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Big Water Blues

A healthy Lake Okeechobee is the only hope for the Everglades, but is there hope for the lake?

By Ted Williams

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On the last morning of winter 2001, I stood four miles out in Lake Okeechobee--the shallow, rich, 470,000-acre heart and lungs of the Everglades and the second largest freshwater body wholly in the United States. Behind me, to the north, flushing Florida's prairie country, were the Kissimmee River and other arteries that had been straightened and cut off from their spongy floodplains. In front of me, on the distant southern shore and beyond--all blocked from view by water draped over the curving earth--lay the sparse, working-class communities of Clewiston and Belle Glade, sprawling sugarcane plantations, the Everglades, and Florida Bay. I saw none of the high grass that had ringed the lake before it was replumbed by humans. And I could only imagine the custard apple-moonvine jungle that had dominated the lake's southern rim, and the dense forest of cypress, water oak, pop ash, maple, and cabbage palms to the north, where beef cattle now cycle alien Bahia grass, dairy cows convert silage into milk and phosphorus, and chemical-addicted orange trees goose-step along chalk-lined rows. The vegetation around the lake had been so impenetrable, and the land so wet, that the basin wasn't even circumnavigated until 1883. This was America's last frontier--through the 19th century wilder and less known than Alaska. Okeechobee, which means "Big Water" in Seminole, had been semi-mythical to whites until Christmas Day 1837, when Colonel Zachary Taylor proved its existence by chasing the Seminoles into a trap they had set for him on its northern shore.

Flanking me in the lake were two of its most tireless and effective advocates: Don Fox, a fisheries biologist with the Florida Fish and Wildlife Conservation Commission, and Paul Gray, manager of Audubon's Lake Okeechobee sanctuaries. Hosed by near-horizontal rain--the first significant precipitation in six months--we slogged toward the surviving portion of Audubon's Indian Prairie Marsh, over acres of white mussel shells, through wet muck, up onto cracked muck, and finally onto the high, brushy berm that now seals the marsh from the life-giving lake.

We had swerved and skidded our way here from a mudflat called Little Grassy, 10 miles to the north and 2 miles offshore. In 1988 the lake wind over Little Grassy had ruffled the tops of bulrushes, sending green waves sweeping across their 250-acre expanse. But at about that time the U.S. Army Corps of Engineers decided to raise the lake roughly one foot--to at least 15.5 feet above sea level--because, well, the water might be needed by thirsty sugarcane, citrus, and Gold Coast lawns. More than a decade of high water had drowned the bulrushes, reducing them lakewide from 10,000 acres to about 700. At Little Grassy, where there had been about 18 million stems, there were just 188 by April 2000. The victims' remains, along with other emergent plants, living and dead, had been ripped up by waves and pushed into the shallows to form the berm. With a shovel, Gray sliced three feet through the berm's black guts until he hit the clean sand of the old lakebed.

The mud the plants had once held in place--and the algae proliferating on the nutrients the plants used to eat--blocked sunlight, so that 50,000 acres of submerged plants died, too. Food for wading birds disappeared or, in the deepening water, became unavailable; nesting pairs declined from about 6,000 to zero. The apple snails, on which endangered snail kites depend, once laid their eggs on the bulrush stems. In 1996 there had been 35 active snail-kite nests on the lake; for the past two years there have been none.

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The decision to drown Lake Okeechobee's marshes and kill off their ecosystems did not result from any dearth of scientific data. It was a calculated transaction that expended the public's fish and wildlife so that agribusiness and cities could be spared an increase of 3 percent in water "demands not met," which might have cost them \$20 million but which also could easily have been canceled by old-fashioned conservation.

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No one had bothered to tally what the lost fish and wildlife would cost South Florida's economy. Recently, though, the Florida Fish and Wildlife Conservation Commission has calculated that the value of black crappie, largemouth bass, and various other sunfishes dependent on an acre of bulrushes is \$19,500. So the lake's 9,000 acres of lost bulrushes had been worth \$175.5 million, not counting other values, such as the dabbling ducks that used to attract hunters from all over the nation. In Fisheating Bay, 20 miles southwest of Little Grass, the commission had counted an average of 11,886 dabbling ducks during the winters of 1981 and 1982. Between 1991 and 2000 it counted an average of 338 for the entire lake.

