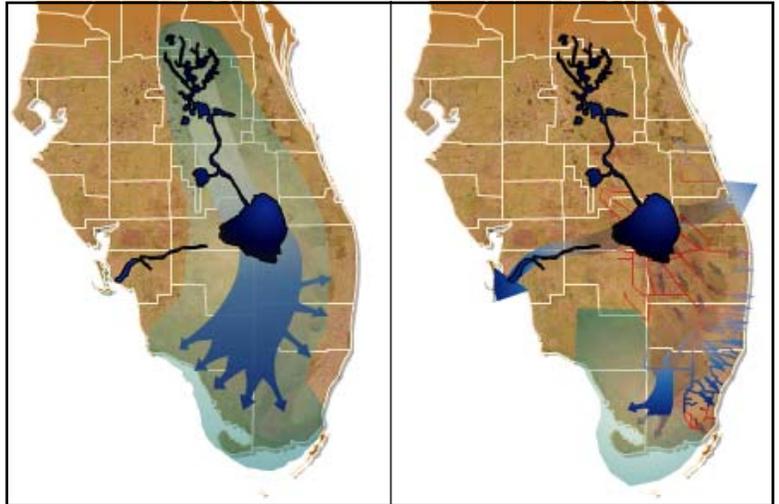




Lake Okeechobee and the Northern Estuaries: The High Cost of High Water

Introduction

There is an ecological crisis in the Lake Okeechobee watershed. Large quantities of water with high levels of nutrient pollution from Lake Okeechobee and local basins are being discharged through the fragile St. Lucie and Caloosahatchee estuaries. The discharges have caused algae blooms to form in some places, which negatively impacts native vegetation, fish, and coastal birds. Florida's famously-clear coastal waters have turned dark brown and green, driving away tourists, harming local businesses, and reducing home values. Scientists have also detected harmful bacteria in some areas, making the water dangerous for human contact.



Historic Flow

Current Flow

In its natural state, a drop of freshwater in the Northern Everglades would meander from the top of the winding Kissimmee River and Kissimmee Valley for six to eight months before entering Lake Okeechobee. In the wet season, water would rise and eventually topple over the southern banks of the Lake and flow south through the great Everglades landscape until it reached Florida Bay.

Now, this same water reaches the Lake in a month or less, raising water levels at an unnaturally rapid pace. Fertilizer and storm runoff add artificially high amounts of phosphorus and nitrogen to the water as it flows south. The water moves so fast that it cannot be cleansed before flowing downstream. Large storm events or atypical weather patterns (like El Niño) exacerbate all of these problems.

Lake Okeechobee Water Levels

Lake Okeechobee is a paradise of biodiversity. Wetland communities fill almost one-third of the Lake, providing prime habitat for Everglade Snail Kites, a variety of wading birds, ducks, game fish, and other species. Water levels between 12.5 and 15.5 feet protect these important resources.

“When Lake Okeechobee water levels are too high, plants die, which harms fisheries and increases turbidity. Beyond 16 feet, a deeper Lake is a dirtier Lake.”

**- Dr. Paul Gray,
Lake Okeechobee
Science Coordinator**

The Lake's thrilling biodiversity and abundance of life cannot thrive when water levels are too high. When water levels rise to 16 feet, the 50,000-acre (75 square miles) submerged marsh is in deep enough water that plants begin to die. Plant die-offs harm fisheries and increased turbidity makes Lake water dirtier. Prolonged deep water also eliminates the wildlife-rich wet prairie communities that wading birds and waterfowl need for foraging. Once plant communities are lost, habitat for fish spawning and feeding is lost, creating a domino effect on the Lake's food chain. Rapidly rising water also drowns alligator and bird nests, including those of Everglade Snail Kites—an Audubon priority species.

Lake Okeechobee and the Northern Estuaries: The High Cost of High Water



Herbert Hoover Dike

The 75-year old Herbert Hoover Dike (HHD) surrounding the Lake cannot tolerate high water levels without risking failure. A breach of this levee would expose nearby towns like Belle Glade, Pahokee, South Bay, and Clewiston to dangerous flooding and flood habitat in the Central and Southern Everglades.

Repairs to the HHD are important to protect these areas south of the Lake. Improving the safety of the Dike could also provide operational flexibility for extreme weather events would justify raising Lake levels above 16 feet for a short period of time.



