



# Florida Fish and Wildlife Conservation Commission

## Florida Waterfowl Permit 2023-24 Annual Report

---

### Florida Waterfowl Permit

Section 379.354(8)(a)(i), *Florida Statutes*, establishes a \$5 fee for an annual Florida waterfowl permit for a resident or nonresident to take wild ducks or geese within the state or its coastal waters. Revenue generated from the sale of waterfowl permits or that pro rata portion of any license that includes waterfowl hunting privileges provided for in this paragraph shall be used for conservation, research, and management of waterfowl; for the development, restoration, maintenance, and preservation of wetlands within the state; or to promote the cultural heritage of hunting. Furthermore, the Commission shall prepare an annual report documenting the use of funds generated and shall submit the report to the Governor, the Speaker of the House of Representatives, and the President of the Senate no later than September 1 of each year.

---

### 1. Executive Summary

### 2. Introduction

### 3. Population Monitoring and Habitat Management

- Resident Species
- Migratory Waterfowl

### 4. Program Direction and Needs

### 5. Appendices



## Executive Summary

---

Florida provides temporary refuge to more than 20 species of migratory waterfowl each year. Four species of ducks (mottled ducks, wood ducks, black-bellied whistling ducks and fulvous whistling ducks) regularly nest in the state during the spring and summer. Waterfowl provide significant economic and recreational benefits to the citizens of Florida. This report documents efforts by the Florida Fish and Wildlife Conservation Commission (FWC) to manage Florida's waterfowl during Fiscal Year (FY) 2023-24.

Waterfowl management activities fall into two categories: population monitoring and habitat management. FWC's Waterfowl and Small Game Management Program (WSGMP) coordinated the banding of 525 mottled ducks and 347 wood ducks during 2023. All species of ducks were captured at trap sites or night-lighting. Reports of band encounters allow FWC to measure hunting pressure on these ducks. Hunters can visit [www.reportband.gov](http://www.reportband.gov) to report band information.

A main concern for mottled duck conservation is hybridization between introduced domestic mallards and mottled ducks. The mixing of mottled duck and mallard genes could lead to the loss of Florida's mottled duck as a distinct sub-species. The WSGMP continued to devote staff and funding resources to this issue in FY 2023-24.

Providing appropriate waterfowl hunting opportunities for Florida's citizens is a primary mission of the WSGMP. Hunting seasons are established in Florida to maximize hunter opportunity within the constraints of sound resource stewardship and guidelines mandated by the United States Fish and Wildlife Service (USFWS). WSGMP participated in the national process for setting waterfowl hunting regulations in 2023.

Habitat management allows FWC to improve the habitat quality and quantity necessary to support Florida's waterfowl and other wetland wildlife. Waterfowl biologists provided technical assistance on wetland conservation and management issues around the state throughout FY 2023-24. FWC worked with many agencies, organizations, and private landowners to cooperatively manage wetlands.



## Introduction

---

Waterfowl are among the most recognized and economically important wild animals in North America. In Florida, hunters, naturalists and bird watchers spend countless hours enjoying these birds. FWC's Waterfowl and Small Game Management Program (WSGMP) is charged with ensuring the continued well-being of these popular birds for the sustained use and enjoyment of Florida's citizens.

The passage of the Florida Duck Stamp Act in 1979, which resulted from sportsmen's support and efforts, provided a mechanism for funding waterfowl research and management. This act requires that all Florida waterfowl hunters purchase a waterfowl permit. The fee for a waterfowl permit is \$5.00 for both resident and nonresident hunters. The law stipulates that revenue generated from the sale of waterfowl permits or the pro rata portion of any license that includes waterfowl hunting privileges, shall be used for the conservation, research, and management of waterfowl or to promote the cultural heritage of hunting. The law also allows FWC to expend up to 10% of permit revenues to promote hunting and sport-fishing activities with an emphasis on youth participation.

During FY 23-24, 13,315 waterfowl permits (including 266 five-year permits) were sold. Sportsman's licenses also include a waterfowl permit, and 83,924 of these licenses were sold. Revenue from waterfowl permits and sportsman's licenses totaled \$259,430, of which \$7,788 was set aside to promote youth hunting programs in Florida (e.g., Florida Youth Hunting Program and Ocala Youth Conservation Camp). The remaining permit revenue (\$251,643) and additional revenue from the State Game Trust Fund (primarily from license fees) supported the \$584,835 that was expended on the conservation, research, and management of waterfowl.