The absurdity of this and other transactions became even more apparent to me when I stepped back--or up--and perused the whole watershed from a Cessna 172. The still air was hazy from wildfires whose convection columns bloomed like thunderheads to the northwest and southwest. Directly below us the gutterized corpse of the Kissimmee River marched to the lake, straight as a drill column. Six miles east we cut the course of Taylor Creek, named for Zach, now bilious with algae after collecting seepage from dairy-farm manure lagoons (state-of-the-art waste treatment, even in the 21st century).

Scattered over the prairie were potholes where otters, waterfowl, shorebirds, and wading birds breed and raise their young. The metastasizing citrus groves had cut many off from the prairie and its cycles of flood, drought, and fire. Clogged with brush and polluted with nutrients, the potholes can no longer support many wetland-dependent species. All this happened when the lake was supposedly being restored under the state's Surface Water Improvement Management Plan, implemented in 1989. "After 12 years of 'restoration,' the lake is in the worst shape it's ever been in," Gray remarked.

Another tireless lake advocate--Nat Reed of Hobe Sound, Florida, who served presidents Nixon and Ford as Assistant Secretary of the Interior when the lake's decline started accelerating--said this: "I consider the near-death of Lake Okeechobee the single greatest environmental defeat I have suffered on my watch [1971 to 1977]. The defeat is painful and nags at me. I am determined with 'time left' to turn the situation around. . . . The saga of Lake Okeechobee is one of the great pollution stories in the sense that since 1971 [in my case] the key decision makers knew that the problem existed and was growing more serious. It is a story of studies and more studies, because action seemed impossible, either politically or pragmatically. Having stated the obvious, who will save the lake?"

Maybe it will be Reed, Gray, Fox, and other activists, who have been piling up some impressive victories. In June 2000--six months before President Bill Clinton signed the Comprehensive Everglades Restoration Plan--the Florida legislature enacted the Lake Okeechobee Protection Plan, which allocated \$38.5 million for restoration of the northern part of the watershed, including landowner-assistance programs and stormwater-treatment areas. The treatment areas, full of nutrient-loving plants, will function as artificial kidneys, doing some of what the natural river systems used to do for free.

Thirty miles from the lake, the straight gutter we'd been following came to an abrupt end, and suddenly the old Kissimmee River reappeared, braiding and coiling through its ancient floodplain. In an enormously significant reversal that advertises the folly of gutterization to the world, the Corps and the South Florida Water Management District are returning 22 of 56 miles to their original condition. Seven miles had been restored in just the past year, and already this section looked wild and natural. Part of the plan--set in motion by the Florida legislature in 1976, only five years after the Corps' drag-line took its last bite--calls for buying all the land in the five-year floodplain (the area that, on average, floods once every five years).

Not all the dead trees we flew over were victims of high water. Many had been injected with herbicide by the district. These were melaleuca from Australia, the bane of native ecosystems, which had been planted by the Corps to stabilize the flood-control dike. In the Everglades, melaleuca are out of control, but on Lake Okeechobee the district is winning. And last year the district, the Florida Department of Environmental Protection, and the Corps replanted the dike with 10,000 native trees--custard apple, red maple, and bald cypress.

Out over the lake the picture brightened even more. Blowing east across the newly exposed flats like shreds of black silk were small, tight formations of pintail, blue-winged teal, green-winged teal, and Florida mottled duck--the first push of pioneers. Far to the southwest, the marshes of Audubon's Lake Okeechobee sanctuaries merged with haze and horizon, regreening in the sunlight and newly dried soil or blackened by desperately needed prescribed burns. Farther out, where the lake turned silver, we could make out the chartreuse brushstrokes of

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surviving bulrushes and bulrushes planted by Fox and his volunteers. Now, for the first time in more than a decade, the bulrushes were producing seeds. "To go back and restore all the 18 million plants we lost on Little Grassy would cost \$6.3 million," Fox had told me. "Now nature's doing most of it for us."

Last January, at its conference in Stuart, Florida, the Everglades Coalition, an alliance of 41 environmental groups, including the National Audubon Society and Audubon of Florida, predicted that if restoration is allowed to proceed on schedule, within 10 years roughly 50,000 acres of submergent plants and 100,000 acres of emergent plants will have returned to the lake's littoral zones, and with them most of the missing fish and wildlife, including at least 30 nesting pairs of snail kites.

