

FINAL PERFORMANCE REPORT



Federal Aid Grant No. F15AF01188 (T-86-1)

**Biological surveys to determine the breeding range, habitat needs,
and co-occurring faunal communities associated with Black Rails
(*Laterallus jamaicensis*) in Oklahoma.**

Oklahoma Department of Wildlife Conservation

January 1, 2016 through December 31, 2017

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State: Oklahoma

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Principle Investigators: Ms. Brenda Smith-Patten and Dr. Michael A. Patten, Oklahoma Biological Survey, University of Oklahoma

A. ABSTRACT

In 2016–2017, we surveyed for breeding Black Rails (*Laterallus jamaicensis*) in the panhandle and northwestern Oklahoma, the most likely breeding range for this species in the state. A total of thirteen locations in seven counties were surveyed, with the majority of the locations having multiple survey points and most locations being surveyed in both years. We found Black Rails at two locations: Optima National Wildlife Refuge (NWR), Texas County, and along Commission Creek at Ellis County Wildlife Management Area (WMA). One to two birds were heard and recorded between 11 and 21 May 2016 at Optima NWR, but the marsh was drying or dry during later surveys and no birds were detected after May. Two to three birds were detected (one adult photographed) along Commission Creek at Ellis Co. WMA between 28 May and 11 July 2016, although nesting was not confirmed. In 2017, that same locality was the only location of those surveyed that year at which a Black Rail was detected. One bird was heard and recorded on 25–26 May, but not on subsequent visits to the site as late as 3 September.

We surveyed in a variety of habitats, including those dominated by cattail (*Typha*), bulrush (*Scirpus/Bolboschoenus*), spike sedge (*Eleocharis*), and sedge (*Carex*), all of which have harbored the Black Rail elsewhere. At the two locations we found Black Rails, there was moist soil to shallow water (about 1–3 cm). *Typha* dominated and was rather dense at higher levels while remaining sparse near the ground. *Typha* stands were 1–3 m high with many dead stems from the previous year's growth interspersed with live stems. *Scirpus/Bolboschoenus*, *Eleocharis*, and *Carex* were part of the vegetation assemblage as well. Dominant vegetation and height differs from that reported for Quivira NWR, Kansas, where *Eleocharis* dominated and mean height was 95 cm.

In addition to field surveys, we conducted regular literature reviews, reviewed various online resources (e.g., eBird), searched museum databases, and directly consulted observers to obtain detailed and up-to-date information. We compiled all known records of the Black Rail in Oklahoma. Those records were provided to the Oklahoma Department of Wildlife Conservation (ODWC) and directly to Whitney A. Wiest, the head of the federal Species Status Assessment (SSA) for the Black Rail. The records are archived with the Oklahoma Natural Heritage Inventory (ONHI) within the Oklahoma Biodiversity Information System (OBIS).

There are 23 known reports of the Black Rail in Oklahoma; those reports comprise approximately 30 individuals. Eight of the records are considered to be of migrating individuals (one record may be dubious) and none indicate overwintering in the state. The majority of Oklahoma's records ($n = 15$) fall within the species' expected breeding season of late April/early May to mid/late August. However, three of those records may not actually indicate breeding given their locations or by falling within the seasonal transition between breeding and migration. A fourth record, for Osage County, we consider dubious. Consequently, we find that there are *11 acceptable breeding season records for Oklahoma*. Three of the definite breeding season records come from our 2016–2017 surveys, during which we confirmed the

presence of Black Rail at two new localities—Ellis Co. WMA, Ellis County, and Optima NWR, Texas County, the latter county being previously unknown for the species. Although we were only able during the project to document adult presence, i.e., no immature birds or nests were encountered, we believe it is reasonable to conclude that *the Black Rail is a breeder, at least occasionally, in Oklahoma.*

B. BACKGROUND

The Black Rail (*Laterallus jamaicensis*) is the smallest rail in North America. The North American populations currently are divided into two subspecies—the Eastern Black Rail (nominate subspecies) and the California Black Rail (*Laterallus jamaicensis coturniculus*). Populations along the Atlantic, Pacific, and Gulf coasts as well as the one found along the Colorado River and nearby Salton Sea have received relatively much attention compared to the interior populations. Therefore, few specifics are known of the geographic distribution, population size, conservation status, breeding behavior and phenology, foraging behavior, associations with other species, and habitat needs of the interior populations.