Lake Okeechobee

Even after the U.S. Army Corps of Engineers completes the ongoing HHD repairs, consistently holding more water in the Lake will damage fragile ecological resources and create significant safety concerns. The ability to store considerably more water outside of the Lake is the key to easing high water levels and meeting dry season needs. Repairing the HHD alone cannot prevent or substantially reduce discharges from Lake Okeechobee to the St. Lucie and Caloosahatchee estuaries.

The St. Lucie and Caloosahatchee Watersheds

Freshwater flowing from the St. Lucie and Caloosahatchee watersheds causes salinity and water quality problems in their respective estuaries. This is often true before discharges from Lake Okeechobee ever occur. The University of Florida Water Institute recommends storing about 200,000 acre-feet of water in the St. Lucie and 400,000 acre-feet in the Caloosahatchee watersheds to protect them from problems caused by local runoff.

Solutions to Provide Relief from High Water Levels in Lake Okeechobee and the St. Lucie and Caloosahatchee Estuaries

Protecting the health of Lake Okeechobee and the St. Lucie and Caloosahatchee estuaries depends on implementing long-term solutions to more closely replicate the balance of water levels in the historic Everglades. This means holding more water in the right places at the right time. To achieve this goal, Audubon Florida recommends the following:

Develop restoration projects that store water and help flow it south: An additional one million acre-feet or more of water must be stored south and north of Lake Okeechobee to further reduce discharges from the Lake. This water storage is a centerpiece of the Comprehensive Everglades Restoration Plan. But details for specific storage projects have not yet been developed. After construction began on a high capacity storage reservoir in the Everglades Agricultural Area, plans were modified and the project was converted to a water treatment feature.

Developing an alternative plan and a new location for this storage reservoir is, therefore, a priority to reconnect Lake Okeechobee and the Central Everglades.

Lake Okeechobee and the Northern Estuaries: The High Cost of High Water



Complete CEPP, C-44, and C-43 reservoirs: The Central Everglades Planning Project will provide an outlet for 217,000 acre-feet of water to flow south from Lake Okeechobee and replenish the Central Everglades and Florida Bay. The C-44 reservoir and Stormwater Treatment Area (STA) will limit salinity imbalances and pollution by storing and treating 50,600 acre-feet of water from the St. Lucie basin and at times from Lake Okeechobee. The C-43 reservoir will reduce estuary harm, especially during droughts, by storing 170,000 acre-feet of water from Lake Okeechobee and the Caloosahatchee basin.

Complete Kissimmee River Restoration: Once complete, this showcase restoration project will add about 100,000 acre-feet of storage potential to the watershed, much of it by raising the levels of Lakes Kissimmee, Cypress, and Hatchinehaw another 1.5 feet.

Expand USFWS Everglades Headwaters National Wildlife Refuge: This new U.S. Fish and Wildlife Service National Wildlife Refuge will create a network of up to 100,000 acres of conservation easements and 50,000 acres of property acquisition in the Kissimmee Chain of Lakes and Kissimmee Prairie area.

Approach Dispersed Water Management in an efficient way: Storing water on private land in the Lake Okeechobee watershed is a collaborative approach that can be a part of the larger solution. Further hydrological modeling and cost-benefit analyses should be developed to ensure the programs advance in a comprehensive way to achieve maximum benefits. Audubon and other organizations have asked the South Florida Water Management District to conduct such analyses.

Maximize Benefits from the USDA Natural Resources Conservation Service's Wetland Reserve Program: This program restores wetlands on agricultural lands to increase wildlife and water resource values. Since 2009, the U.S. Department of Agriculture (USDA) has acquired 95,000 acres in conservation easements in Florida. The Fisheating Creek Wetlands Reserve Program project has the potential to restore over 23,000 acres of wetlands, which will help normalize the hydroperiod of the marsh and store additional water upstream of Lake Okeechobee.

Reduce Nutrient Pollution: High levels of phosphorus and nitrogen continue to enter Lake Okeechobee and the northern estuaries from wastewater, urban stormwater, farm fertilizers, and animal feed. A Basin Management Action Plan (BMAP) has been developed by state agencies to reduce this nutrient loading. Future phases and updates of the plan are needed to fully address the negative water quality impacts that are caused by unnaturally high nutrient levels. More focus on monitoring and enforcement of on-farm Best Management Practices is needed.



Everglade Snail Kite

For more information, please contact:

Julie Hill-Gabriel, Esq.
Director of Everglades Policy
Audubon Florida
jhill-gabriel@audubon.org
[@EvergladesJulie](https://twitter.com/EvergladesJulie)

Paul Gray, Ph.D.
Lake Okeechobee Science Coordinator
pgray@audubon.org
863-202-6658