Black Rail Survey Protocol – FL Fish and Wildlife Conservation Commission – version: Dec 2020
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This document is a modified version of a protocol developed by Christy Hand, South Carolina Department of Natural Resources for black rail surveys in that state (version 2016). She used a combination of the following protocols:

"Maryland Protocol" adapted from:

Wilson, Michael D., Bryan D. Watts, and Fletcher M. Smith. 2009. Status and Distribution of Black Rails in Virginia. Center for Conservation Biology Technical Report Series, CCBTR-0-010. College of William and Mary and Virginia Commonwealth University. Williamsburg, VA.

***Detailed survey methods* ad*apted from*:**

Conway, C. J. 2009. Standardized North American Marsh Bird Monitoring Protocols, version 2009-2. Wildlife Research Report #2009-02. U.S. Geological Survey, Arizona Cooperative Fish and Wildlife Research Unit, Tucson, AZ.

This document was further adapted by A. Schwarzer to suit Florida specific needs.

Black Rail Survey Protocol – Florida

Method:

The Standardized North American Marsh Bird Monitoring Protocols ("Conway Protocol", Conway 2009) is widely used for general marsh bird surveys but has been found to be ineffective at detecting black rails. We will be using a modified and targeted protocol based on the Conway Protocol, Maryland Protocol, and local observations.

Call-response surveys including passive listening periods and playback of black rail and clapper rail vocalizations will be used to identify locations that are occupied by black rails. A 10-minute recording will be used. The first two minutes will be passive, followed by four minutes of black rail vocalizations (kicky-doo, growls, churt), another passive minute, two minutes of clapper rail or king rail vocalizations (for estuarine or inland environments respectively), and another passive minute. Mike Wilson (Center for Conservation Biology) provided the recording used in Virginia and North Carolina during recent surveys, and South Carolina DNR replaced Virginia rail vocalizations with clapper rail vocalizations from Dr. Greg Shriver's webpage (http://udel.edu/~gshriver/research/saltmarsh.html). Florida will also use the recording with clapper rail calls, as Virginia rails do not breed in Florida and king rails will respond to clapper rail calls.

Focal Species:

Primary: black rail

Secondary: clapper rail, king rail, least bittern, seaside sparrow, marsh wren, terrapin, mink

Selection of Survey Points:

Survey points should be placed in known or potential black rail habitat. In general, black rail habitat is characterized as dense vegetation which creates a relatively closed cover, but with enough room at the ground level for birds to navigate. They can be found in both freshwater and saltwater marshes. Vegetation structure is important, vegetation species generally is not, although species such as *Spartina bakerii*, *S. patens*, *Juncus roemerianus* and *Cladium jamaicense* (sawgrass) are examples of species that form the desired structure. This list is not exhaustive and other grasses, sedges and rushes should be considered if they form the proper structure. In addition, black rail habitat is often either fringe habitat between deeper marshes and upland, or in matrix with microtopographic differences that include deeper pools and higher mounds that act as suitable refugia in high water events.

Water level is also critically important. Rails nest and forage in areas where water depth is <6 cm, and are often found on moist soils. Only points with suitable conditions should be surveyed if possible in a given year. In areas that are hydrologically dynamic this can be difficult, but can be addressed in one of three ways. 1) Generate more points across the area than will be needed in a year but that cover an elevational range. Only survey those points that are appropriate in a given year. 2) If the habitat is a linear fringe, simply shift points year to year to follow the habitat. 3) Create static points that remain stable year-to-year but do not survey those points that are inappropriate.

Points should be spaced at least 400 m apart to avoid detecting the same individual rails from two points.

Survey point (Point):
Surveyor(s) will stand at a pre-selected survey point while playing the recording and listening for responses. Consider safety and convenience when planning routes. Survey points should be in areas where you can safely park, anchor, or walk. On routes surveyed by boat, most points should be surveyed while remaining in the boat. Survey points can be marked with flagging during the first survey of the season for ease of location through the rest of the season.

