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## **ASSESSMENT OF BLACK RAIL STATUS IN GEORGIA**

### **Interim Report: Summer 2018**

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#### **Context**

The black rail (*Laterallus jamaicensis*) is the most secretive of the secretive marsh birds and one of the least understood species in North America. The eastern black rail (*L. j. jamaicensis*) is one of two subspecies that occur in North America. The form is listed as endangered in six states along the Atlantic Coast and is a candidate for federal listing. Black rails require dense vegetation for cover during all stages of their life cycle. They require wetlands with minimal water coverage during the breeding season. Historic population size was likely in the tens of thousands (25,000 to 100,000; Wetlands International) but is now believed to be in the low thousands to hundreds. Eastern black rails breed within three geographic areas within North America including the Atlantic Coast, the Gulf Coast and the Midwest. The Atlantic Coast has generally been considered to support the largest breeding population throughout the range with pairs mostly confined to the highest elevations within tidal salt marshes. Breeding range along the Atlantic Coast has contracted south more than 450 kilometers and the population is estimated to be declining by 9% annually (Watts 2016). The primary driver of declines over the past three decades is believed to be sea-level rise and associated tidal inundation during the nesting season.

Georgia is noticeably missing from most of the early descriptions of eastern black rail distribution (e.g. Allen 1900, Bent 1926, Forbush 1929). Early authors describing black rail status in the state (Burleigh 1938, Greene et al. 1945) indicate that the species is likely much more common and widespread than known. As in all states within the breeding range, the lack of status and distribution information is certainly facilitated by their secretive habits, but in Georgia this may also reflect an extremely low population size, a lack of overlap between rails and bird watchers, or both. As with many other areas early records come from inland locations. Scattered occurrences along the outer coast suggest the presence of an undocumented population. The only definitive breeding record comes from Greene County and this site has been the most consistently documented throughout the state over the past 25 years. The

population estimate for the state (based on available habitat) is 10 to 40 pairs though the uncertainty in this estimate is very high. A targeted survey is scheduled for the breeding seasons of 2017 and 2018.

## **Study Objectives**

The overall objective of this effort is to assess the status and distribution of the black rail population breeding in Georgia. Our objective during the 2017-2018 field seasons are 1) to survey all potential habitat within Georgia, and 2) document status and distribution of the black rail within Georgia.

## **Statement of Project Activities: Spring 2018**

Development of a survey frame for 2017-2018 – In consultation with biologists from the Georgia DNR, Wildlife Resources Division, Nongame Conservation Section and the U.S. Fish and Wildlife Service, we developed a sampling frame for the 2017 and 2018 field seasons. The agreed upon focus of 2017 survey efforts would include 1) the best examples of high-marsh habitat that were accessible within the outer Coastal Plain, 2) impounded wetlands that were accessible within the outer Coastal Plain, and 3) areas outside of the national wildlife refuges designated for survey by the USFWS. Areas not to be surveyed during the 2017 effort included private impounded marshes and inland impoundments and wetlands. The focus of 2018 surveys include marshes and ponds associated with agricultural areas within the inner coastal plain centered on Valdosta, Georgia, a survey of high quality sites along the coast that were not sampled in 2017, and a resurvey of previously occupied sites along the coast.

Refine survey protocol – We reviewed national and state protocols that are in use or have been used to survey for breeding black rails. In consultation with USFWS biologists, we adopted a survey protocol that is consistent with what has been used previously in Maryland, Virginia, North Carolina and elsewhere. We have attached protocol (much of the structure and text taken from recent USFWS protocol; Smith and Wiest) as Appendix I. We used this survey protocol along the Georgia coast during the 2017 and 2018 field seasons. We used the unmodified Smith and Wiest protocol for 2018 inland points due to the problem of frog noise at freshwater or brackish marshes.

Selection of pool of survey points for 2017-2018 – For the 2018 inland rail surveys, we created a study grid centered on Valdosta, Georgia, and created points based on non-ephemeral water features observed on satellite imagery. We visited all of these potential points (a pool of just over 270 points) and sampled a subset of the “best” quality points (approximately 140 total inland points). We chose points based on proximity to vegetation that appeared suitable for breeding Black Rails. For the 2018 coastal surveys, we selected high quality habitat that was not surveyed during the 2017 field season as well as points in close proximity to historic detections of black rails along the Georgia coast.

In 2017, we blocked out geographic areas that were not included in the 2017 USFWS study survey frame and then used satellite imagery and previous site visits to select accessible marshes that might have suitable habitat including patches of high tidal salt marsh and shallowly flooded areas of impoundments. Potential survey points were placed on the landscape and a database of point coordinates was created. The point dataset was examined for natural clusters to improve sampling efficiency. Outlier points were excluded from the pool. The final pool included over 500 points in 2017, and over 300 points in 2018.