The Black Rail is known to breed in the Great Plains in Kansas and the Texas panhandle (Eddleman, et al. 1994). It is known from Oklahoma, where there are breeding season records, but breeding has been documented only once (Fig. 1; Table 1). In Colorado, it is now known to occur in relatively large numbers (estimated >100 males annually) during the breeding season, but documentation of breeding—nests, eggs, or fledglings—has not been obtained (Smith-Patten and Patten 2012; Wickersham 2016). Smith-Patten and Patten (2012) recommended that fieldwork be conducted in Colorado and Oklahoma to determine the species' breeding status in those states.

The Black Rail is classified as a species of conservation concern by various government agencies and conservation organizations. It has been under review by the United States Fish and Wildlife Service (USFWS) since 2011 (*Federal Register*, vol. 76, no. 187, 27 Sept 2011). The USFWS considers the species to be affected by all five of the threat factors they take into account (Factor A: Present or threatened destruction, modification or curtailment of its habitat or range; Factor B: Overutilization for commercial, recreational, scientific, or educational purposes; Factor C: Disease or predation; Factor D: Inadequacy of existing regulatory mechanisms; and Factor E: Other natural or manmade factors). USFWS currently has a draft SSA in preparation (USFWS 2018), which indicates that the Eastern Black Rail is at risk of extirpation within the United States. ODWC designates the species as a *Tier II Species of Greatest Conservation Need (SGCN)* (ODWC 2005, 2015). NatureServe (2018) considers the Black Rail to be *Vulnerable* at the global and national levels (rounded global rank of G3; national status of N3B, N3N). In Oklahoma it is ranked as S1B, or a *Critically Imperiled* breeder, which is the same rank it has in Kansas. The International Union for Conservation of Nature (IUCN 2018) Red List evaluated the species as being *Near Threatened* across its entire world range, which extends south to southern South America.

At the time of the project's undertaking it was still under debate as to whether the Black Rail bred in Oklahoma; the phenological characterization of many of the known records was still unclear. The species was known to occur in all of the biogeographic regions designated in ODWC's *Oklahoma Comprehensive Wildlife Conservation Strategy* (ODWC 2005, 2015), except the Ozark Region. The northwestern portion of the state, including the panhandle, was considered the most likely breeding range of the species in Oklahoma (Fig. 1). As such, surveys were focused within the Shortgrass and Mixed-grass Prairie Regions in that portion of the state.

C. OBJECTIVES

Objective 1—Conduct field surveys to determine the breeding range of the Black Rail in Oklahoma.

Surveys will also assess the habitat needs and the co-occurring faunal communities associated with this species.

Objective 2—Compile a database of records of the Black Rail in Oklahoma.

D. APPROACH

At the beginning of the project, we compiled all known records (literature, photographic, observational, etc.) of the Black Rail in Oklahoma and included pertinent details such as the number and age of individuals, documentation level, habitat association, and associated marsh birds (Tables 1 and 2). These records were then geocoded and combined with records from Kansas to determine if there were specific regional habitat associations for breeding Black Rails; thus directing where we conducted survey in Oklahoma. In the winter and early spring of 2016, we worked with ODWC and NWR personnel to narrow down potential survey sites. We started with a pool of approximately 20 sites with potentially suitable habitat, but some of those sites were dry when we visited in 2016 (some sites stayed dry in 2017) or there was not suitable habitat (Fig. 2, as black triangles). For example, Lunceford, Gate, and Lavern Playas were dry and the marsh on the south end of Spring Creek Lake that is often a shallow marsh was instead flooded in both years. Therefore, we focused on eleven sites in 2016 and twelve sites in 2017, while opportunistically visiting other sites in northwestern Oklahoma (Fig. 2).