Route:
A set of points that can be surveyed during a survey period. The number of points per route will depend on the length of the survey period and the logistics. The playback/listening period lasts for 10 minutes. Plan to spend around 12 minutes per survey point, and also account for time needed to travel between points when planning routes. It might be possible to survey up to 4 points per hour on routes where points are close together and where you can drive from point to point. Routes with more complicated logistics should include fewer points. If necessary, routes can be split and reorganized during the field season if they cannot be completed within a survey period.

Survey Period/Time of Day:
Surveys will take place during the appropriate timeframe for breeding birds in your area. In north and central Florida, this is generally April to mid-July with peak calling in April and May. In south Florida, breeding may begin in February and carry on until end of May or early June, however, much less is known about the breeding phenology of south Florida birds. Surveys will take place from either a) 0.5 hours before sunrise until 3 hours after sunrise or b) 3 hours before sunset to end of twilight.

Repetitions and Survey Window/Time of Year:
Each point should be surveyed a minimum of 3 times. Due to low detection rates for the species, 5 surveys is ideal. There should be a minimum of 7-10 days between surveys of the same point.

Surveyors:
At least one person per survey should be proficient at using the protocol and identifying marsh birds by their calls. (If necessary, an untrained assistant can accompany a surveyor for safety reasons rather than to collect data.)

If double observers are used, each surveyor should fill out a separate data sheet and should record their data separately without discussing anything with the other surveyor. Surveyors should not point out a call or a bird to the other during the survey period. Each surveyor should stand 1-2 meters away from each other and should keep their pen on their data sheet at all times so that one surveyor is not cued by the sudden writing activity of another surveyor. Once all of the points for that night/morning are

completed, the surveyors can look over each others' data and discuss discrepancies, but the data should not be altered; obvious mistakes should be noted but not changed.

Training:
All surveyors should have the ability to identify all black rail vocalizations and common calls of focal and non-focal marsh bird species in Florida. Regularly listening to the recorded calls used for surveys can help you learn calls, but surveyors should also practice call identification at marshes where the focal species are frequently heard calling. Inexperienced surveyors can go along on surveys conducted by more experienced surveyors to learn calls prior to starting their own surveys. They should do at least one "trial run" before their first data collection window begins because it takes time to get used to the data sheet and recording the data appropriately. Surveyors should also practice estimating distance to focal birds.

Broadcast Equipment and Placement
Surveyors should **stand at the survey point coordinates** while listening for vocal responses. The broadcast player should be placed approximately 1 m above the ground (hood of truck or all terrain vehicle) if possible and should be at least 2 m to one side of the survey point (placing the speaker too close to the surveyors can reduce their ability to hear calling birds). If necessary, the broadcast player can be placed on the ground (if dry) or on the bow of the boat. Sound pressure should be 70-80 dB at 3 feet in front of the speaker. Surveyors should point the speaker toward the center of the marsh and should **not** rotate the speaker during the call-broadcast survey. Speakers should not face the surveyors. If necessary, one speaker on the FoxPro units can be turned off during boat surveys to allow surveyors to hear.

Recording Survey Data

Filling out the Datasheet:
Prior to the beginning of the survey, write down the month, day, and year at the top of the data sheet. Write out the month or use a 3-letter acronym to avoid confusion between day and month (i.e., so that 6 May is not confused with 5 June). Write down the name of the survey route. Write down the observer(s) and which round of surveys you are completing. When you arrive at each survey point, write down the name/number of the survey point. Record background noise (codes on datasheet), ambient temperature (approximate, °F), wind speed (Beaufort number), and sky condition (codes on datasheet) at the beginning of each survey.

Recording Detections of Black Rails and other Focal Species:
When an individual black rail is detected, assign it a number starting with "1" in the *Bird #* column and numbering each subsequent individual at that point consecutively. Then, put a "1" in each detection column in which that individual is detected aurally and put a "s" in each column in which the individual is detected visually. For example, if an individual black rail vocalizes during the first 1 minute of passive listening, put a "1" in the first column. Regardless of whether that individual calls once or many times during the first minute, you only put one "1" in the first column. If that same individual bird is still calling during the second minute of passive listening, then also put a "1" in the second column. If the same individual calls during the third minute when the black rail call is playing, put a "1" in the column for "3 BLRA". If that same individual bird calls again during the seventh (passive) minute, you also put a "1" in the column "7 Passive", and so on. Hence, if an individual bird is calling constantly throughout the survey period, you will have a "1" in every column for that individual. If the individual is heard and seen, put both a "1" and a "S" in the appropriate column(s). If you hear a call of the same species but from a

different individual (or from an individual of another species), you start a new row on the data sheet and follow the same protocol just described for this individual bird.

