's Kissimmee River

Between 1964 and 1970, the Army Corps of Engineers hacked away at the winding Kissimmee River in Florida, hauling up mud and dumping it along the banks. When they had finished this huge flood control project, a river that had once lazily meandered nearly 150 kilometers (100 miles) through the Florida marshes had been reduced to a canal 64 kilometers (40 miles) long, 60 meters (200 feet) wide, and 10 meters (30 feet) deep. The canal was designed to drain water quickly from the northern reaches of the watershed. On the heels of the huge dredgers that had converted the river into a canal came contractors who threw up concrete and earthen dams and locks every 10 miles, creating huge reservoirs along the river's previous course. These were designed to control flooding downstream.

Once a rich habitat for bald eagles, deer, fish, waterfowl, and alligators, the Kissimmee River became a sterile tribute to our tireless efforts to control flooding. Most scientists condemned the channelization as a major environmental catastrophe, which destroyed three fourths of the original 16,000 hectares (40,000 acres) of marsh, once a major habitat for dozens of species of waterbirds. Secondary canals built by landowners along the main canal drained another 80,000 hectares (200,000 acres). Soon after the canal's completion, the vast flocks of ducks that once rained down from the skies were gone. Gone, too, were the wading birds. By Florida Game and Fresh Water Fish Commission estimates, 90% of the waterfowl and 75% of the bald eagles vanished from the region, as did the largemouth bass that once attracted anglers from all over the nation.

Two years after this enormous project had been completed, Florida biologists began noticing changes in Lake Okeechobee (pronounced OAK-eh-CHO-bee), into which the Kissimmee's clean waters once flowed. Dead fish and dying vegetation were the most blatant signs that something was awry in the lake, which provides drinking water for Miami and coastal cities. It didn't take biologists long to determine that the loss of marshlands, which purify waters and hold back sediment, was the reason for Lake Okeechobee's sudden deterioration. The loss of the natural cleansing provided by wetlands—plus a heavy load of pesticides, fertilizer, animal wastes, and sediment from cattle ranches and farms that sprang up along the river's banks—created a monumental water quality problem for the lake.

The waters of the Kissimmee River (which flow south) once fanned out across southern Florida to nourish the huge, multimillion-hectare wetlands known as the Everglades. On the southernmost tip of Florida is Everglades National Park. To make room for farms, much of the Everglades has been drained, and the water from Lake Okeechobee and the Kissimmee River basin has been shunted via canals to the coast. Reduced flows have disrupted the ecology of the Everglades, seriously threatening many species, some already endangered. Reduced water flows also produced an ironic backlash. Because of a lowered water table, farmland once prized because of its rich soil began to sink at a rate that could hinder farming in the region. Lower water flows have also resulted in saltwater intrusion into surface water and groundwater.

Ironically, studies made after the canal was completed indicate that it provides little or none of the expected flood control. Making matters worse, the canal is now seen as a major threat to downstream areas. After heavy rains in central Florida, for instance, a slug of water travels rapidly southward along the canal, wiping out nesting waterfowl and drowning unsuspecting wildlife.

Less than 2 years after the Army Corps of Engineers had trucked in the last load of cement, a special governor's conference committee released a report calling on the state to reflood the marshes that it had just drained. The report concluded that channelizing the river had been a big mistake. With a price tag of $30 million, it had also been a costly one. Even the Army Corps of Engineers commissioned a study to re-evaluate the project and prepare recommendations for returning the river to its original state.

In 1983, Governor Robert Graham and supporters took steps to reverse the damage. In 1984, the Kissimmee River restoration began. However, because no federal funds were available to reclaim the river, funding had to come from another source, property taxes on residents in southern Florida. Financed by property taxes, the South Florida Water Management District (which was put in charge of the project) built three small dams to divert water from the canal back into the old river channel (**FIGURE 1**). This flooded the marshes along 20 kilometers (12 miles) of the river and cost $1.5 million.

These steps helped wetland vegetation, waterfowl, and fish populations recover, but full recovery will require other measures—especially steps to restore more normal water flows. In 1992, the U.S. Congress approved legislation that began a project that will restore over 40 square miles of river and associated wetlands. This will be accomplished by filling in 22 miles of the 56-mile-long canal and removing two of the five water control structures. The water district will continue to buy up land along the river and will take an ecological approach to restoration. Their goal is not to optimize one or a few valuable species, such as bass, but to restore the ecosystems badly damaged by channelization. They are also working upstream to help prevent runoff from farms and dairies. Restoring the Kissimmee River is part of a major ecological experiment aimed at saving Florida's fast-vanishing wetlands. The restoration project is expected to take 20 years.

Someday, the complex wetlands of Florida will function more like they did a hundred years ago. But at this very moment, engineers and construction companies are hard at work draining wetlands the world over. One of the largest lies along the Nile River. In the home of countless birds and wildlife, huge dredgers are now busily sucking up the mud and straightening the channel.

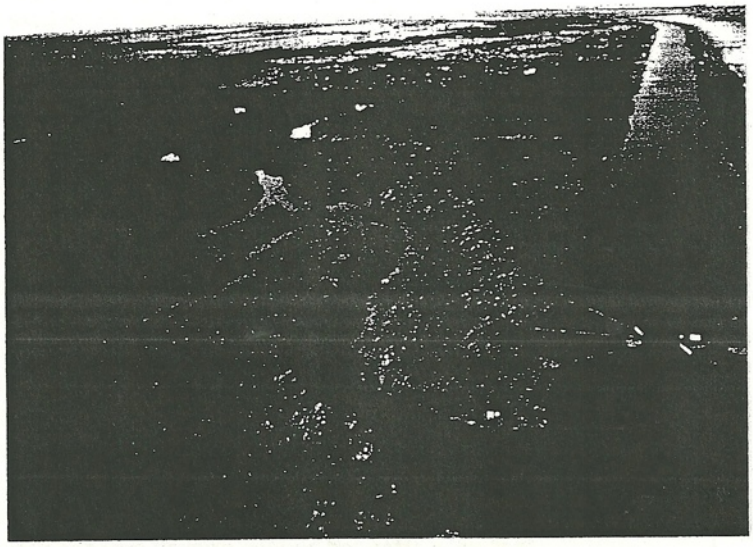

FIGURE 1 Small dam on the channelized portion of the Kissimmee River in Florida helps to restore wetlands.