Audubon FLORIDA

Everglade Snail Kite Nesting Season Summary 2012

Restoration Needed to Improve Core Everglades Habitat

Photo by Ashok Khosla

Introduction

In recent years, the endangered Everglade Snail Kite (Kite) has experienced an alarming population decline.

A symbol of the Everglades, the Kite remains a priority bird for Audubon and its decline has heightened awareness about the need for action. The species is also an important indicator for Everglades restoration as the Kite is just one of three Total System-Wide Performance Measures for the Comprehensive Everglades Restoration Plan. While nesting during the past two years has increased in small lakes as a result of reliance on exotic apple snails, nesting in the Kite's core Everglades habitat is virtually nonexistent.

This summary explores recent Kite population trends, 2012 nesting effort, and results by region, followed by recommended solutions for the recovery of the Kite.

Population Trends

Starting around the year 2000, the Kite population experienced an 80% decline, decreasing from 3400 individuals to approximately 700 by 2008 (Fig. 2). At that rate, population models predicted that Kites could become functionally extinct from Florida in 20 to 30 years.

"The Everglade Snail Kite is an icon of the River of Grass that is perfectly evolved to live in the original habitat. Restoration projects and better water management are urgently needed to ensure this bird thrives beyond 2013."

- Dr. Paul Gray, Audubon Florida
Lake Okeechobee Science Coordinator

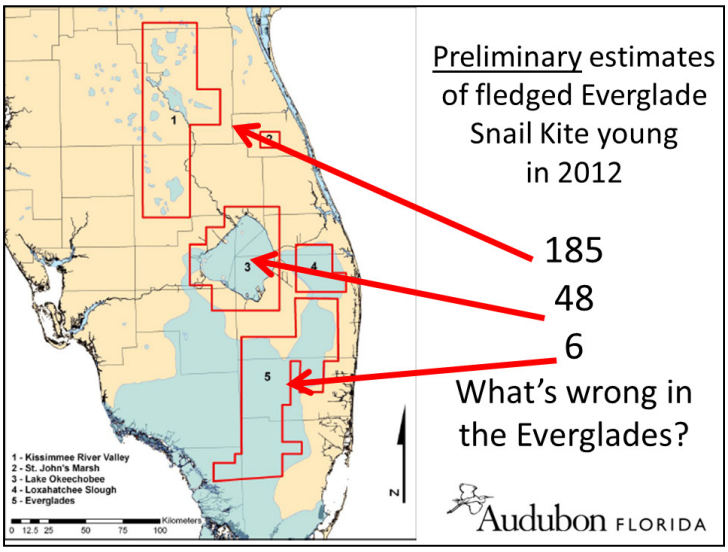


Figure 1. The estimated number of young Kites fledged in 2012 by region showing an ongoing nesting disaster in the Central Everglades. Success in northern areas is mostly concentrated on the Toho lakes (Source: Reichert et al. 2012).

As compared to the dire population numbers before 2010, the Kite's populations improved in 2011 with about 200 young fledged (Fig. 3). Preliminary numbers from 2012 indicate a second year of improvement. But in spite of two good years overall, the Kite population remains seriously threatened for the following reasons:

1. the population remains far below historic levels and conservation goals;
2. the most important Kite habitat, the Central Everglades, continues to fail to support nesting Kites; and
3. evidence discussed later in this document indicates that recent nesting success has been based on an exotic apple snail living largely on exotic plants in a few small lakes.

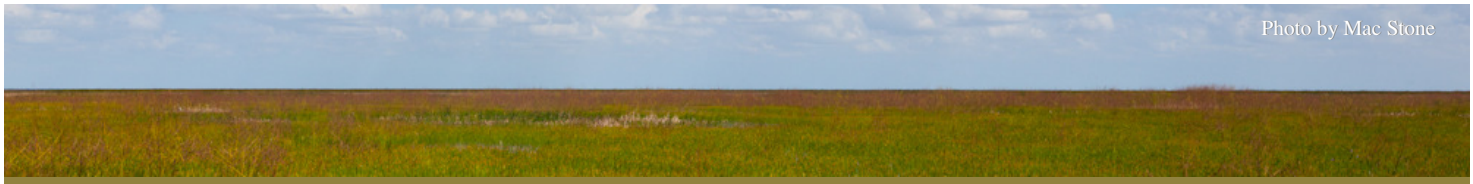


Photo by Mac Stone

Nesting Trends by Region

Troubling news in the Everglades

The Central Everglades, which in this report refers to Everglades National Park, the Water Conservation Areas, and the Arthur R. Marshall Loxahatchee National Wildlife Refuge, has the largest area of Kite habitat in Florida and has historically supported the majority of Kite population and breeding. Although designated as critical habitat under the Endangered Species Act, successful Kite nesting throughout this portion of the Everglades has all but ceased (Fig. 1), indicating the urgent need for restoration of Kite habitat.

