



Snail Kite by Mike Tracy

Protecting Endangered Snail Kite Populations in Florida

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Introduction

Snail Kites are one of the most famous birds of south Florida and the Everglades. Formerly called the Everglades Kite, anthropogenic changes to south Florida's natural areas have eliminated this bird from large parts of its former range and in just the past decade, the population has declined from more than 3000 birds to less than 700 today. Much of this crash is attributable to development-related water management problems, exacerbated by severe droughts and floods in the Everglades and Okeechobee areas this decade. The Kissimmee Chain of Lakes, and especially Lake Tohopekaliga (Lake Toho)—both minor breeding areas formerly—have hosted most of the (few) Kites who have tried to nest in recent years. Unfortunately, in 2010, 77% of the nests on Lake Toho failed to produce chicks.

Snail Kites are extremely specialized and eat only apple snails, for which they are named. On Lake Toho, the native plant and snail community has been mostly replaced with the exotic plant hydrilla, and an exotic apple snail. Even though this replacement is foreign to Florida, the Snail Kites appear to be able to sustain themselves in this habitat if the hydrilla/snail community remains healthy. Normally, managers try to eliminate the exotics, but with the Kite's precarious position today, strategies to sustain the beneficial aspects of this plant and animal community are necessary to continue some Kite nesting until the southern nesting areas can be restored to ecological health.

This paper discusses the history of the Snail Kite's plight, the plant management plans now needed, and ways to meet the Kite's needs while continuing the function of Lake Toho for the many user and economic groups that depend on it.

Historical Range and Status

The entire U.S. range of the Snail Kite (*Rostrhamus sociabilis*), formerly the Everglades Kite, is contained within the state of Florida. Snail Kites originally ranged from as far north as the Florida panhandle, Paynes Prairie near Gainesville and Jacksonville on the St. Johns River, to the Miami River in the south¹. Pioneering ornithologist W. E. D. Scott found so many nesting Kites on Lake Panasofkee in 1875 that after collecting 40 for the museum at Princeton, he noted, "...their numbers seemed in no way diminished."²

The Snail Kite is acclaimed for its aerial grace and beautiful plumage, but it is also known for its unique bill and talons, perfect for its specialized diet consisting almost entirely of the golf ball-sized native apple snails (*Pomacea paludosa*).

¹ Sykes, P. W., Jr., J. A. Rodgers, Jr., R. E. Bennetts. 1995. Snail Kite (*Rostrhamus sociabilis*). In *The Birds of North America*, No. 171 (A. Poole and F. Gill, eds.) The Academy of Natural Sciences, Philadelphia, and The American Ornithologists Union, Washington, D. C. [most basic biology reported in our document is from the cited document]

² Scott, W. E. D. 1903. *The story of a bird lover*. The Outlook Company, New York, NY.

These aquatic snails come to the water surface periodically to take in air through their siphon, making them accessible to the Kite. Florida recently has been invaded by four species of non-native apple snails³ (*Pomacea spp.*) that grow to the size of a baseball, lay more eggs than native snails, and also can be eaten by Snail Kites. Several entities are investigating the impacts of the non-native snails on Kite biology, native plant communities, and the native apple snails. All these snails feed on aquatic plants, including hydrilla, and the algae coatings on the plants.

Snail Kites build their nests over water, in low reeds or trees. Nesting often occurs in groups where Kites defend the immediate nest, but not the entire feeding territory. The distance Kites will travel to find food for their young in the nest range from less than 100 feet in good habitat, to up to 3.5 miles in poor or degraded habitat. Traveling farther, does however, reduce successful nesting prospects significantly.

Current Status

The Snail Kite's range has decreased significantly in Florida and now they only inhabit the Everglades, Lake Okeechobee, Kissimmee Valley, and southern parts of the St. Johns River marshes. Northern regions and many peripheral areas, such as Lake Panasofkee, no longer host Snail Kites. In the past 10 years, Kite numbers have also plummeted dramatically, from more than 3,000 in the mid 1990s to less than 700 now⁴ (Figure. 1).