Surveyors may have difficulty determining whether a call is coming from a new individual or an individual detected earlier at that survey point. Many times marsh birds move closer to investigate other calling birds. In general, be conservative and assume that a call is from the same bird if the call came from the same general location (i.e., a similar direction and not too far from the location of the original call). The number of rows filled out on the data sheet will differ among survey points and will correspond to the total number of individual focal marsh birds detected at each point.

If no black rails are detected at a survey point, record the point number and starting time, and write "0" in the *Bird #* column. If the surveyor hears a marsh bird but is unsure of its identity as a black rail, the surveyor should write "?" in the *Bird #* column and record all data for this individual as described above. Make a verbal description of the unknown call (e.g., soft "kak-kak-grr" - sounds like BLRA but harsher') in the *Type of Call* column.

Distance and direction:
Record the estimated distance in meters to the black rail at the point of first detection. Use a range finder if available. If a range finder is not available, surveyors should practice estimating distances visually and aurally prior to conducting surveys (ex. hiding playback equipment at various distances, estimating distance, and then measuring to speakers). Record direction to each individual rail, using eight compass points (N, NE, E, SE, S, SW, W, and NW).

Birds detected at a prior survey point:
If a surveyor detects a focal bird during a survey and the surveyor believes that this is the same individual bird that was detected and recorded at a previous survey point, the surveyor should record all the relevant data for that bird and then enter a "Yes" in the *Detected at a Previous Point* column on the datasheet. When in doubt, be conservative as to whether an individual bird detected at the current point was the same individual recorded at a previous point (i.e., record "Yes" when in doubt).

Outside of survey or between points:
Record any black rails that are detected outside of the playback period but note that it was not detected during the survey rather than entering data in the minute columns. If you detect a black rail between survey points, record data as described above and also record coordinates from the location where you detected the rail and add a point to future surveys if feasible.

Record Types of Call:
Record all types of calls given for each black rail detected in the *Type of Calls* column on the data sheet. Different call types have different functions and can indicate pairing status and stages of the nesting cycle in a local area (allowing refinement of local survey windows). Detection probability and observer bias may differ with different call types and accuracy of distance estimation may vary with call type.

Weather Restrictions:
Surveys should only be conducted when wind speed is <20 kmph, and not during periods of sustained rain or heavy fog. Even winds <20 kmph affect the detection probability of marsh birds. Surveyors should postpone surveys if they believe winds are affecting detection probability of marsh birds. If wind speed increases to >20 kmph during the survey (or sustained rain begins while the survey is already underway), surveyors should stop the survey. The remaining points should be surveyed on another date (i.e., it is not necessary to repeat the entire route).

Incidental Species:
If possible record the following incidental species: clapper rails, king rails, least bitterns, seaside sparrows, marsh wrens, terrapins, and mink. You may also note other species of interest. If these species are encountered, record the point name/number, the species encountered, and the total number if possible at the bottom of the data sheet. If it is not possible to count the number of individuals, mark an "X" in the # column.

Tips:
Distinguishing King Rails from Clapper Rails
King rails breed in freshwater marshes and clapper rails breed in saltwater marshes. Both species have similar calls. In brackish marshes near coastal areas, surveyors may not be able to determine whether birds heard calling are king rails or clapper rails. In those situations, surveyors should record these individuals as KCRA (King-Clapper Rails).

Sources

Conway, Courtney J. 2009. Standardized North American Marsh Bird Monitoring Protocols, version 2009-2. Wildlife Research Report #2009-02. U.S. Geological Survey, Arizona Cooperative Fish and Wildlife Research Unit, Tucson, AZ.

Conway, Courtney J. 2011. Standardized North American Marsh Bird Monitoring Protocol. Waterbirds 34: 319-346.

Conway, Courtney J., Christina Sulzman, and Barbara E. Raulston. 2004. Factors affection detection probabilities of black rails. Journal of Wildlife Management 68 (2): 360-370.

