The Lake Apopka Agreement

by Heath Rauschenberger

From November 1998 through early April 1999, a bird die-off occurred on the north shore of Lake Apopka, Florida. The deaths occurred on former farmlands that had been purchased to reduce nutrient run-off into the lake by the St. Johns River Water Management District and the Natural Resources Conservation Service (NRCS). An estimated 680 birds died, mostly American white pelicans (*Pelecanus erythrorhynchos*) and wading birds, including over 40 endangered American wood storks (*Mycteria americana*).

The die-off ultimately was attributed to organochlorine pesticide (OCP) poisoning from dieldrin, toxaphene, and DDT and its metabolites that were applied over many years when the fields had been used for crop production. The birds were exposed by eating OCP-contaminated fish that had moved from ditches into flooded fields in the eastern part (Unit 2) of the restoration area. In response, Unit 2 was drained, and other areas east of the Apopka Beauclair Canal were kept dry by pumping the water off the fields and back into the lake. After an investigation involving numerous federal and state agencies, the District, the U.S. Department of Justice, and the Fish and Wildlife Service reached an agreement in 2003.

The Lake Apopka agreement was based on cooperative efforts to assess the impact of the die-off to avian wildlife and to examine appropriate restoration options. In reaching the agreement, the Service and the District used Natural Resource Damage Assessment and Restoration (NRDAR) program principles. Under the Comprehensive Environmental Response, Compensation and Liability Act, the NRDAR program provides criteria that ensure restoration actions 1) focus on the protection and enhancement of affected species, 2) are sufficient to compensate for total estimated losses (including lost reproductive potential), and 3) encourage sustainable populations.

One immediate and significant benefit of the agreement was that the District paid $10 million towards the purchase of 8,450 acres (3,420 hectares) that

Jim Peterson/St. John's River Water Management District

Birds are now doing well on this restored habitat.

Wayne Lasch

The Southeast breeding population of wood storks is showing signs of recovery with over 10,000 breeding pairs. The recovery is being accomplished by external partnerships, such as those with the state of Florida and the St. Johns River Water Management District, and internal partnerships such as those with the Service's Environmental Contaminants Program.

at the time were home to the second largest wood stork colony in northeast Florida. This property is now owned by the state of Florida and managed for wood storks and other wetland wildlife. The District has also monitored all wood stork colonies located on its lands (over 600,000 acres, or 243,000 ha) and provided support for the revision of the Habitat Management Guidelines for the Wood Stork in the Southeast Region, originally published in 1990. In addition, the District hosted a conference in 2004 on pesticide toxicosis and avian mortality issues, where information was presented regarding the die-off and strategies for preventing similar occurrences in the future.

Another important benefit of the agreement was the establishment of a joint District-Service working group that meets regularly with the common goal of safely restoring Lake Apopka's north shore marsh. The group is composed of District scientists, engineers, and managers; Service contaminant, recovery, and restoration program biologists; and NRCS restoration managers. The group began working prior to the 2003 agreement with the goal of developing ways to safely move forward with restoration.

The group's hard work has restored 7,200 acres (2,915 ha) of Lake Apopka's north shore marsh in areas where OCP contamination is low to moderate. Restoration was made possible by managing water levels in a way that inhibits the establishment of fish populations and discourages foraging by fish eating birds, which is accomplished by promoting the growth of dense wetland vegetation. To validate the effectiveness of these measures, the District and the Service conducted extensive studies. These field and laboratory studies have examined OCP levels in soils, invertebrates, amphibians, fish, and birds. Evaluating the effects of restoration activity on wood storks has been accomplished by using egrets as surrogate species. The lake restoration efforts, including those on the north shore, have reduced phosphorus levels by 62 percent and improved water clarity in Lake Apopka by 68 percent, leading to a resurgence of eel grass and other aquatic plants.

The southeast breeding population of wood storks is showing signs of recovery and for the first time since the early 1960s over 10,000 breeding pairs were documented during the 2006 nest census. Through the Lake Apopka agreement, the District, NRCS, and the Service have significantly contributed to the recovery of this endangered species by acquiring quality habitat and improving restoration science. Lessons learned from the north shore of Lake Apopka will benefit other restoration efforts across the country that are working to convert drained agricultural lands back to wetlands, including certain areas in the Everglades that are contaminated with OCPs. Indeed, as the wood stork population continues to grow, providing quality wetland habitat across its range will be important but difficult given that Florida's human population is expected to exceed 28 million by 2030. However challenging, we must find ways to restore habitat and ensure its quality if the wood stork is to take its place alongside other species that have completely recovered and dodged the bullet of extinction.

James A. Rodgers, Jr./Florida Fish and Wildlife Conservation Commission

Waterbirds, including wood storks, died from organochloride pesticide exposure on north shore of Lake Apopka, Florida, in 1998-99. Investigations by the Service's Environmental Contaminants and Law Enforcement Programs led to an approximately $40 million settlement to restore wood storks and other injured birds.

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