Despite the explosion of life caused by the first low water in a dozen years, enormous problems remain. Lake Okeechobee gets 500 tons of phosphorus annually from dairy, citrus, and ranching operations in the north; and in the south, polluted flood and irrigation water is "backpumped" by the sugar industry--that is, pumped back into the lake so the sugarcane won't drown. Natural phosphorus inflow is roughly 100 tons. In 1987, about the time the lake began to blanch with massive, malodorous blooms of blue-green algae, Florida's legislature established an average phosphorus goal of 400 tons a year--300 tons more than the lake and the Everglades can handle. With luck, the treatment areas currently planned for the north shore will remove 90 tons of phosphorus per year, but an additional 310 tons will still need to be removed if the lake and the Everglades are to live. "If we don't restore the lake, nothing else will work quite right," said Gray. "We're spending \$7.8 billion on the Comprehensive Everglades Restoration Plan, but only half a billion of that for the watershed north of the lake [mainly for additional reservoirs and stormwater-treatment areas and for dredging muck from streams], where most of the pollution comes from. That's not going to get the Everglades fixed."

The Corps and the water-management district are returning 22 of 56 miles of the Kissimmee River to their original condition. Seven miles had been restored in just the past year, and already this section looked wild and natural.

Before humans messed with it, Lake Okeechobee had expanded and contracted like any other healthy heart and lungs. During the summer rainy season, the lake's shore would move six miles inland and the surface would rise to 20 feet above sea level, spilling over the southern rim into a 40-mile-wide, 100-mile-long swath of sawgrass. The Everglades, as English surveyors started calling this marsh 150 or so years ago, was like no ecosystem on the planet--a river of grass nourished by the lake. It filtered out solids, sucked up nutrients, and delivered sweet, soft water to aquifers and Florida Bay.

The contractions of Lake Okeechobee were as vital as its expansions. When the water receded, the organic muck that had built up on the bottom dried, decomposed, burned, and blew away. Dabbling ducks wobbled down onto shallows rife with seeds and young, succulent vegetation. Shorebirds scampered over wet flats, gorging on the aquatic larvae of dragonflies, damselflies, midges, mayflies, and caddisflies. Then these insects would grow wings, shuck their exoskeletons, and billow up in great clouds of beige and black that wafted like woodsmoke across lake and marsh, nourishing the whole food chain, from fish and frogs to the birds, turtles, and alligators that ate the fish and frogs.

In autumn, insect blooms would fuel the continent's largest migration of swallow-tailed kites and coincide with the arrival of insectivorous neotropical birds--warblers, tanagers, vireos, nightjars, and the like--all funneling down from half a continent through the tip of Florida, exhausted and desperate for energy to carry them across the gulf. In the spring they migrated the other way, again refueling on the lake's insects after the arduous gulf crossing. Then, during the 1990s, the flying insects crashed. Taking their place were sludge worms--useless to birds and virtually all the other life that had depended on the insect blooms.

The first major assault on Lake Okeechobee began in 1887, when humans connected it to the Gulf of Mexico via the Caloosahatchee River. Then, in 1926, they connected it to the Atlantic via the St. Lucie River. This way the lake could be flushed whenever bureaucrats supposed that it was "too high." In 1967 the Army Corps of Engineers finished girdling the lake with the 38-foot-high Hoover dike. All these manipulations shrank Okeechobee; desiccated the Everglades; sickened Florida Bay by depriving its flora and fauna of the brackish

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water in which they had evolved; and, in the St. Lucie and Caloosahatchee estuaries, killed seagrasses, oysters, crabs, and other organisms intolerant of fresh water.

Yet the tweaking continued. In 1971 the Corps finished its "improvement" of the Kissimmee River, ripping it from the embrace of its wildlife-rich wetlands, yanking out its lazy curves, forcing it into a dragline-excavated ditch, dredging out its life and magic, even the magic of its name, which now became "C-38."

The old river system had been the lake's kidneys--or one of them--cleansing roughly half the inflow as the Everglades used to cleanse the outflow. Now, along with the other gutterized tributaries, it express-delivers nutrients and solids straight into the lake, where they settle, choking benthic life and plants and toppling the ecosystems built upon them.