During FY 23-24, the WSGMP continued its efforts to increase public awareness of Florida's waterfowl resources through the agency's website ([www.MyFWC.com/duck](http://www.MyFWC.com/duck)). The website provides information on Florida's resident and migrant waterfowl, habitat conservation and waterfowl hunting, as well as links to other sites of interest to waterfowl enthusiasts.

The WSGMP worked cooperatively during the year with several important stakeholder groups, including Ducks Unlimited, Delta Waterfowl and United Waterfowlers of Florida. WSGMP activities with these groups included coordinating cooperative projects and providing technical assistance on issues of mutual interest.

The Waterfowl Management Strategic Plan (<https://myfwc.com/media/3186/waterfowl-strategic-plan.pdf>), continues to guide waterfowl management efforts. The plan has three goals: (1) conservation and enhancement of resident waterfowl populations and habitats; (2) leadership in the conservation and enhancement of continental waterfowl populations and habitats; and (3) recreational use and public support resulting in the enhancement and conservation of waterfowl populations and habitat.

Florida wetlands support breeding (i.e., resident) and migrant (i.e., wintering) waterfowl, and FWC management targets the populations and habitats of these birds, which are discussed below.



## Population Monitoring and Habitat Management

---

Population monitoring allows the agency to track the number and species of ducks present in the state over time. Annual population estimates, and other population parameters, help in managing maximum hunting opportunities while sustaining healthy waterfowl populations. Accurate population information provides a basis for directing waterfowl conservation efforts where they are most needed and effective.

Habitat management helps to provide the greatest quantity and highest quality habitat possible to support Florida's waterfowl and other wetland-dependent wildlife. Without a large habitat base that includes breeding, migration, and wintering areas, waterfowl populations will decline. Habitat management and conservation have importance beyond their value to waterfowl because wetlands benefit many other plant and wildlife species.

Two external programs enhance FWC's ability to conserve and manage wetland habitat for both resident and migratory waterfowl. Ducks Unlimited provides matching money to help states acquire and enhance wetland habitat. FWC's matching funds for these projects in Florida are budgeted through the Legislature. Since this program's inception, FWC's projects completed by partnering with Ducks Unlimited have helped restore and conserve more than 69,000 acres of habitat in Florida. Florida is part of the Atlantic Coast Joint Venture (ACJV) of the North American Waterfowl Management Plan. Joint ventures create partnerships to plan, fund, and implement habitat projects within their respective geographic areas. The ACJV is one of 22 habitat joint venture partnerships in the continental United States. The ACJV brings together public and private agencies, conservation groups, and other partners focused on the conservation of habitat for native birds in the Atlantic Flyway of the United States from Maine, south to Puerto Rico. The WSGMP provides input on ACJV activities in Florida, which provides substantial benefits to Florida's fish and wildlife resources.

### Resident Species

The four species of ducks that regularly breed in Florida are the mottled duck, wood duck, fulvous whistling duck, and black-bellied whistling duck. All four of these species nest during spring and summer. Mottled ducks remain in Florida throughout the year. Many wood ducks, fulvous whistling ducks, and black-bellied whistling ducks remain year-round as well, but some of these birds migrate from Florida for part of the year.

### Florida Mottled Duck

The Florida mottled duck is one of approximately 25 closely related, mallard-type species worldwide. This subspecies (*Anas fulvigula fulvigula*) occurs only in Florida and does not migrate from the state; therefore, management and protection of this bird is primarily the responsibility of the State of Florida. The Florida mottled duck is sought by hunters because of its large size and table fare. Florida hunters harvested an estimated 6,981 mottled ducks during the 2022-23 hunting season, which accounted for approximately 5.7% of the statewide harvest of ducks, ranking them fourth in Florida's overall harvest. FWC remains concerned about the long-term status of Florida's mottled duck population throughout its range because low reproduction and survival have been documented, important habitat in Florida continues to be altered or lost, and hybridization with feral mallard ducks continues. Because of these concerns, the conservative daily bag limit for the harvest of this species remains at one.