Ground truth and adjust survey pool – Roughly 300 points were visited in the 2018 field season to assess suitability and accessibility. Points that fell on private lands that could not be accessed efficiently or that lacked safe pull-off sites were excluded from the final set of survey points. The final set of points surveyed during the field season was 206.

Between 440 and 480 of the 2017 point locations within the pool of potential survey sites were visited on the ground to assess feasibility and accessibility. The final set covered during 2017 included 409 points.

Hiring field technicians for 2018 field season – From a large number of applicants, we hired one field technician. We also had one volunteer assist us with surveys.

Training field technicians – Field technicians for our North Carolina black rail project and the Georgia black rail project were trained in mid to late April on survey protocols and all aspects of the field operation. We utilized housing at Altama WMA for the week long training of technicians.

Set up logistics for 2018 field season – We prepared FoxPro game callers, datasheets, GPS units and other field equipment for deployment into the field with the crew. A house provided by GA DNR near Brunswick, GA, was used as a central field station for surveys along the coast, and a travel trailer was used for inland surveys centered on Valdosta. We deployed one university vehicle with the field crew for transportation, as well as one personal vehicle and boat.

Conducted field surveys for black rails – Three rounds of field surveys of the point network were conducted between 25 April through approximately 15 July 2018 (ongoing).

Entered survey results into project database – Survey results were entered by the field crew into a project database on an ongoing basis. Data will be proofed during the late July/August time period.

### **Survey Results for 2017-2018 Field Seasons**

A total of 409 marsh points were surveyed three times during the 2017 field season. We detected no Black Rails during the surveys. A complete survey database including all other species detected will be sent with the final report. This final database will include minute by

minute data for all rails and chuck-wills widows (and a separate database of all incidental species detected).

A total of 206 points were surveyed twice so far during the 2018 field season. We are beginning the 3<sup>rd</sup> round of surveys and will complete the 3<sup>rd</sup> round by 15 July 2018. We have thus far detected no Black Rails at inland or coastal locations.

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#### **Appendix I.**

**Coastal Black Rail Survey Protocols (used in Maryland, Virginia, North Carolina, Georgia).**

**Fletcher Smith, Center for Conservation Biology (fmsmit@wm.edu)**

**Protocols modified from A. Smith and W. Wiest 2017.**

#### **Survey Playback Sources:**

Ki-ki-kerr: Sourced from Cornell Lab of Ornithology, Macaulay Library in 2007.

Churt: Sourced from Christy Hand, South Carolina DNR

Growl: Sourced from Cornell Lab of Ornithology, Macaulay Library in 2007.

Eek-eek call: Sourced from Cornell Lab of Ornithology, Macaulay Library, Florida call.

**Survey Windows:** All surveys will take place between 1 May and 15 July, with survey window one between 1 May and 24 May, window 2 between 25 May and 19 June, and window 3 between 20 June and 15 July.

All coastal surveys will take place between a half hour after sunset and will conclude by a half hour prior to sunrise. All inland surveys will take place between two survey windows: between an hour before sunrise to 3 hours after sunrise, and between 3 hours prior to sunset to 1 hour after sunset (inland survey times coordinated to reduce impact of frog noise issues, and similar protocol as used in South Carolina and by USFWS scientists).

**Survey Routes:** A survey route is a set of points that can be surveyed together during the same night. The number of points per route will depend primarily on logistics. The factor most limiting the number of points per route is the time needed to travel between points. The playback/listening period lasts for 10 minutes. Plan to spend around 12-15 minutes per survey point. It might be possible to survey up to 3-4 points per hour on routes where points are close together and where you can drive from point to point. Routes with more complicated logistics (long distance between points/boat based points) will include fewer points. Surveyors should carefully consider safety and convenience when planning routes, and find safe places to park when doing road based points. Routes can be reorganized during the field season, and care should be taken not to sample the same point repeatedly at the same time of day (e.g., alternate the order of locations along a given route on subsequent visits).

**Survey Points and Broadcast Equipment Placement:** Surveyor(s) will stand at pre-selected survey point coordinates. Survey points should be marked with pin flagging (and labeled with survey point ID with a permanent marker in a nook of the flagging) during scouting, if visited, or the first survey of the season for ease of location through the rest of the season. Each point should be surveyed at least 3 times, with a 10-day minimum between surveys of the same point.