When the devastation gets bad enough, even the bureaucrats take note. It was, in fact, the extirpation of nesting snail kites in 1999 that helped set real restoration in motion. In 1977 the U.S. Fish and Wildlife Service declared Lake Okeechobee critical snail-kite habitat, which meant that by flooding the marshes the Corps was violating the Endangered Species Act. If Audubon, the lead group in the fight for Okeechobee, had sued--and it would have--the lake's water management would probably have been taken over by a federal judge. But on April 25, 2000, the Corps let the district declare an environmental emergency, authorizing water releases calculated to bring the lake down to 13 feet above sea level by June.

Then came an additional reprieve for the flora and fauna of Lake Okeechobee--a drought, which by May 14, 2001, had dropped the surface to 9.24 feet above sea level, the lowest ever recorded. Now a new water-level management plan has been implemented that is better than the last, though still inadequate. It will allow levels as low as 13.5 feet, at which point 19 percent of the marshes will be exposed. "A quarter of the lake is marshes," said Gray. "So we can restore 25 percent of Okeechobee with just a good water regimen, which means occasionally allowing the level to go down to 12 feet [at which point 75 percent of the marshes would be exposed]."

Even with the great promise of restoration that I saw on the lake and on the upper Kissimmee River, public resistance is daunting. James Bass--who runs 500 head of cattle a mile from C-38 and whose father rode on the old cattle drives to the east coast before there were real roads--speaks for many of his neighbors when he calls freeing the river from the big ditch a faddish "reversal" instigated by "newcomers." "You can't go backwards," he told me. "Everyone wants to preserve. How would you like to own land here and be preserved?"

One of Okeechobee's biggest problems is the inflow of phosphorus and pesticides from the sugar industry's flood and irrigation water. The growers, accustomed to getting their way, appear intransigent. While the water-management district has always allowed them to get rid of flood and irrigation water by backpumping, it has recently given them permission to backpump merely to keep the lake full for future irrigation. "It's difficult to talk to environmentalists sometimes because they don't want to look at the facts," declared George Wedgworth, president of the Sugar Cane Growers Cooperative of Florida.

But here's a fact that environmentalists have looked at: Soon there will be no excuse for backpumping, because treatment areas on the south shore will serve as receptacles for excess water from the sugarcane fields, and because water needed for future irrigation will be available from all treatment areas. About half the wetlands in Florida have been drained, so now there is water to spare. In an average year the lake gets about 7.7 surface feet, 5 of which evaporate. About a foot goes to irrigation, about six inches to the big cities on the lower east coast, and about a foot needs to be vented. It is this excess foot that has been killing the salt-dependent St. Lucie and Caloosahatchee estuaries by being dumped on them and killing the freshwater-dependent Everglades and Florida Bay by not being dumped on them.

"The water going into the Everglades [from the sugarcane fields] is cleaner than the water we're receiving from Lake Okeechobee," proclaimed Wedgworth. "Water backpumped from sugarcane is the cleanest entering the lake--somewhere in the high 90s [parts per billion of phosphorus]," chimed in his vice-president for communications, Barbara Miedema, who later denied she said it, correctly pointing out that the real figure is more like 250 ppb. And Wedgworth blames environmentalists for demanding the emergency release and thereby making backpumping "necessary." "Lowering the lake has caused the worst drought that South Florida has seen

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in over 20 years," he continued. (According to the South Florida Water Management District, 450,000 acre-feet of water were released during last year's emergency, the same amount taken by the agricultural industry; from October 2, 2000, to May 14, 2001, the industry took an additional 400,000 acre-feet.) But then, speaking of the storm that had drenched Don Fox, Paul Gray, and me, Wedgworth said something eminently true, and with which all interests agree: "We had about two inches of rain last Monday, and they dumped [much of] it into the sea. I don't think that's very prudent for the natural system, for wildlife, for agriculture, or for people who drink scotch and water on Miami Beach." It is this agreement that has allowed Lake Okeechobee and the Everglades to suddenly acquire a future.

If resistance to restoration seems unstoppable, so does support. The increased backpumping has outraged and mobilized the two-year-old, 150-member Friends of Lake Okeechobee. "At the same time the district authorized more backpumping it decided not to restrict water usage," says Larry Harris, the editor of the group's newsletter. "The district made a conscious decision to pollute the lake on the south end, which is extremely sensitive and which was showing the best recovery. Now they're dumping all this stuff in there. I hate to call it water--you have to look at it to understand."