In spring and early summer 2016, the PIs surveyed for the Black Rail and other marsh birds at the eleven focal sites/routes selected within six counties in northwestern Oklahoma; other sites were visited opportunistically (Fig. 2; Tables 3 and 4). Survey protocol followed the North American Marsh Bird Monitoring Protocol (NAMBMP; Conway 2011). In brief, we conducted standard playback surveys, using approved recordings supplied by the NAMBMP, at fixed points at each site. The playback series consists of five minutes of silence, then three call types of Black Rails, each followed by 30 seconds of silence, then three call types of the Least Bittern (*Ixobrychus exilis*; with 30 sec silence after each call type), three call types of the Virginia Rail (*Rallus limicola*; with 30 sec silence after each call type), and three call types of the King Rail (*R. elegans*; with 30 sec silence after each call type). Surveys were conducted in the early morning (before 09:00 CDT) or late afternoon (after 18:30 CDT). Site visits occurred a minimum of two times between 15 April and 31 May 2016 as per NAMBMP suggested timing. Follow-up visits (“spot-checks”) were made in June and/or July to sites at which we earlier discovered a Black Rail(s). All occurrences of the Black Rail were noted, as were occurrences of the Virginia Rail, King Rail, Least Bittern, and Sora (*Porzana carolina*). In addition to these pre-determined focal species, we noted all occurrences of other marsh birds, such the Marsh Wren (*Cistothorus palustris*) or Red-winged Blackbird (*Agelaius phoeniceus*). Other birds, such as the Great Blue Heron (*Ardea herodias*), Common Yellowthroat (*Geothlypis trichas*), and some ducks, were opportunistically noted (Table 4). For each survey we noted standard environmental conditions, such as wind speed (Beaufort scale) and ambient temperature (°C), and assessed general habitat quality, and for each encounter of the target species we measured salinity and broadly described vegetation.

In 2017, we dispensed with the NAMBMP that we followed in 2016. We made the decision not to follow NAMBMP because in 2016 we dealt with these issues: 1) freezing temperatures persisted into the first survey window recommended by NAMBMP, 2) flooding in some areas made it a waste of time to survey points as they were laid out, 3) regular high winds were often high enough (>20 kmph) to technically negate survey results, and 4) tornadic weather occasionally compromised the safety of field personnel. We felt that all of these issues not only made for troublesome logistics but they also took attention away from the main goal of the project—*finding, not monitoring, Black Rails*. The decision to dispense with NAMBMP was made in consultation with ODWC personnel.

In place of NAMBMP, we conducted opportunistic surveys at twelve sites in seven counties between 14 May and 3 September 2017 (Fig 2; Table 5). Surveys were conducted primarily by William F. Oakley with some visits made by the PIs. We focused attention on sites from 2016 that looked the most promising, paying particular attention to the two sites, Ellis Co. WMA and Optima NWR, at which we found Black Rails in 2016. Survey visits to the sites were made during the early morning hours of pre-dawn and a few hours after sunrise as well as just before dusk and further into the evening hours than was possible in 2016. Surveys were conducted by walking through suitable areas while looking and listening for Black Rails. Playback calls and songs of Black Rails were used intermittently during the surveys. Scouting and other visits to the sites generally consisted of passive surveys (looking and listening; no

playback) during the cooler hours of the day. Notes were made as to other rail species encountered during visits (Table 5).

Throughout the project we continued to look for additional records of the Black Rail in Oklahoma. As part of our search for records we conducted multiple literature reviews, reviewed various online resources (e.g., eBird, listserves), searched museum databases, and directly consulted observers to obtain detailed and up-to-date information. At the end of the project we finalized the compilation of all known records of the Black Rail in Oklahoma, adding additional details to some previous records, and entered all into database-ready files (Fig. 1; Table 1; also presented separately as data files: *Laterallus jamaicensis* Oklahoma records.csv and .xlsx) that we included with this final report. Those records were provided to ODWC and directly to Whitney A. Wiest, the head of the federal SSA for the species. The records are archived with the ONHI within the OBIS.

