

# WADING BIRD COLONY SURVEY PROTOCOL



Florida FWC Fish and Wildlife Research Institute | Wading Bird Database Team

## OVERVIEW

Citizen Scientists seeking to survey Florida's wading bird nesting colonies, should do so using one of two survey methods: Direct Counts or Flight-Line Surveys. The appropriate method to use depends largely on the colony site, the survey conditions, and the expertise of the surveyors. Both methods are described in detail below, as is the appropriate time to use each.

Following an overview of each method, this document also details the process for submitting colony survey observation data back to the Wading Bird Colony Database Team, for verification and eventual inclusion in Florida's statewide Wading Bird Colony Database.

Please note our agency is particularly interested in and is prioritizing colony surveys that include the following species: Double-crested Cormorant, Great White Heron, Little Blue Heron, Reddish Egret, Roseate Spoonbill, and Tricolored Heron. We recommend focusing on these state-listed and other focal species, especially in large and diverse colonies where it may be difficult to account for every nesting wading bird.

## DIRECT COUNT

Direct counts (i.e., counting all nests in a breeding site) conducted from a distance of at least 330 ft are recommended only for small or narrow breeding sites, in which the observer can see all the way through the vegetation to identify all nests. These surveys may be conducted closer to the breeding site if the survey effort is similar in nature, size, duration, and intensity to existing

activities. Otherwise, direct counts conducted within 330 ft of a wading bird breeding site can result in take and should not be undertaken without a Scientific Collecting Permit from the FWC. Direct counts from a distance of at least 330 ft can occur at any time of day as long as there is adequate visibility.

We strongly recommend at least 2 direct counts at least 1 month apart at a site to account for variability in the timing of nesting in the colony and to ensure that counts occur during the optimal window for each species likely to be present (Figure 1). For example, optimal survey dates do not overlap for roseate spoonbills and tricolored herons in the south zone, so multiple surveys will be necessary to ensure proper coverage for both species.