In March, a cluster of about 19 nests was started in Water Conservation Area 3B (WCA 3B) and all failed. Identification markers on five of the nesting birds revealed that all of the Kites that attempted to nest were 12 or more years old. Kite studies indicate that the birds are likely to nest in or near areas where they were born, and usually do not travel long distances to nest.

That these relatively geriatric birds attempted to nest and failed indicates that Kites familiar with nesting in the Central Everglades may be dying out. Because the Kite's core habitat fails to support a healthy population, urgent restoration activities and improved management are needed to restore the population viability in the Central Everglades.

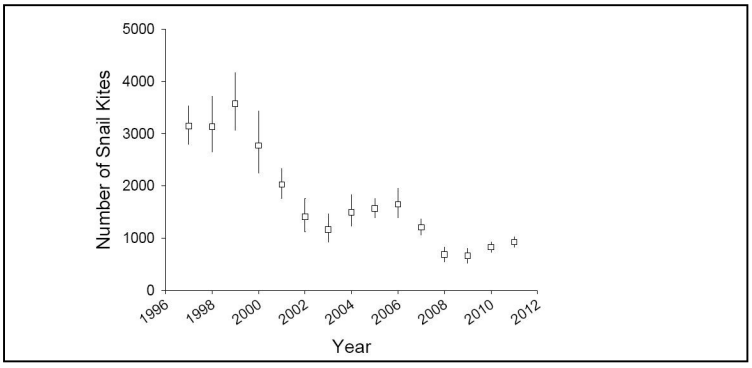
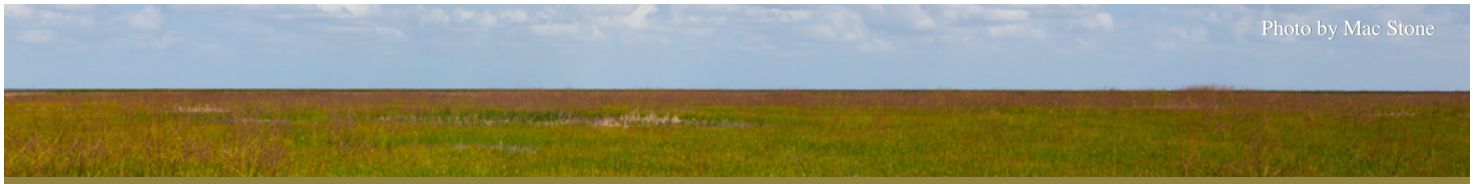


Figure 2. Everglade Snail Kite population levels have inched upward the past few years but remain far below historic, or safe, levels. (Source: Reichert, B., C. Cattau, W. Kitchens, R. Fletcher, J. Olbert, K. Pias, and C. Zweig. 2012. *Snail Kite Demography Annual Report 2011*. Interim Report for the U. S. Army Corps of Engineers, Jacksonville, FL.)

Lake Okeechobee water management remains a problem

The estimated 48 fledged young on Lake Okeechobee in 2012 were the most since 1993, when there were almost 100. The number of nests on Okeechobee almost doubled from 2011, but nest success was not as high. About 50% more young fledged in 2012 as compared to 2011. However, the reliance on exotic apple snails makes the sustainability of this population increase questionable.

In four separate years since 2000, Lake Okeechobee water levels have dropped lower than any level recorded before 2000. While droughts naturally occur, water management decisions often exacerbate the dry conditions. When water levels are too low to permit gravity flow, temporary forward pumps are installed to continue to pump water out of Lake Okeechobee to deliver to consumptive users. And rather than requiring less water usage at the first sign of a drought, the South Florida Water Management District



often allocates more of Lake Okeechobee's surface water to agricultural users than during normal rainfall years in order to prevent crops from suffering from drought conditions. These practices further deplete Lake levels and intensify drought impacts to Kite habitat on the Lake.

In the first three extreme-low events since 2000, native apple snails were all but eliminated and it took years for snail and Kite populations to recover. After the 2011 extreme low, native snails again were decreased, but the exotic apple snails were not as severely impacted. In 2012, exotic snails made up nearly 100% of the snails observed at Kite nests, indicating Kite nesting was supported by the exotic species (Fig. 4).

The full impact of the exotic snails has not yet been realized. Areas outside of Florida provide cautionary examples where exotic snails have become established and have impacted plant life with their voracious feeding.