E. RESULTS AND DISCUSSION

Results

Field Surveys

During the spring and summer of 2016, we documented the Black Rail at two survey sites (Table 3). Our first survey at Optima NWR, Texas County, on 23 April had negative results but our second survey proved fruitful. A single calling male, and perhaps a second individual, was present in a 15–20 m² area within the ephemeral marsh at Optima NWR, Texas County, on the morning of 11 May (vocalized from 07:15–07:45). One bird was still present in approximately the same area on the morning of 21 May (vocalized from 06:38+), indicating that the bird was holding territory. The bird(s) responded to playback during both visits but remained obscured in dense vegetation so we were not able to obtain quality photographs. On 21 May, we obtained an excellent voice recording of a calling putative male on the last date (copy archived at the Macaulay Library, Cornell Lab of Ornithology, recording ML46345171; Fig. 3). We could not locate the species on subsequent searches of Optima NWR, presumably because after late May the marsh had dried considerably and had dried completely upon other visits that summer.

The marshy area above Optima Dam is west of the alkaline “lake” in a man-made depression that is approximately 1 km² and that fills, at least partially, in most years, but can remain dry in some. In early April 2016 the marsh was just beginning to fill and have new vegetative growth (Fig. 4). By the 11 May visit, the marsh was quite expansive, with the eastern third having open water that was up to 20–25 cm deep in places where depth could safely be measured. That portion of the marsh was dominated by bulrush (*Bolboschoenus maritimus*, formerly *Scirpus*; identification by Bruce W. Hoagland, from photo; Fig 4), whereas the majority of the marsh contained cattails (*Typha* sp.). In more upland areas, salt cedar (*Tamarix* sp.) and herbaceous cover (especially salt grass, *Distichlis spicata*) was abundant. The central portion of the marsh along the southern edge where the bird was found (Fig. 4) was only damp or with places at which water would burble from the soil when stepped upon. The exact location where the bird(s) was found was dominated by cattail of both new growth (mostly about ≤ 1 m high early season and ≥ 1 m later) and dead stalks (up to 3 m high) from the previous year’s growth. The cattails were rather densely situated but the understory provided enough open space for small birds to move about while remaining obscured by dead stalks that had fallen over. Nearby vegetation consisted of salt cedar and unspecified herbaceous cover.

The first two surveys of marshes at Ellis Co. WMA, on 24 April and 13 May 2016, resulted in no detections of the Black Rail although we did note a Sora on 13 May. But we detected up to three individual Black Rails along Commission Creek in the western portion of Ellis Co. WMA between 28 May and 11 July (vocalized: 08:10–08:30+ on 28 May; 07:30+ on 26 June; and 10:40–11:30+ on 11 July). We suspect that two of those individuals were a pair, as they were in close proximity to one another and appeared to make contact calls. A series of photographs of a putative male was obtained on 26 June (Fig. 5). The marsh complex along this part of Commission Creek is approximately 1 km² in its area, but

Black Rails were detected only in the eastern half. Vegetation at the site was quite dense (Fig. 6). Late in the season, it was composed of cattail (70%, 2–3 m high), bulrush (28%, *Scirpus* sp.), gooseberry (*Ribes*) saplings, and germander (*Teucrium canadense*; plants identifications by Bruce W. Hoagland, from photo). The latter two plants were about 2% of the vegetation. There was also some dead vegetation, exposed sand, and open water from braids of the creek (the main channel of which was about 30 m distant). There was moist soil directly at the Black Rail spot and nearby. The nearest trees and shrubs were about 10 m. There was no disturbance directly at the site, but there was disturbance at the marsh's edge (~30 m away) from a large oil pumping pad, which was in the upland portion of the site about 10 m from the patch edge. The dirt road was about 200 m to the east. Similar habitat to this marsh exists in other portions of Ellis Co. WMA, such as below Lake Lloyd Vincent's dam and along northern portions of Coon Creek, but we did not detect Black Rails at those other locations. We did not encounter Black Rails at any of the other sites in 2016.