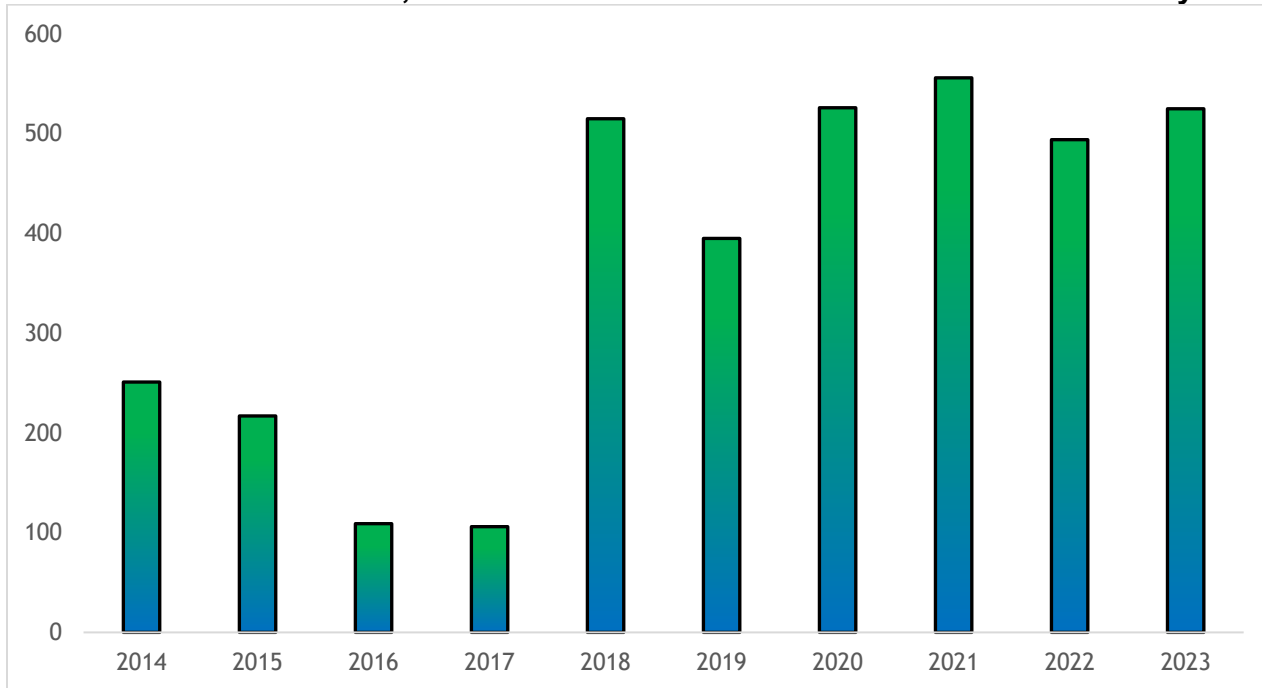
### Mottled Duck Population Monitoring and Management



Annual mottled duck population monitoring includes banding and a March aerial survey of the breeding population. During the summer of 2023, 525 mottled ducks were captured and marked with leg bands. Over the past ten years, 3,694 mottled ducks have been banded (see Exhibit 1). Periodically, staff analyzes band recovery data to estimate annual survival rates, the proportion of the population that is harvested, and to monitor movements.

**Exhibit 1**

**Over the Past Ten Years 3,694 Mottled Ducks Have Been Banded Statewide by FWC**



Source: Data collected by FWC’s Waterfowl and Small Game Management Program.

Between 1985 and 2009, FWC assessed the status of the Florida mottled duck population during aerial (helicopter) surveys conducted each March. Because the prevalence of mallards/hybrids (mallards or mallard x mottled duck hybrids) appears to be increasing from year to year and FWC staff are unable to differentiate between mottled ducks, female mallards, and hybrids during aerial surveys, population estimates became increasingly suspect. Historic survey results indicated the mottled duck population was relatively stable; however, the proportion of mottled ducks and mallards/hybrids in the population was unknown. Without this key piece of information, population status or trends may be masked or even driven by mallards/hybrids.

In 2010, the annual survey was discontinued so funds could be used to develop strategies to account for mallards/ hybrids counted during mottled duck surveys. This work has been completed and the resulting range-wide brown duck correction factors will now enable state biologists to more accurately estimate the mottled duck population.

Small, unmanned aircraft systems (drones), provide biologists with a safer and less expensive tool to survey wildlife populations when compared to surveys conducted using helicopter or fixed-wing aircraft. A pilot survey was conducted in 2022 and 2023 to test the feasibility of using drones to conduct a range-wide brown duck survey across peninsular Florida. In March 2024, a full-scale drone survey was conducted.



### ***Mottled Duck Conservation***

FWC's plan for addressing the mottled duck/mallard hybridization problem has three objectives: (1) develop plumage-based techniques to identify pure mottled ducks using dichotomous keys, (2) assess the proportion and geographic distribution of hybrids in the mottled duck population, and (3) identify and implement mechanisms to minimize the infusion, through crossbreeding, of mallard genes (introgression) into the mottled duck population.