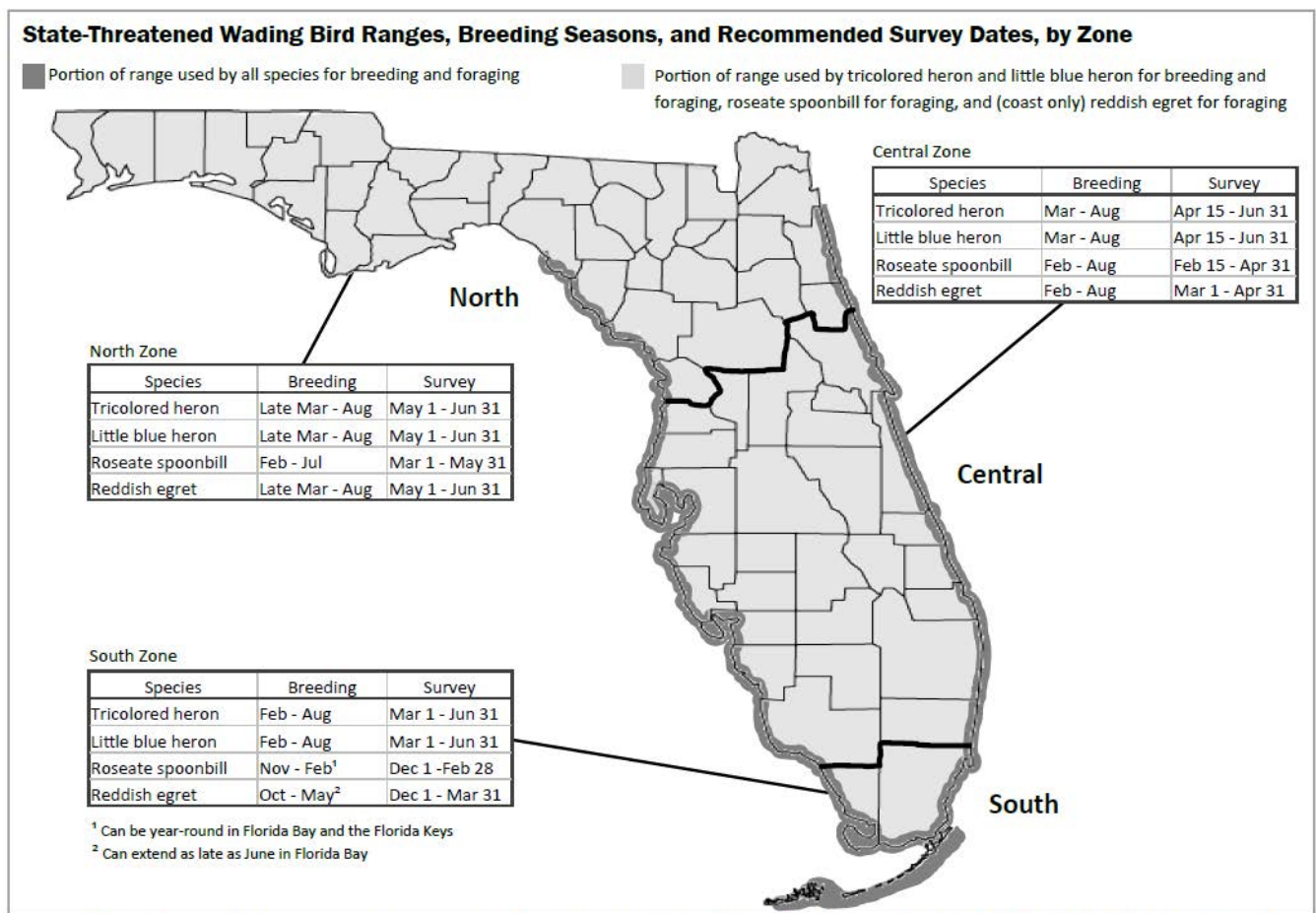


Figure 1. Breeding season dates and recommended survey dates for state-Threatened wading birds in different zones of Florida (Cook 2013, 2014, 2016; Cook and Baranski 2017, 2018; Cook and Kobza 2010, 2011, 2012; Smith and Duvall 2017; Anderson 2018; personal communications with G. Anderson, V. Doig, J. Lorenz, A. Paul, K. Smith, M. van Deventer, R. Zambrano).

## Survey Data to Collect

Observers should record the following information in Direct Count colony surveys:

- **Colony name** – If a site does not already have a known established name, it should be assigned a unique name based on the project (e.g., Example Lake Development Island 1) that will be used in any subsequent observations/reports.
- **Colony latitude/longitude** – Record the general location of the colony in decimal degrees (dd.ddddd), using map datum WGS 84.
- **Date** – mm/dd/yy.
- **Observer** – first and last name of observer.
- **Survey times** – Start time and end time of the survey.
- **Species counts** – Each species receives its own line of data, with the number of nests recorded per species. Only count breeding (i.e., not roosting) wading birds!

## FLIGHT-LINE COUNT

If the colony is large or wide enough that observers cannot see through the vegetation from the recommended buffer distance, the FWC recommends flight-line surveys (Erwin and Ogden 1980, Erwin 1981, Cox et al. 2017a) as the best method for identifying breeding sites and estimating take that may occur from project activities. Flight-line surveys use counts of flights by adults to and from colonies to identify species presence and to estimate abundance. If flight-line surveys are impractical due to the nature of the site or other factors, the potential surveyor should contact the Wading Bird Database Team for assistance.

For the best estimates of colony size, flight-line surveys should be conducted when most birds in a colony are incubating or have small chicks. During this stage in the nesting period, adults generally only switch nest duties once during the morning. Surveys during the nest-building or large nestling/fledgling stages will likely lead to an overestimate of nest numbers. Figure 1 provides the best dates for surveys to meet conditions described above. When possible, conduct >2 flight-line counts at least a month apart to account for variability in the timing of nesting in the colony and to ensure that counts occur during the optimal window for each

species likely to be present (Figure 1). For example, optimal survey dates do not overlap for roseate spoonbills and tricolored herons in the south zone, so multiple surveys will be necessary to ensure proper coverage for both species.

Observers will visit colony sites by land and/or boat and will perform counts lasting 2 hours beginning approximately 1 hour after sunrise. Counts should be performed only under favorable weather conditions (i.e., good visibility, low wind, no rain). Surveys involve recording incoming and outgoing flights from the colony. Flight-line counts usually require at least 2 observers, with observers stationed on opposite sides of a colony to ensure that all birds incoming and outgoing from a colony can be seen. Observers should maintain a distance of 330 ft (100 m) from active nests. Observers can be closer to active nests only if the survey effort is similar in nature, size, duration, and intensity to existing activities (e.g., if an existing man-made structure is closer than 330 ft [100 m] and gets substantial foot/vehicle traffic, then survey efforts from this structure would likely not create disturbance). Otherwise, flight-line surveys within 330 ft (100 m) of active nests can result in take and should not be undertaken without a Scientific Collecting Permit from the FWC.

A sample data sheet is provided at the end of this document for your use. It may be modified as necessary. Observers will independently record the following information:

## Pre-survey Data

- **Location/Project name** – If a site does not already have a known established name, it should be assigned a unique name based on the project (e.g., Example: Lake Development Island 1) that will be used in any subsequent observations/reports.
- **Colony latitude/longitude** – Record the general location of the colony in decimal degrees (dd.ddddd), using map datum WGS 84.
- **Date** – mm/dd/yy.
- **Observer** – first and last name of observer.
- **Start time** – time at the beginning of survey.

## During Survey Data

Each species receives its own line of data. If a bird is known to have been observed more than once (e.g., an observer sees an individual land on a nest and then subsequently leave again, a bird flies back and forth repeatedly with nesting material) it should not be counted more than once. Make sure to record this behavior in the notes.