Only one Black Rail was detected during the spring and summer 2017 surveys: on the night of 25 May and the morning of 26 May 2017 at Ellis Co. WMA, Ellis County, at the same location on Commission Creek as the previous year's detection. Audio and video recordings were obtained (archived with the senior author). Vegetation was similar as the previous year but the creek seemed to experience more dynamic flow, including obvious flooding at times throughout the season. Also of note at Ellis Co. WMA in 2017 is that some of the northern portions of Coon Creek were undergoing habitat restoration via prescribed burning so we were not able to survey those areas throughout the breeding season as planned. Future surveys should include those areas. Black Rails were not detected on subsequent visits to Commission Creek, nor were they detected at any other survey locations in Oklahoma in 2017.

During our targeted surveys for Black Rails in 2016–2017, we noted other marsh birds at and near our survey locations. Results are presented in Tables 4 and 5.

Database records

From the records compilation we determined that there are 23 reports of the Black Rail in Oklahoma accounting for approximately 30 birds encountered (Fig. 1; Table 1; also presented separately as data files: *Laterallus jamaicensis* Oklahoma records.csv and .xlsx). Two of the records were reported without indication of their seasonality (as “1915” and “about 1940”); the others range from as early as 23 April to as late as 11 October. Fifteen of those records are from the expected regional breeding season (late April/early May to mid/late August). However, three of those records cannot be categorized confidently by phenology and two of those three records are outside of what is generally considered the species' breeding range in Oklahoma—the northwestern portion of the state, including the panhandle. The timing of the record from 23 April 1971 at Tishomingo NWR, Johnston County, puts in within the early part of the species' potential breeding season in Oklahoma, but its location, in south-central Oklahoma, likely indicates that it was a migrating bird (i.e., a spring migrant heading north). The 27 August 2002 individual reported for Red Slough WMA, McCurtain County, was also likely a migrating bird given its location in the far southeastern corner of the state where the species is not expected to breed but would be expected to migrate through in the fall on its way south to overwinter in coastal Texas. That record was erroneously reported as an immature/juvenile bird by Beck and Patten (2007). David Arbour's description of the bird's plumage and behavior (Appendix A) indicates that it was an adult. A third record is within the expected breeding range, but it is on the cusp of the breeding and migration seasons, so it is impossible to determine if it is a breeding or migratory record—an apparent adult Black Rail, reported on 29 August 1973, from Salt Plains NWR, Alfalfa County.

A fourth breeding season record, that reported from Osage County in 1977, also is problematic. Details for that record are lacking so it is unclear where in the county it was from. But even if the record was from westernmost Osage County, its location is much farther east than one would expect a breeding record to fall in this region. The observer also said that he had only a brief look (Baumgartner & Baumgartner 1992:134) at the bird, which given the frequency at which small birds are mistaken for Black Rails, the record does not inspire our confidence. At this point, the record may best be treated as

dubious. One other outlying breeding season record is of note—the 16 May 1924 record of an adult bird in Cleveland County. We treat that record as a probable breeding record because although the central Oklahoma location is outside the expected breeding range, the record’s timing, unlike that of the 23 April record, is well within the timeframe one would expect establishment of breeding territories to have occurred. However, Nice 1931 characterized the Black Rail as a transient species in Oklahoma, which suggests that she perceived the Cleveland County specimen to be a migrating bird. The Cleveland County record, unlike the Osage County record, has good documentation—an adult male specimen, OMNH-8446. With the four discounted records, there remain a total of eleven records that we categorize as acceptable breeding records.

The remaining records, reported from between 14 September and 11 October, are considered migratory records because they fall clearly within the timeframe of migration. We currently consider one of those records, from “Caravella Cabin,” Pittsburg County, on 9 October 2012 (eBird S11767010), dubious. We are hesitant to accept the record, not because of its timing and location, but because its description sounds as if there may have been confusion with a Sora or some other bird: “On private land, By side of road, ran into undergrowth, flushed [sic] it out 3 times to get good looks at it.” With further details on this sighting, which we were unable to obtain, the record perhaps ought to be reconsidered. The lack of winter records, including no detections during the 5-year Winter Bird Atlas surveys conducted in Oklahoma (Reinking 2017), indicate that the Black Rail does not overwinter in the state.