Efforts from previous year's development and validation of plumage keys that effectively differentiate mottled ducks from mallards and their hybrids have been completed. This allowed for a study assessing the proportion and distribution of mallards/hybrids in the mottled duck population. The data have been analyzed and the proportion of the brown duck population made up of mottled ducks has been estimated. A manuscript that details the findings was published in January 2024. Results from this work allows FWC to correct future mottled duck survey data for the presence of mallards/hybrids and define areas of moderate to high hybridization. This information is vital to FWC's conservation efforts to minimize mallard genetic introgression.

### ***Wood Duck***

Wood ducks are perhaps the most colorful duck in North America and are admired by people throughout the state. The most abundant resident duck species in Florida, wood ducks also are highly valued by Florida hunters. Wood ducks ranked third in hunters' bags and made up approximately 5.9% of the total duck harvest in Florida in 2022-23. An estimated 7,240 wood ducks were harvested in Florida during the 2022-23 regular duck hunting season.

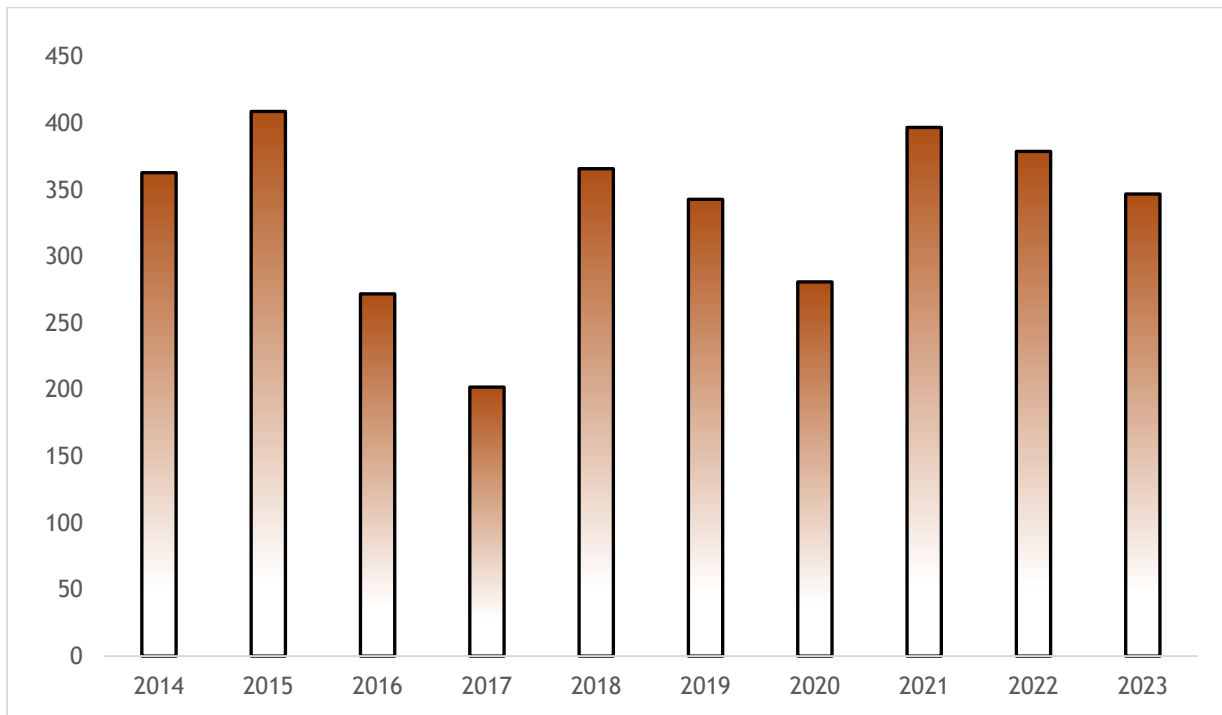
### ***Wood Duck Population Management and Monitoring***

Wood ducks inhabit wooded, brushy, or other vegetated wetland areas. Unlike other duck species, wood ducks cannot be counted reliably during aerial surveys. Consequently, populations have been monitored through banding, experimental monitoring of nest boxes, and harvest surveys. These efforts have been critical to continuing the special September duck season for Florida's hunters.

In 2023, WSGMP coordinated the banding of 347 wood ducks prior to the hunting season. Over the past 10 years, 3,359 wood ducks have been banded (see Exhibit 2). Previous analysis of banding data indicated that a high proportion of the wood ducks banded during the summer in Florida are harvested by hunters within the state. This information supports increased opportunities for hunting Florida's wood ducks during the September duck season.



