



Tipping Point for the Everglades Bold Restoration Action Needed Now



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Audubon of Florida scientific research and interpretation is helping to show that the Everglades is continuing to decline and may be reaching a tipping point beyond which environmental degradation becomes irreversible. This message was substantially reinforced this year in the National Research Council's (NRC) "Progress Toward Restoring the Everglades: The Second Biennial Review, 2008." This report states that "ongoing delay in Everglades restoration has not only postponed improvements—it has allowed ecological decline to continue." The report further states: "To do nothing is, in fact, to do harm." The loss of major wading bird nesting colonies and of about two-thirds of the snail kite population are examples of this effect. Audubon believes we are increasingly in a race against time in our efforts to restore the Everglades. The time for bold action is now.

The effects of climate change add another layer of urgency to the need to protect the Everglades, freshwater resources, and wildlife. Sea level rise poses a serious threat of salt water intrusion to both South Florida's water supply and natural freshwater habitats. It is imperative that we significantly strengthen the Everglades freshwater head to keep out saltwater and to improve the health of wildlife habitats. Everglades restoration and the prioritization of the key projects will help Florida adapt to the harmful effects of climate change.

Given our current understanding of the ecological health of the Everglades, as well as current economic realities and political opportunities, Audubon believes that focused action is necessary for Everglades restoration, action which prioritizes implementation and re-organization of critical projects to achieve immediate ecological and hydrological benefits.

Audubon calls for bold action on:

- **Science Building Blocks:** Adaptive Management and collaborative planning have proven successful in restoring the Kissimmee River and should be more aggressively incorporated into the Everglades Restoration program. The large body of new science that has accumulated since the completion of the Comprehensive Everglades Restoration Plan (CERP) plan needs to be effectively integrated into the Everglades program.
- **Florida Bay:** The state and federal components of the C-111 projects must be implemented in a manner that delivers sufficient freshwater flows to Florida Bay to reverse ecological decline.
- **Core Freshwater Everglades:** The opportunity exists to be more efficient with restoration planning by bundling key, inter-dependent projects in the core areas of the southern Everglades. Multi-project planning provides opportunities to streamline government processes and increases the probability that the total amount of clean water available to the Everglades will be distributed in the most ecologically smart patterns. Bundling of interrelated projects will result in the most successful and comprehensive regional-scaled planning, and would reduce costs by combining resources, administration, and planning.
- **Everglades Agricultural Area (EAA):** Prioritize completion of land acquisition, and use the newly acquired land in a manner that will provide the earliest ecological benefits. Land in the EAA is essential for increased storage, treatment and conveyance of water from Lake Okeechobee south through the EAA in order to provide enough clean water to restore the downstream core and southern Everglades ecosystems.
- **Lake Okeechobee and the Northern Estuaries:** Greatly increased water storage capacity and pollution control efforts are critical to achieving system-wide ecological benefits, and must remain a priority.

Using Science Building Blocks and Collaborative Engagement to Achieve Early Ecological Benefits

The NRC found that “there are no gaps in knowledge or ranges of uncertainties that are large enough that they should impede Comprehensive Everglades Restoration Plan (CERP) progress. In many cases, scientific knowledge will improve and uncertainty will decrease as project construction moves forward in an adaptive management framework.”

In 2006 the NRC recommended Incremental Adaptive Restoration (IAR) within an Adaptive Management framework as a means to aggressively achieve the earliest possible ecological benefits while at the same time increasing learning on the key ecological uncertainties. IAR also requires adequate monitoring and evaluation of system responses, as a basis for making adjustments where needed to mitigate undesirable ecological outcomes and to improve overall ecological performance. Adaptive Management has proven a successful approach to restoring the Kissimmee River and should be more fully incorporated in Everglades restoration projects.

The integration and application of current Everglades ecological and hydrological sciences with the values and objectives of Everglades stakeholders is an essential prerequisite for sound planning and decision-making by the implementing and supporting agencies in Everglades restoration. It is the view of Audubon that the seamless and collaborative relationship that should occur between science, management and stakeholders in Everglades restoration needs additional attention and improvement. A stronger role by Everglades scientists and stakeholders is especially necessary for strengthening consensus on restoration program goals, for planning IAR strategies, and for guiding multi-project planning for the core Everglades and southern estuaries regions.



Last year Audubon scientists observed the worst nesting season for roseate spoonbills since the 1960's, a decade the birds were showing signs of recovery from plume hunting and other impacts on their population. Only 292 nests were identified during the nesting season, indicating a 37 percent drop in spoonbill nests in just one year.