A variety of documentation exists for Oklahoma’s Black Rail records (Fig. 1; Table 1), including two specimen records (OMNH-8446 taken on 16 May 1924 and CUMZ-1172 on 14 Sept 1999), at least two photographic records (Figs. 4 and 5; Sullivan 1976), at least six audio recordings, and one series of video. The Black Rail has been reported from 13 Oklahoma Counties: Alfalfa, Beaver, Cleveland, Ellis, Greer, Johnston, McCurtain, Noble, Osage, Pittsburg, Texas, Tillman, and Woodward. Six of those counties (Alfalfa, Beaver, Cleveland, Ellis, Texas, and Woodward) are considered as having breeding season records. Thirteen records are considered historical (pre-2000). There are ten recent records (2002–2017), three of which were obtained during the 2016–2017 survey project.

Discussion

We classified eleven of the 23 known Black Rail reports from Oklahoma as breeding season records. Three of the breeding season records come from our 2016–2017 surveys. Our surveys confirmed presence of the species at two new localities— Ellis Co. WMA, Ellis County, and Optima NWR, Texas County. We were not able to detect the species again at Salt Plains NWR, Alfalfa County, the location of the only documented breeding of Black Rail for the state—a juvenile/fledgling captured and photographed at Salt Plains NWR, Alfalfa County, on 19 August 1971.

Oklahoma’s breeding season records indicate that the species may be found during the breeding season at marshes with shallow water (1–3 cm, with some areas up to 10 cm), but if at least some water does not persist throughout the breeding season, Black Rails may abandon the site. Marshes should also have rather dense stands of live and dead cattails with understories that allow for both movement and concealment of the Black Rails. Limited data suggest that a minimum of 0.5 km² area of suitable habitat is requisite, but that should not inhibit future researchers from surveying smaller marshlands within the species’ expected breeding range in Oklahoma if they can gain access. Taken together all records having an indication of associated marsh birds (Tables 2, 4, and 5) indicate that Virginia Rail is the rail species most commonly associated with Black Rail. Until further research can be conducted, we cannot say whether there are microhabitat differences between the two rails but we suspect as much. This association is also the case in Colorado (“found in extensive cattail marshes with standing water, ones that also support Virginia Rails...”; Wickersham 2016:188). Less common marsh bird associations were accounts of the King Rail, Least Bittern, Common Gallinule (*Gallinula galeata*), and Sora sharing, at least broadly, the same marsh where Black Rail was found. Sora were also found on two occasions at the overall locality (e.g., within the NWR or WMA), but not within the same marsh as Black Rail.

Although we were only able during the project to document adult presence, i.e., no immature birds or nests were encountered, we believe that the Black Rail likely breeds, at least occasionally, in Oklahoma. However, it may be that there is not sufficient suitable habitat and a sufficient number of birds during the breeding season to constitute a true breeding population in the state. Alternatively, it may be that more suitable habitat can be found in the state and that future surveys could detect an isolated breeding population such as that found in Colorado and those known for Kansas.

We speculate that birds migrating to the Colorado and Kansas locations may stop short on their migration routes on some years when Oklahoma appears to have suitable breeding habitat. Such may have been the case in 2006, for example, when four breeding season records were reported from Beaver, Ellis, and Woodward Counties (Table 1). A disadvantage that those birds may have in Oklahoma is fluctuating water levels at sites and concomitant changes in the suitability of habitat throughout the breeding season (*sensu* Kane 2011). We believe this may be why the 1–2 birds at Optima NWR in 2016 did not persist through the summer at the ephemeral marsh there. Drastically fluctuating water levels at Ellis Co. WMA in 2017 may have been why the single bird detected in late May did not appear to stay at the site. Rapidly changing water levels, including outright high flooding, at Salt Plains NWR likely explains why we did not detect Black Rails anywhere we surveyed at the refuge in either year. Habitat management practices that appear to have changed the overall character of Puterbaugh Marsh since the early 1970s would explain why Black Rails were not present specifically at that marsh during our surveys. We recommend that Salt Plains NWR, to the extent possible, manage some of their marshes to optimize habitat that can support Black Rails during the breeding season. We also recommend that Ellis Co. WMA staff take measures to ensure that Black Rail habitat is maintained and enhanced, including taking flood control measures to ease major fluctuations along Commission Creek. Further surveys of Coon Creek also are recommended.