**Exhibit 2**  
**Over the Past Ten Years, 3,359 Wood Ducks Have Been Banded Statewide by FWC**



Source: Data collected by FWC's Waterfowl and Small Game Management Program.

**Wood Duck Habitat Management**

Wood ducks nest in cavities of trees. Many areas with adequate brood-rearing habitat do not contain trees large enough to have suitable nesting cavities. Fortunately, man-made nest boxes can provide nest sites. FWC staff-maintained nest boxes existing on Wildlife Management Areas (WMAs) and other public water bodies in FY 2023-2024. WSGMP personnel provided technical assistance to private citizens, government agencies, and groups such as local Ducks Unlimited and Delta Waterfowl chapters, High School FFA groups and Scout troops to erect and maintain nest boxes.

Beginning in 2020, the WSGMP began a collaborative 4-year study with Nemours Wildlife Foundation and Clemson University titled "Regional Examination of the Contribution of Nest Boxes to wood duck Recruitment in the Southeast and Mid-Atlantic United States." The Florida study site is located at Apalachee WMA and will culminate in a one-of-a-kind data set for Florida that will provide critical population metrics and opportunities to examine a suite of other questions relating to wood duck ecology and management. Study findings will help improve guidelines for nest box construction, placement, maintenance, and reporting, as well as provide a better product that can be used to encourage citizen participation, resulting in more robust local populations of this important game bird in Florida. Year four of the study is complete. Data analyses are underway, and results should be disseminated in the coming year.



## ***Fulvous and Black-bellied Whistling Ducks***

Whistling ducks are more closely related to geese than to ducks. Fulvous whistling ducks have separate populations in Asia, Africa, Madagascar, South America, and North America. Until about 50 years ago, neither fulvous whistling ducks nor black-bellied whistling ducks nested in Florida. Today, nesting fulvous whistling ducks are abundant in South Florida, primarily in habitat provided by rice and other flooded agricultural areas, which provides desirable water and nesting cover (habitat).

Black-bellied whistling ducks have slowly expanded northward and now nest throughout Florida. Banding data indicates that this species moves north-south from Florida to the Carolinas and beyond, but they retreat south when cooler weather appears in fall. These noisy ducks are gregarious and travel in family groups, often being heard well before being seen.

There are no current population or habitat projects associated with these species in Florida, but FWC continues to monitor the populations through trends in harvest data and hunter effort.

## ***Migratory Waterfowl***

This large group includes waterfowl that breed in northern North America and migrate to Florida during the fall and winter. Approximately 20 species of waterfowl regularly spend the winter in Florida, and migratory ducks constitute the majority of all waterfowl harvested by Florida hunters. The estimated duck harvest in Florida during the 2022-23 hunting season totaled 123,300 birds. This is a 24% decrease from the 2021-22 season estimated harvest (162,100) and slightly lower than the 2013-2022 average of 159,130.

Habitat in wintering areas such as Florida is important in the annual cycle of migratory waterfowl. Habitat conditions during this non-breeding period influence survival and subsequent reproduction. Ducks must maintain or improve their body condition during winter to avoid mortality during the spring migration and to meet the physiological demands of the nesting season (i.e., egg laying, incubation). WSGMP devotes considerable resources to monitoring and managing these migrant birds and providing quality habitat.

### ***Migratory Waterfowl Population Management***

Ring-necked ducks and blue-winged teal are particularly important in Florida because they constitute a large proportion of the state's annual waterfowl harvest (36% and 28%, respectively in 2022-23). WSGMP provides funding for cooperative banding efforts in Canada, the primary breeding area for these species, and remains vigilant in encouraging Canadian waterfowl managers to continue banding ring-necked ducks on breeding grounds. These efforts are important for providing continued harvest opportunities for these species.

### ***Migratory Waterfowl Habitat Management***

Florida has lost over 260,000 acres of freshwater, emergent wetlands since 1985 and additional losses continue today due to urbanization and agricultural expansion. This habitat type is essential for waterfowl. Waterfowl management staff provide technical assistance for managing, restoring, and enhancing waterfowl habitat to various agencies, groups, and individuals (see Appendix 1). Not all technical assistance produces a tangible increase in waterfowl habitat, but this input does cause the welfare of wetlands and associated wildlife to be considered when resource management decisions are made.