Florida Bay and the Southern Mainland Estuaries

Roseate spoonbills are an indicator of the overall health of the southern Everglades and Florida Bay and Audubon scientists have been studying their life cycles in Florida Bay for the past 80 years. The 2007-2008 roseate spoonbill nesting effort and success plummeted in the northeastern part of Florida Bay, a region that is heavily impacted by water management practices. Declines of other fish-eating birds (e.g., pelicans, osprey, eagles), along with predatory fishes, alligators, and crocodiles have also been widely documented, indicating a common-cause denominator, which is likely the decline in small fish and invertebrate populations that make up the base of the food chain. Because of these widespread declines combined with other signs such as more frequent and persistent algae blooms, Audubon believes that Florida Bay is on the brink of a monumental ecological collapse.

Florida Bay and the adjacent estuaries have suffered from the algae blooms, elevated salinities, and decline of freshwater flows in recent years. The South Florida Water Management District (SFWMD) has expedited the C-111 Phase I Spreader Canal (SC) project and has set construction to begin in the fall of 2009. Bold action is critical to ensure that the operation of this project delivers sufficient freshwater flows to Taylor Slough in order to achieve measurable ecological benefits. Adequate flows through Taylor Slough will not only provide restoration benefits in northeastern Florida Bay, but also will create a spillover effect in adjacent mainland estuaries by rehydrating nearby mangrove wetlands and lowering damaging high salinities in imbedded lakes (West Lake, Cuthbert Lake, etc.) that are now inundated with salt as a result of decades of diminished freshwater flows. Essential ecological responses to the operation of the C-111 SC Phase I include measurable progress in the recovery of healthy submerged aquatic vegetation communities (SAV), increased abundance and diversity of estuarine fish communities, and indications of improved nesting success by roseate spoonbills in eastern Florida Bay.

The federal C-111 South Dade project is another project needed to reduce the damaging effects of water management structures and practices. Portions of this project are under construction, but other critical parts need additional funding. The ecological benefits that are projected to occur with the SFWMD's completion of the C-111 Phase I SC project assume that the features of the Army Corps of Engineers (Corps) C-111 South Dade project will be complete. Thus, the success of the SFWMD's expedited Phase I of the C-111 SC project, and increased flows through Taylor Slough, will be enhanced by the Corps' completion of the C-111 South Dade project.

Snail kite © Mike Tracy

Core Freshwater Everglades

The historical abundance of wildlife that once flourished throughout the system is in serious decline. Wildlife recovery depends upon restoring the core, freshwater Everglades from south of Lake Okeechobee through Everglades National Park. This system was once connected by an Everglades ridge and slough landscape that was created and sustained by the uninhibited flow of a slow-moving river, often called sheet flow. Today, this region is fragmented by a series of canals and levees that have impeded the natural flow of water. The result is an unnatural mosaic of wetlands that are either over-flooded and ecologically damaged in broad areas up-stream from flow barriers, or over-drained in areas downstream from the same barriers. As a result, the classic Everglades landscape has been dramatically altered and the ecological vitality of the system has greatly declined.

Restoration of the core and southern Everglades requires immediate completion of the Tamiami Trail one-mile bridge component of the Modified Waters Delivery (Mod Waters) project. Although this critical step to accomplish progress toward finalizing the Mod Waters project is underway—after numerous delays and cost escalations have resulted in a more narrow scope and more limited projected ecological benefits—it is certain that additional flows beyond those provided by a one-mile bridge will be necessary to meet ecosystem restoration goals for Everglades National Park. As the NRC found, “Additional Tamiami Trail modifications will be needed as the CERP progresses and the Decom project moves forward to allow greater water flow volumes into Everglades National Park.”





Everglades Agricultural Area

Increasing storage, treatment, and conveyance of water from Lake Okeechobee south through the Everglades Agricultural Area (EAA) is critical to providing enough clean water to restore the downstream core and southern Everglades ecosystems. All recent science and modeling are showing that the core Everglades and downstream estuaries need more water than was understood when CERP was first planned. Audubon is working to ensure successful completion of the state of Florida's purchase of key lands in the EAA. Moving forward, restoration projects to increase water storage, enhance water treatment, and ensure conveyance south must be included for priority planning and implementation.

The acquisition of lands in the EAA can also improve the health of upstream ecosystems such as Lake Okeechobee and the Caloosahatchee and St. Lucie estuaries. The opportunity to flow water out of the lake and through the core Everglades can eliminate the need to make harmful releases of polluted lake water into the Caloosahatchee and St. Lucie rivers, while protecting the integrity of the Herbert Hoover Dike. Northern Everglades calculations call for capturing roughly four times more water north of the lake than present plans and infrastructure would be able to move southward through the EAA. Updated planning for land acquisition and land use in the EAA can ensure that Everglades restoration needs are met as well as provide for sustainable agriculture and sustainable local communities.



American Alligator © RJ Wiley

Particularly important for an ecosystem-scaled restoration program, restoration objectives and measures of success should focus on recovering the defining ecological characteristics of the historical Everglades and include key indicators of the recovery of healthy Everglades-type landscapes. These landscape indicators could include such defining features as tree islands (ridge and slough Everglades), alligators ponds (southern marl prairies), and estuarine lakes (southern mainland mangroves forest).