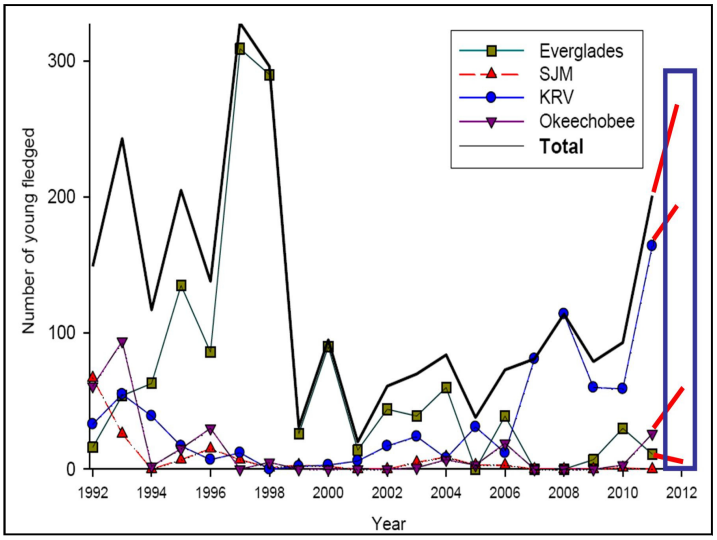


Figure 3. Est. number of fledged Everglade Snail Kites, i.e. young that left the nest (Source: Reichert et al. 2012). The blue box contains preliminary 2012 nesting trends which projects the past two years likely continued the trend of increased nesting. However, note that the Central Everglades previously produced more young than any other region but now produces nearly the lowest number of young Kites fledged. ("SJM" is St. Johns River Marshes and "KRV" is the Kissimmee River Valley lakes.)

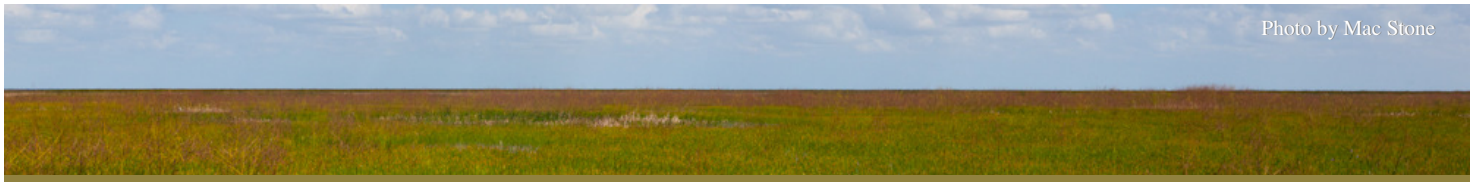
While exotic snails survived water level extremes, the low water levels in 2011 left Kites to abandon their young in nests to die. Indeed, all marsh biota suffered an extreme dry-out and concomitant harm, including events such as loss of fish spawning grounds, and nesting failure for organisms from alligators to wading birds.

Therefore, despite recent moderate Kite nesting success, more needs to be done to improve Lake Okeechobee water management to support sustainable Kite populations.

Exotic snails in the Kissimmee Chain of Lakes region support Kites

As with Okeechobee, Kite nesting success in this region primarily relied on exotic apple snails (Fig. 4) and in some lakes, exotic snails survived by living on the exotic plant Hydrilla. As in 2011, during the past year, East and West Lakes Tohopekaliga produced more than 50% of all fledged young in Florida.

With other Chain of Lakes included, the region produced about three-fourths of all fledged Kites in 2012 (Fig. 1).



Audubon supported managing the Hydrilla exotic snail habitat as a short term enhancement to benefit Kite nesting in West Lake Tohopekaliga because state-wide populations are in such serious trouble. But this is not a long term solution. In addition to the uncertainty of sustainability of the exotic snail population, reliance on exotic species can result in replacing native plant and animal communities. The Hydrilla also severely limits boating and other human uses of the Lake and can block drainage gates during floods.

The Kite's heavy dependence on the Kissimmee Chain of Lakes for nesting presents a number of other concerns. First, this area is more susceptible than other Everglades habitats to cold fronts during the nesting season. Cold snaps can make snails inactive and thus less available for the Kites to catch, ultimately harming nesting success. Similarly, if a disease outbreak occurred on these small lakes, the Kite population could be quickly and severely impacted.

The 2011-2012 trend of the majority of Kite nesting occurring on such a few small lakes, while virtually absent from other parts of the Greater Everglades Ecosystem including their critical habitat in the Water Conservation Areas, is not sufficient.