³ Apples Snails of Florida. Florida Institute of Food and Agricultural Sciences, Univ. Florida (http://entnemdept.ufl.edu/creatures/misc/gastro/apple_snails.htm)

⁴ Christopher Cattau, C., W Kitchens, B Reichert, J. Olbert, K. Pias, J. Martin, and C. Zweig. 2009. Snail Kite Demography Annual Report. 2009 U.S. Army Corps of Engineers Contract # W912EP-09-C-0023. Jacksonville, FL. [population data in our document comes from the cited document]

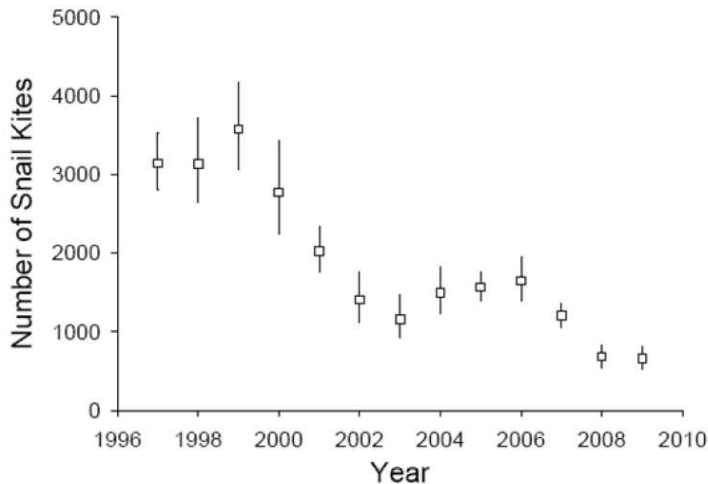


FIGURE 2-9 Annual estimates of snail kite population size in Florida and 95 percent confidence intervals
 SOURCE: Cattau et al. (2008, 2009).

Figure 1. Kite populations have plummeted in Florida and it is calculated that if these trends continue, Kites could be extirpated from the state in as little as 30 years.

The reasons for the dramatic population decline vary with location. In the Everglades Water Conservation Areas and Lake Okeechobee where most Snail Kites nest, extreme water-level fluctuations associated with severe droughts and hurricanes have virtually eliminated nesting success. How long it will take for these habitats to recover is uncertain and is partly dependent on weather patterns, water management and the success of restoration efforts.

While southern habitats are not functioning, northern areas still serve as a bridge for Snail Kite nesting success. On lakes such as Tohopekaliga, native plant and snail communities have been overrun by the exotic plant, hydrilla, and invasive exotic apple snails. A habitat of hydrilla and exotic snails may be foreign to Florida, but can be utilized by Kites much like a community of native plants and snails. Audubon supports efforts to suppress the exotics and restore native communities, but unfortunately at this point in time, greatly reducing hydrilla coverage would leave Kites with virtually no habitat at all. Because Kites can utilize these non-native communities, Audubon recommends that these temporarily-useful, non-native habitats be managed to sustain adequate snail populations for nesting Kites.

Ecological Result Needed

Aquatic plant management is essential in Florida's water bodies because exotic and nuisance plants, if not controlled, will destroy the very habitats so important to protect. Hydrilla and exotic snails cannot be eradicated with present technologies, therefore, management is required. Now Florida faces the additional challenge of managing hydrilla and snails to benefit Kites. For now,

management should sustain enough hydrilla to meet Kite needs, yet maintain other essential functions of the lake, including navigation, fishing, and flood control to the extent practicable.

For hydrilla, plant control relies primarily on the application of herbicides in the water that kill plants over wide areas. At the edges of the kill zone, plants that do not die can be damaged enough to become unfit food and substrate for snails. And because of variable conditions in the lake including unpredictable currents, changing temperatures, (herbicides last longer in cooler water), varying plant densities, water depths, and other factors, the total area of treatment effects is only generally predictable. For example, a carefully-conducted hydrilla treatment on Lake Istokpoga in March 2008 designed to treat 2,074 acres ultimately killed 3,570 acres of hydrilla—1,496 more acres (2.3 square miles) than predicted.⁵ With such large uncertainties, caution and balance are essential.