Bundling Restoration Projects

There is an excellent opportunity to save money and plan restoration projects on a landscape scale, taking into account the interdependence of the system. This is necessary to undo the damage created by ditching and damming the ecosystem into compartments. Future project planning and implementation must be bundled across regional scales. The NRC report found that “there is a need for a combined operational plan because the C-111 and Mod Waters projects are hydrologically linked to each other and the larger regional water management system, even though the two projects were authorized by separate congressional legislation.”

Implementing a suite of critical projects, which are interdependent and which have not yet entered the planning or authorization stages, should begin immediately, concurrently with the construction of the Tamiami Trail one-mile bridge and phase-one of the C-111 SC project. Planning Phase II projects together, including Decompartmentalization (Decomp), Phase II of the C-111 SC, Seepage Management in CERP and Mod Waters, and additional Tamiami Trail bridging components, will substantially improve the chances that maximum system-level restoration will be achieved. Collectively these projects are all critical to restore the degraded core Everglades ecosystem and to enable more water to reach the southern estuaries downstream from the core Everglades.

Phase II restoration projects must occur at a large enough scale to produce widespread ecological benefits, consistent with the restoration goals of CERP and companion restoration programs. The design, integration, and refinements of these projects should be primarily guided by ecosystem restoration goals and actual ecological responses that occur cumulatively, over time, at species and landscape



Lake Okeechobee and the Northern Estuaries The Lake Okeechobee watershed is both over-drained and intensely polluted with phosphorous. In response to the deteriorating health of the lake and the problematic highs and lows of in-lake water levels, in 2007 the Florida Legislature boldly approved the Northern Everglades Plan. This plan effectively authorized the SFWMD to explore opportunities to store and treat much greater volumes of water in the Lake Okeechobee watershed and Caloosahatchee and St. Lucie basins. The legislation requires the development of sub-basin technical plans and the efforts and projects will be funded by the state of Florida.

The Lake Okeechobee Protection Plan mandates meeting Lake Okeechobee's phosphorus Total Maximum Daily Load (TMDL) of 140 metric tons per year by the year 2015 (allocated as 35 tons from the atmosphere and 105 tons from inflows). Northern Everglades calculations projected Florida is not on a path to meet that deadline. In spite of the looming deadline and un-encouraging projections, development of the sub-basin plans for the Northern Everglades is lagging as implementation details and timelines remain undefined.

The lake's TMDL deadline should evoke a sense of urgency in our pollution control efforts. Audubon believes that sub-basin plans must be prioritized. In particular, the Kissimmee basin plan is critical and remains stalled. This region contributes half of the lake's total inflow and is experiencing the most intense development pressure. The Kissimmee basin continues to dump excess water and harmful nutrients into Lake Okeechobee and ultimately other downstream systems. The SFWMD has developed most tools necessary to work on this most important task and must start this effort immediately.

There are also a host of simultaneous efforts that can be implemented to help the state meet the water storage goals and phosphorous TMDL for Lake Okeechobee. A peer review of the current Best Management Practices (BMPs) needs to be conducted to evaluate the BMP program's effectiveness. In spite of the pressing challenges mentioned herein, current BMPs allow continued excessive addition of phosphorous and have no specific requirements for onsite water management. Partnerships with private landowners to store and treat water onsite could aid in the reduction of phosphorous run-off while reducing the amount of land the state needs to purchase in order to store water north of the lake.

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Conclusion

The Everglades is unquestionably a unique American treasure. No other vast freshwater and estuarine wetland system like it exists anywhere in the world. As such, it is as much a part of our national heritage and identity as is any of the great natural or historical treasures across our broad nation. For this reason alone, we must double our efforts to re-ignite a unity of purpose and a renewed partnership among the State of Florida, the federal government, tribes, and all stakeholders toward a common goal of making immediate progress to recover the Everglades' ecological and hydrological health. There are many other compelling reasons for prioritizing and accelerating Everglades restoration projects, not the least of which is to protect and ensure abundant freshwater resources so critical to human society, birds, wildlife, and the natural system, and because of the urgent need to reverse the continuing degradation of these wetlands.

The passage of the CERP in 2000 demonstrated a broad societal commitment to restoring entire ecosystems as the most lasting and effective means of resolving complex problems in such national treasures as the Everglades. Since the passage of CERP and after years of planning, however, scant progress has been made on project implementation.

The opportunity still exists to renew our commitment to recovering a healthy Everglades ecosystem, for the benefit of humans, wildlife, and to protect water resources. Opportunities exist to demonstrate that humans can undo the harm that years of dredging, damming, ditching, and water management practices have caused to our natural systems. This is the time and place to demonstrate that our nation can restore its national treasures.