"The lake's health is more important than having just-in-case water for the sugar industry," adds the group's president, Carroll Head. Along with Audubon and the Florida Wildlife Federation, the Friends of Lake Okeechobee petitioned the district to reverse its decision, but they were ignored.

When I tried to contact the loud, angry property-rights group Realists Opposing Alleged Restoration (ROAR), I learned that it was no longer active. Apparently, its voice has been drowned out. Louder and angrier than ROAR ever thought of being is Fishermen Against Destruction of the Environment. "It's a new day dawning, and I'm glad to see it," comments the group's take-no-prisoners director, Wayne Nelson. "For 15 years I've been trying to tell the bureaucrats that if you don't clean up Okeechobee, you can forget about the Everglades. Finally, they're listening. Now what this lake needs is a governor who will be its champion. Jeb Bush told me he's fished it. But when I asked him to come see it with me, he hemmed and hawed." The governor has yet to take him up on his offer, but his aides say he strongly supports restoration.

On my last day in Florida, driving east toward the Gold Coast, I looked for a sign from the lake. Finally, I thought I saw it--a snail kite hanging over the St. Lucie canal and wobbling on the west wind like its namesake. Later, I learned that snail kites don't have forked tails, and that this was "only" a swallow-tailed kite. Still, it was hawking insects, perhaps dragonflies emerging from the lake's reborn shallows. As an omen, it would have to do.

Editor-at-large Ted Williams has been writing full-time on environmental issues, with special attention to fish and wildlife conservation, since 1970.

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What You Can Do

Everglades restoration is far from a done deal. Each year, for the next two decades, the U.S. government and the state of Florida must allocate funds to keep the \$7.8 billion, 38-year project going. Let your government representatives know that you want the job finished.

Join the Everglades Conservation Network to receive Restore, a newsletter published by Audubon of Florida, which will keep you current on various Everglades restoration projects, conservation news, and events, as well as provide information on community and technical resources. Restore will also tell you how to make your voice heard in Congress, the Florida legislature, and government agencies. To join, call the Everglades Conservation Network hot line at 800-753-5499; write Audubon of Florida, Everglades Conservation Network, 444 Brickell Avenue, Suite 850, Miami, FL 33131; or visit www.audubonofflorida.org/leadership/ecn.htm (click on "Sign Up Here to Join the Everglades Conservation Network and Receive the Restore newsletter," at the bottom of the page).

On the Audubon of Florida publications web page (www.audubonofflorida.org/main/publications.htm), you can sign up for the Audubon Advocate newsletter, a good source of up-to-date information on the Florida legislature and statewide conservation news.

Whether you live in Florida or not, contact Governor Jeb Bush and urge him to ensure that the state meets its funding obligations for the Everglades restoration. Write Governor Jeb Bush, The Capitol, Tallahassee, FL 32399 (850-488-2272; fax: 850-487-0801; fl_governor@myflorida.com).

President George W. Bush's proposed 2002 budget provides less funding for South Florida's ecosystem than any budget since 1997. Let the President know that full funding of the Restoring the Everglades, an American Legacy (REAL) Act is a priority for you. Write to the President at The White House, 1600 Pennsylvania Avenue NW, Washington, DC 20500. Another good person to contact is Senator Robert Smith, Chairman, Senate Environment and Public Works Committee, 410 Dirksen Senate Office Building, Washington, DC 20510.

There are numerous ways to get other people involved in the Everglades Conservation Network. You can sponsor an Everglades event in your community; hold an Everglades house party; distribute education and advocacy materials; write letters to the editor or op-ed columns for your local newspaper; or participate in call-in radio shows.

You can also volunteer to work in Everglades National Park, where opportunities run the gamut, from cleaning up beaches to collecting data for biologists to removing exotic plants and manning the visitors' center. For information, write to Everglades National Park, Attn: VIP Coordinator, 4001 State Road 9336, Homestead, FL 33034-6733, or visit www.nps.gov/ever/vip.htm.

Visit the Everglades to see firsthand how special it is. Educators or community advocates planning a trip to Florida can take a tour of a restoration site in the Everglades with an Audubon representative by calling 800-753-5499 or e-mailing smayorga@audubon.org.