The success of Snail Kite nesting is dependent on the availability of apples snails. Specifically, Figure 2 shows that in deeper water, more snails have been detected in areas with hydrilla than without⁶. On Lake Toho in 2010, when relatively few acres of healthy hydrilla were present due to treatments and freezes, 61 of 79 nesting attempts failed (77% failure rate)⁷. Hydrilla management historically has not been conducted in experimental ways that detect cause and effect relationships with Kite nesting, but recent Kite problems mandate increased attention. Only by conducting controlled experiments—in this case by reducing treatments to allow hydrilla persistence and potential improvements in Kite nesting areas—can these complex relationships be untangled.

⁵ Meeting minutes of April 23, 2008. Lake Istokpoga Management Sub-committee for Hydrilla. Sebring.

⁶ Kitchens, W., et al. 2009. Population ecology and conservation of the Snail Kite: An update. Presentation to the Snail Kite meeting sponsored by Florida Fish and Wildlife Conservation Commission. September 25, 2009. Tallahassee.

⁷ W. Kitchens. University of Florida. Pers comm..

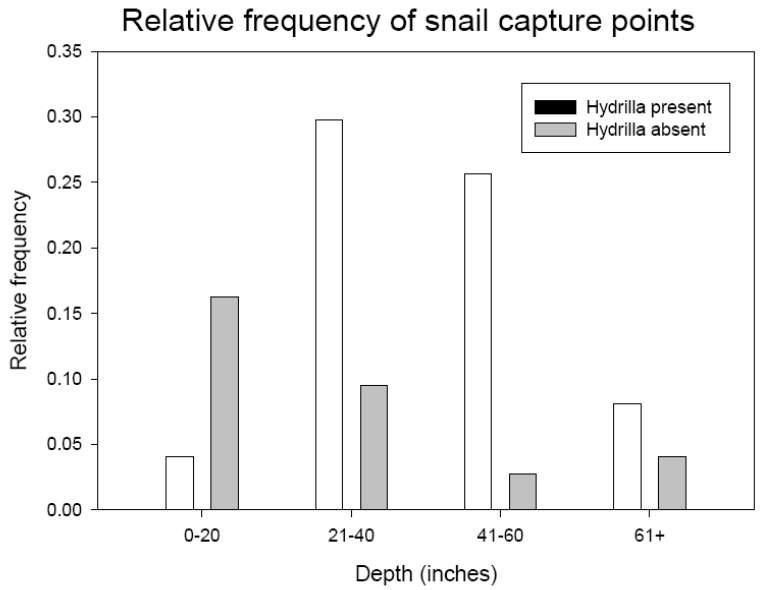


Figure 2. In water more than 21 inches deep, 2-6 times as many snails occurred in the habitats with hydrilla than in those without.

Steps Needed to Achieve Ecological Results

Hydrilla control must be continued through an adaptive management approach. Such approaches design scientifically-controlled treatments that allow managers to determine cause and effect relationships in natural communities. A major hypothesis for poor nesting success is collateral impacts from hydrilla treatments. The best way to test this hypothesis is to limit treatments to such low levels that they could not possibly cause widespread nesting problems. If nesting still does not rebound, then other factors likely are the major problems and can be tested in subsequent years.

None of the annual hydrilla protocols will be permanent, indeed, due to their experimental nature; they must change as learning occurs. And as Kite habitat improves in the south (hopefully), pressure to help sustain Kites in the northern part of their range will decrease and management flexibility can increase. In the interim, wide boating and access lanes will be maintained through existing hydrilla stands to ensure the fishing economy, and community, are sustained. As the results of the treatments become apparent, additional targeted treatments can be made, on an adaptive basis.

Aquatic plant management is remarkably complex, and must enhance many goals. By adapting hydrilla management treatments in a systematic (scientific) way, managers will gain information on how better to serve the many valuable uses humans have for these habitats.