- **Species** – write out the species names of the birds observed. Only record observations for breeding (i.e., not roosting) wading birds.
- **In/out tallies** – mark flight direction of each individual bird in the proper column with a tick mark, either into the colony or out of the colony. Birds that do not have noticeably direct flight to or from the colony (such as birds landing on nearby flats, circling, etc.) should not be counted. During the nest-building stage, adults visit the nest more frequently than birds incubating or feeding chicks. To avoid inflating numbers, birds carrying sticks should not be counted. Columns on the data sheet should be separated by adults, immatures and birds of unknown age (e.g., birds flying too fast to identify age).

## Post-survey Data

- **End time** – time at the end of survey.

Flight-line surveys can over- or underestimate colony size under different circumstances (Erwin and Ogden 1980, Cox et al. 2017a). To account for this variability, FWC Wading Bird Database staff have created a [Citizen Science Datasheet Excel Template](#) that perform nest count calculations based on the in/out tallies entered. Please enter tally counts (and all other survey information) into this template when submitting survey data to us. Nest count calculations and the tallies submitted will be verified by the Wading Bird Colony Database team before entry into the statewide database.

## SURVEY DATA SUBMISSIONS

Once you have completed a colony survey using either method described above, it is time to send your survey data back to us!

But first, you must transfer the data from your field datasheet (similar to the sample datasheet on the last page of this document) into our [Citizen Science Excel Datasheet Template](#). Doing so should be fairly straightforward, but included below are some general directions for entering data into the template provided:

1. Save a copy of this datasheet in the following format:  
WBCSSurvey\_ColonyName\_Date.xlsx
2. Consult the handouts at the end of this document to acquaint yourself with the type of data we collect for our statewide database.
3. Begin entering your collected survey data into either the DirectCount or FlightLine tabs, depending on what type of survey was conducted.
4. Either tab represents one colony site survey. Complete a new version of this template for each colony survey conducted.
5. Save often or enable autosave to prevent data loss.
6. Enter any important survey-wide notes or comments into the designated notes area on either tab.
7. Check your data entry for errors and omissions.

Once your colony survey data is in our template, you can submit it to us by completing the [online form available here](#). This form will ask a few additional questions about the survey and survey results and then provide you a place to upload the filled in Excel template. Once you have attached the survey template to the form, you are free to submit your survey results to us.

We will then review your survey submission and reach out to you if we have any questions or need any additional details from your survey. If you plan on completing surveys at multiple

colony sites or plan to survey the same site multiple times, you will need to submit a separate survey template and online form for EACH survey.

## QUESTIONS AND RESOURCES

To assist our citizen scientists with the colony survey data collection and submission process, we have put together a couple short handouts to review colony survey best practices. These handouts are included in the following pages of this protocol document. If you have additional questions after perusing this survey protocol or want to learn more about the Wading Bird Colony Database, please contact our team at [WadingBirds@MyFWC.com](mailto:WadingBirds@MyFWC.com).

This protocol is a modified version of a protocol originally found in the Species Conservation Measures and Permitting Guidelines, which was approved by the FWC Commission in December of 2018. For more information, reference Rule 68A-27.003, F.A.C., April, 2019

# Wading Bird Survey Data We Collect for our Database

Local Colony Name and its unique Atlas Number (if known)

## Colony ID



Precise Geographic Location of Colony (Latitude, Longitude)

## Location



Date(s) or at least Year(s) colony was visited/surveyed

## Date



Methods used to survey the colony (e.g., aerial vs ground survey)

## Methods



# Florida Wading Bird Database

Statewide Wading Bird Colony Database Hosted By:  
Florida FWC's Fish and Wildlife Research Institute



## Species

Wading Bird Species observed **breeding** at colony site (AOU codes)



## Counts

Exact or approximate counts for each species (0/1 for absence/presence)



## Units

Units (and methods) for each count (e.g., nests vs pairs, estimate vs actual)



## Source

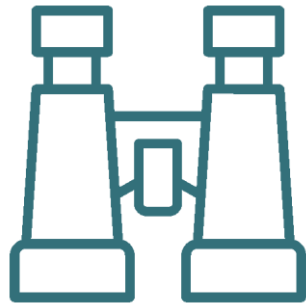
Contact Name and Information for each survey and observation



# Wading Bird Colony Survey Best Practices



Know Your Wading  
Bird Species IDs!



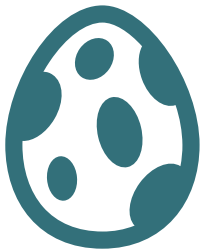
Bring Necessary  
Equipment



Collect All Required  
Information



Don't Forget  
Your PPE



Look for Nesting  
Evidence (for Each  
Species Present)



Only Count Breeding  
Birds



Follow the Survey  
Protocol and  
Procedures Precisely



Avoid Disturbing  
the Birds!

### Appendix C. Example data sheet for flight-line surveys for state-threatened wading birds

#### Wading Bird Colony Flightline Survey

Location/Project Name: \_\_\_\_\_ Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

Date: \_\_\_\_\_ Observers: \_\_\_\_\_ Start Time: \_\_\_\_\_ End Time: \_\_\_\_\_

Notes: \_\_\_\_\_

Species	Adult		Immature		Unknown	
	In	Out	In	Out	In	Out