Another possible issue with Black Rails pertains to detectability. Oklahoma is not special when it comes to the level of difficulty detecting Black Rails, but there are a couple of factors one ought to consider for future research. One factor is that there are relatively few public lands in the breeding range of the Black Rail. The number of available public lands are further limited because they often have access restricted by the private individuals who lease those lands, for example, for livestock grazing. Other public lands are not accessible because private landowners will not allow passage through on their privately-owned land or they will restrict access to county roads by erecting barriers or by threatening arrest. Public lands that are accessible often do not have suitable, even marginal, breeding habitat as we currently understand it to be. Those constraints truly leave one with the feeling of looking for a needle in a massive haystack. Fortunately, our study did locate some suitable habitat, but additional localities, particularly those on private lands, should be sought out for future study.

A second factor of detectability regards variability in the timing of Black Rail vocalizations. When future researchers pay visits to localities they should keep in mind Scott McConnell's experiences with Black Rail in Oklahoma (McConnell 2008 and field notes). McConnell worked intensively at three sites in Ellis and Woodward Counties during the summer of 2006. He noted much variability in detection of the species. For example, he could arrive on an evening, survey that evening with positive results, camp at the marsh's edge without hearing a bird, and then re-survey again in the morning also without hearing a bird. He could survey a few days later with the opposite results (e.g., no detections the previous evening/night but detection in the morning, an experience we had in 2016 at Optima, when no birds called in the evening and early night of 20 May but one called persistently on the morning of 21 May). Those experiences indicate that Black Rails may not be detected unless a researcher is fortunate enough to survey during an optimum year for habitat suitability and be available to survey at a given site for a few days at time. Such extremely intensive surveys, timed to coincide with a perfect greening of habitat and just the right amount of rain, will be necessary to fully document breeding behavior in Oklahoma.

Despite the lack of hard evidence—save the 1971 photograph of a juvenile/fledgling—of breeding Black Rails in Oklahoma, we feel it is reasonable to conclude that *the species is a breeder, at least occasionally, in Oklahoma.*

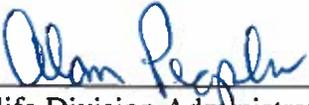
F. SIGNIFICANT DEVIATIONS:

There were no significant deviations during this project.

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H. DATE: 10 February 2018

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APPENDIX A. David Arbour's account of Black Rail (*Laterallus jamaicensis*) at Red Slough WMA, McCurtain County, Oklahoma, 27 August 2002.

“While disking today at Red Slough in unit #16 I flushed up a Black Rail in front of the tractor. He flew about 50 feet and landed in the vegetation. I quickly jumped off the tractor and ran over to the spot he landed but could not flush him up again. I then went back to the tractor and disked around the area he landed in to cut him off from the rest of the field. As I was completing the circle around him he flushed up and flew ahead of me and landed near the edge of the disked ground. I quickly disked a small circle around him. As I completed the circle I caught a glimpse of him running down the edge of the vegetation where it meets the disked ground. He reminded me of a mouse the way he was acting. As I started disking the area down to size he suddenly walked out into the bare disked ground beside me. I quickly stopped the tractor, turned it off, and opened the door. There he was standing out in the open on bare ground about 10-12 feet from me. He was tiny! About half the size of a Sora. He was blackish overall with a rufous nape and short black bill. He only posed for me for about 20 seconds and then flew back into the vegetation ahead of me. As I continued disking, and thinking that that was the last I was going to see of him, as he flew about 30 feet in from the edge, he suddenly flushed up again and flew across in front of me and landed about 30 feet out on the disked ground. As I stopped the tractor again I could see him walking around in the dirt clods. I turned my back for about 15 seconds to get my binoculars then I walked out into the field to where I last saw him but couldn't find him. Apparently he flew back into the vegetation when I was getting my binoculars. The habitat he was in was dry as we drained this unit last spring. The vegetation he was in was smartweed. I left the area so as to not disturb him anymore in hopes that I can show him to others.”