The game caller should be placed on the ground near the center of the point (on road based surveys) or the bow of the boat during playback surveys. Surveyor should stand 5m away from caller if possible to better hear responses. When surveyors are surrounded completely by marsh, orient the caller toward magnetic north. At survey points located on the edge of open water or upland habitat, orient the broadcast caller towards the center of appropriate marsh habitat. Do not rotate the speaker during the broadcast survey. Speakers should not face the surveyors. Both speakers of the broadcast callers should be operational in open marsh and only the forward speaker operational when the surveying from the edge of open water or upland habitat. Sound pressure should be 70-80 dB at 3 feet in front of the speaker; the appropriate volume level on the FoxPro NX3 or NX4, in combination with this project's audio file, is illustrated in the figure below. When viewed straight on, the centerline of the volume knob should align with the trailing edge of the last marked volume setting. Replace batteries in game caller with freshly charged batteries at least every other day of surveys and daily, if necessary.

**Figure1. NX4 or NX3 volume level during surveys.**



**Surveyors:** If two observers survey the same point, each surveyor should fill out a separate data sheet and record their data separately without pointing out or discussing bird observations with the other surveyor. Each surveyor should stand 1-2 meters away from each other and avoid cueing the other surveyor with sudden writing activity. Once that evening survey window is completed, surveyors may discuss their observations and any discrepancies, but the original data sheets must not be altered; obvious mistakes should be noted in the comments section of the data sheet, but the original data must not be changed. If a change is necessary while conducting the survey, strike a line through the data and proceed to correct the data on the next available line, but do not erase data from the data sheet. Similarly, if a surveyor must be accompanied by an untrained individual for safety reasons, the surveyor should instruct the accompanying individual neither to collect data nor influence the surveyor in any way (e.g., call out bird sightings during the survey).

**Weather Restrictions:** Surveys should only be conducted when wind speed is <20 kmph (moderate breeze; dust and loose paper raised; small branches begin to move), and not during periods of sustained rain or heavy fog. Even winds <20 kmph affect the detection probability of marsh birds, especially Black Rail, and perhaps even suppresses their calling behavior. Surveyors should postpone surveys if they believe winds (or other ambient noise) are dramatically affecting the detection probability of marsh birds. If wind speed increases to >20 kmph, or sustained rains/fog begin during a morning or evening survey window, surveyors should cease surveys for that window and visit unsurveyed sites at another time.

**Recording Bird Detections:** We distinguish between primary and secondary species, which differ in the way data are recorded as described below. Primary Species & 4-letter AOU codes: Each individual is recorded on a separate line and record minute by minute data.

**BLRA - Black Rail**

**CLRA – Clapper Rail**

**KIRA – King Rail**

**CLING – Clapper/King**

**LEBI – Least Bittern**

**VIRA - Virginia Rail**

**SORA – Sora Rail**

**CWWI – Chuck Will’s Widow**

**WPWI – Whip Poor Will**

**Secondary Species & 4-letter AOU codes:** All individuals in a given distance band are recorded on a single line

**SESP – Seaside Sparrow**

**MAWR – Marsh Wren**

**SEWR – Sedge Wren**

**Incidental Species:** record all species heard or seen, including owls, herons, etc... in this portion of the data sheet.

**Distance and direction:** For Black Rail, the only primary species, record an estimate of the exact distance and the general direction (N, NE, E, SE, S, SW, W, or NW, or to the degree marker on a compass) to the initial detection of each individual. Recalling the orientation of the broadcast caller can make this determination more efficient. For secondary species, record the estimated distance band at the time of first detection.

**Time of detection:** Detections of each individual marsh bird should be recorded minute-by-minute during the 10-minute survey period. The beginning of each passive minute during the survey period is indicated by “start”. Surveyors should distinguish and indicate the call type(s) of all Black Rail detections during a given survey minute using the call type codes on the provided “cheat sheet”; multiple call types may be recorded in a given minute (e.g., a Black Rail *ki-ki-kerr* followed by a *growl* would be recorded K, GR). For secondary species, indicate the number of individuals detected in each minute using dot and

line notation. Remember that for secondary species, each line of the data corresponds to a single distance band. Examples are provided below.

**Species Identification:** *King Rail vs. Clapper Rail:* These species make similar vocalizations. King Rails typically breed in freshwater marshes and Clapper Rails breed in saltwater marshes. In brackish marshes or inland salt marshes (e.g., N. Pamlico Sound), however, surveyors may not be able to confidently identify vocalizations to species and should, in these situations, record these individuals as KCRA (King-Clapper Rails).

**Birds detected at a prior survey point:** If a surveyor suspects that a marsh bird detected during a survey is an individual detected at a previous survey point, the surveyor should proceed to record the requisite detection data and record “detected at a previous point” in the comments column. 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., make a note in the *comments* column).

**Birds detected outside the survey period (approaching or leaving):** Record any Black Rail detected outside of the survey period by recording the distance and direction of the detection, indication the call type(s) in the “outside survey period” column, and recording your coordinates at the time of detection in the notes column. For example, if a Black Rail is detected while moving between survey points, record the detection data on the data sheet for the prior (or forthcoming) survey point as described, and record coordinates of the location where you detected the rail.

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