FWC continued to work with several entities and private landowners during FY 2023-24 to evaluate numerous wetland projects and provide technical assistance. Entities included the Atlantic Coast Joint Venture, Florida's Water Management Districts (WMDs), the USFWS, various universities, and numerous local and county governmental entities (see Appendix 1).





## T. M. Goodwin Waterfowl Management Area

This 6,270-acre area in the upper St. Johns River Basin continues to be intensively managed by staff for waterfowl, providing important habitat for migrating, wintering, and resident waterfowl and other wetland-dependent wildlife. The area is comprised of two management units: T. M. Goodwin and Broadmoor Marsh, both of which were formerly intensive agricultural areas.

Prescribed fire, disking, roller chopping, and herbicide application are used on the area to maintain vegetation in an early succession stage (i.e., grasses and herbaceous plants), to control noxious and exotic vegetation, or reduce the height of existing vegetation to create a greater mixture of open water and vegetative cover after flooding. Water level manipulation, in conjunction with disturbance practices, supplies resident and migratory waterfowl with suitable habitat.

Waterfowl use of the impoundments is substantial and waterfowl hunting is in high demand on the area. A total of 2,209 hunters harvested 5,882 ducks (an average of 2.54 ducks per hunter) during the 2023-24 waterfowl season. Three youth-only waterfowl hunts were hosted during the regular season and two additional Federal youth waterfowl hunts were held. These hunts included a variety of events targeted for youth hunters including overnight camping, hunter safety instruction, and meals provided by the United Waterfowlers of Florida and the Treasure Coast Chapter of Delta Waterfowl. A total of 176 youths harvested 400 ducks during these hunts. The Veteran and Military hunt was hosted for the third time, with 40 hunters harvesting 112 birds. Snipe hunting is also permitted on the area, and 32 hunters harvested 143 snipe (an average of 5.02 snipe per hunter) during the 2023-24 season. Other public use activities included observing waterfowl and other birds, biking, hiking, and fishing.

## Program Direction and Needs

The Waterfowl and Small Game Management Program has been in existence for more than 30 years. During this time, substantial contributions have been made to the knowledge and habitat base needed to manage and sustain waterfowl in Florida and internationally. Population monitoring efforts yield information necessary for management. Informing the public and the scientific community is an important part of the efforts to ensure the well-being of the waterfowl resource.

The challenge for the future is to continue population monitoring and management, while using up-to-date information to increase involvement in habitat and population issues. The biggest opportunity to reduce the hybridization threat to mottled ducks by feral mallards is through public education and communication. Efforts to conserve and manage mottled duck habitat remain limited due to the need for additional scientific information on which to base sound recommendations, but recent advancements will allow the WSGMP to advance these efforts in the coming years. Coordinating activities between WSGMP and other entities involved in habitat and conservation issues will remain a priority. Continued funding of cooperative habitat projects with Ducks Unlimited programs remains essential. Conserving and identifying new areas important to waterfowl and waterfowl hunters remains a priority, as Florida continues to grow and properties near lakes and wetlands are developed. FWC continues to seek funding from external grants and other sources to expand management and monitoring efforts.



# Appendices

---

## Appendix 1.

List of entities that received technical assistance from FWC waterfowl personnel during FY 2023-24. In addition to this list, FWC provided this assistance to numerous private citizens.

### Florida State Agencies

- Florida Department of Agriculture - Florida Forest Service
- Florida Dept. Of Environmental Protection
- South Florida Water Management District
- Southwest Florida Water Management District
- St. Johns River Water Management District

### Other State or Provincial Agencies

- Georgia Department of Natural Resources

### Federal Agencies

- U.S. Army Corp of Engineers
- U.S. Department of Agriculture--Wildlife Services
- U.S. Fish and Wildlife Service
- U.S. Geological Survey - Bird Banding Laboratory

### Local Government

- Brevard County
- Highlands County
- Lee County
- Leon County
- Polk County

### Schools and Universities

- Clemson University, James C. Kennedy Waterfowl and Wetlands Conservation Center
- Raa Middle School - Tallahassee
- Tallahassee Collegiate Academy
- University of Florida
- University of Illinois, Forbes Biological Station, Illinois Natural History Survey
- University of Texas - El Paso
- Yale University

### Non-governmental Organizations

- Atlantic Coast Joint Venture
- Delta Waterfowl
- Ducks Unlimited Inc., national, state chapter, and various local chapters
- Nemours Wildlife Foundation
- Subcommittee on Managed Marshes
- Tall Timbers Research Station
- United Waterfowlers of Florida, Inc.