Maryland/Center for Conservation Biology Protocol (Reports, presentations and personal communications)

Wilson, Michael D., Bryan D. Watts, and Fletcher M. Smith. 2009. Status and Distribution of Black Rails in Virginia. Center for Conservation Biology Technical Report Series, CCBTR-0-010. College of William and Mary and Virginia Commonwealth University. Williamsburg, VA.

Codes and Definitions

Datasheet Codes:

Date: Month Day Year (Apr 5, 2016)
Observer: Full name or first initial and last name
Route: name of route or area where survey points are located
Survey Number: number of times site has been surveyed (only count surveys conducted between 1 Apr and 15 June)

Sky: 0 = 0-25% cloud cover; 1 = 25-75% cloud cover; 2 = 75%-100% cloud cover; 4 = fog/smoke; 5 = drizzle
Background noise: 0 = no noise; 1 = faint noise; 2 = moderate noise (probably can't hear some birds beyond 100m *during >30 seconds of the survey*); 3 = loud noise (probably can't hear some birds beyond 50m *during >30 seconds of the survey*); 4 = intense noise (probably can't hear some birds beyond 25m *during >30 seconds of the survey*).
Beaufort wind scale (Wind speed): 0 = smoke rises vertically; 1 = wind direction shown by smoke drift; 2 = wind felt on face, leaves rustle; 3 = leaves & small twigs in constant motion and light flag extended; 4 = raises dust and loose paper, small branches are moved; 5 = small trees with leaves sway, crested wavelets on inland waters.

Bird #: each individual rail at each point is assigned a number, starting with "1" and numbered consecutively, the number assignment restarts at "1" for each point, a point without any birds detected receives a "0"
Playback survey: In the appropriate column for each minute, write "1" if the bird was heard, "S" in if the bird was seen, and "1S" if both heard and seen.
Distance: record distance in meters to location where the bird was initially heard or seen
Direction: 8 cardinal directions.
Detected at previous site: write yes (detected previously) or no in box.
Detected outside of playback survey: write yes (outside survey) or no (during survey) in box.
Comments: No dedicated field. Use data entry rows for noting comments. Note if observer was not able to record all individuals of species other than black rails and any other relevant information. 3 categories – all individuals of all focal species recorded (default), all focal species recorded, all black rails recorded.

Calls of Focal Species:

Species	Standardized Call Name	BNA Name(s)	Possible Function
BLRA	**Kicky-doo**	kicky-doo or kic-kic-krr, or ki-ki-do	mate attraction, territorial signal
BLRA	**Grr**	growl, grr-grr-grr, brrrr or churr-churr-churr	alarm call, territorial defense
BLRA	**Churt**	churt, curt, yip, bip, or kip, yelp, kek, ki	alarm call
BLRA	**Tch**	kik-kik-kik, kuk-kuk-kuk-kuk, ink-ink-ink	when on the nest?
CLRA	**clatter**	clapper, clatter, chock-chock, cac-cac-cac, jupe-jupe-jupe	mate communication
CLRA	**kek**	kek-kek-kek, kik-kik-kik, bup-bup-bup	mate attraction
CLRA	**kek-burr**	kek-burr	
CLRA	**kek-hurrah**	kek-hurrah	
CLRA	**hoo**	hoo, oom-oom-oom	
CLRA	**squawk**	screech or shriek, chase squeal or kak	alarm call, territorial disputes
CLRA	**purr**	purr, agitated purr, churr	
KIRA	**clatter**	cheup-cheu- cheup, jupe-jupe- jupe, gelp-gelp-gelp, chac-chac-chac	mate communication
KIRA	**kek**	kik-kik-kik	mate attraction
KIRA	**kek-hurrah**	Grunting	
KIRA	**kek-burr**	ket-ket-karr	
KIRA	**squawk**		
LEBI	**coo**	coo or cooing, tut-tut-tut	mate attraction
LEBI	**kak**	gack-gack	mate communication, alarm call
LEBI	**ert**	tut-tut-tut, quoh, hah or cackle	alarm call
LEBI	**ant-ant**	ank-ank	when flushed
SESP	**chup-chup-tzeeeee**		
MAWR	**fast, bubbly, complex**		