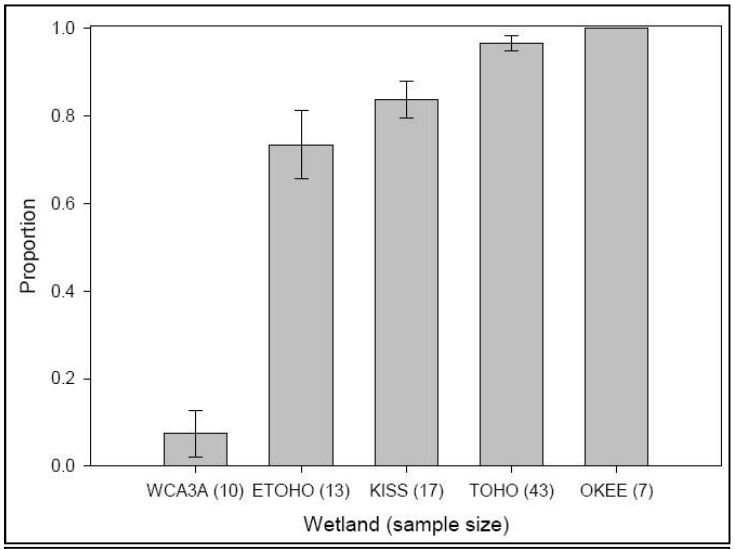


Figure 4. Proportion (percent) of exotic snails collected at kite nests in 2011. Sample size for each wetland is equal to the number of nests from which shells were collected (source: Reichert et al. 2012). "WCA3" is Water Conservation Area 3, "ETOHO" is East Lake Tohopekaliga, "KISS" is Lake Kissimmee, "TOHO" is West Lake Tohopekaliga, and "OKEE" is Lake Okeechobee.

Photo by Larry Frogge

Conclusion

The Central Everglades is the heart of Everglade Snail Kite habitat. The fact that Kites are no longer nesting in this part of their critical habitat demonstrates an emergency that requires urgent and bold action. The population of about 700 Kites in early 2011 have produced more than 400 young Kites in the past two years. But many of these young will not survive to breed, and we remain far below the 3000+ Kite population of a decade ago.

Dependence on exotic snails is not the answer

The full range of impacts to Florida ecosystems from exotic snails remains to be seen. The exotic snails and exotic Hydrilla on which they depend change lake biology and harm biodiversity. Allowing the majority of Kite nesting

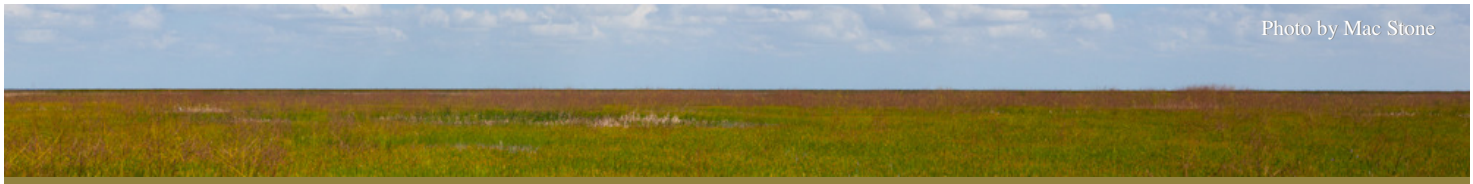


Photo by Mac Stone


Photo by RJ Wiley

success to hinge upon an ecosystem invaded by exotic species that is a fraction of its historic range offers little security for the species' future.

Recommendations:

Everglades restoration and water management changes urgently needed

In the coming year, Audubon will focus on improving the management of Central Everglades and Lake Okeechobee water levels in an effort to expand Kite nesting success to a larger area, and to improve water management to increase native snails and reduce dependence on exotic snails.

Audubon recommends the following actions to benefit the Everglade Snail Kite:

- Continue implementation of the Everglades Restoration Transition Plan (ERTP) to improve water management for snails, Kites and other endangered species utilizing the Water Conservation Areas.[1] Apply scientific coordination and adaptive management strategies using on-the-ground conditions to all habitats possible.
- Implement the most ecologically beneficial plan for the Central Everglades Planning Project. Coupled with ongoing and future bridging efforts to raise the Tamiami Trail so that more water flows into the Everglades and currently compartmentalized habitats become better connected, such restoration efforts are the true key to reestablishing the Kite population in their historic Everglades range.
- Keep Lake Okeechobee's levels within the Lake stage envelope - between 12.5 to 15.5 feet- to maintain Everglade Snail Kite nesting and breeding habitat.
- Avoid the use of temporary forward pumps to deliver water from Lake Okeechobee to consumptive users when the Lake is so low that gravity flow is no longer possible. This practice exacerbates low Lake conditions, resulting in greater harm to Kites and native apple snails.
- Establish a coordinating committee to provide the most up-to-date information available toward improved recommendations for Kite and snail management.

[1] Hydrological conditions in the WCAs also contributed to poor wading bird nesting in 2012 which is addressed in the ERTP. See Audubon's wading bird report at bit.ly/ZcUKdQ.

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