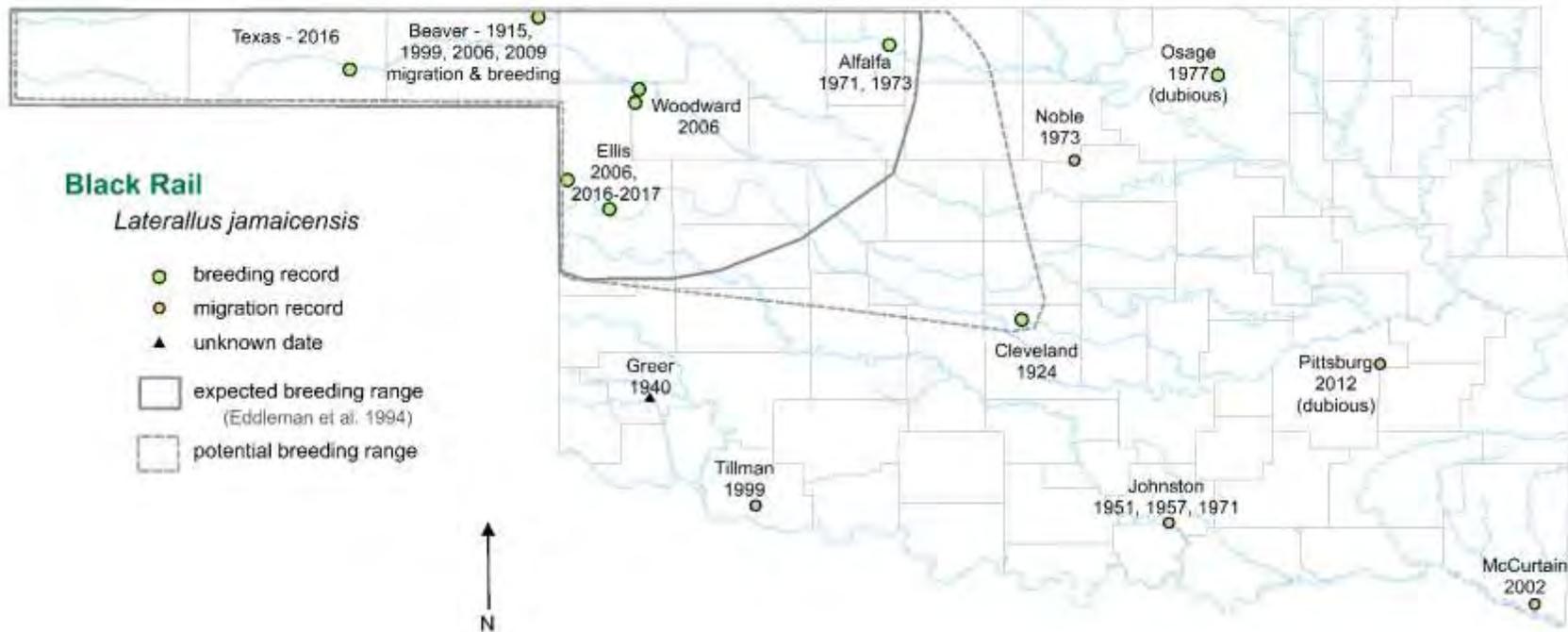


Figure 1. All known reports of the Black Rail (*Laterallus jamaicensis*) in Oklahoma are plotted. Breeding season and migration records are indicated. Two records, one from Greer County (in “about 1940”) and one from Beaver County (in 1915) were reported without indication of seasonality. Counties in which the species has been reported are also indicated (e.g., Cleveland) along with the years in which the species was reported from that county. Expected and potential breeding ranges in Oklahoma are indicated (dubious Osage Co. record is not included).

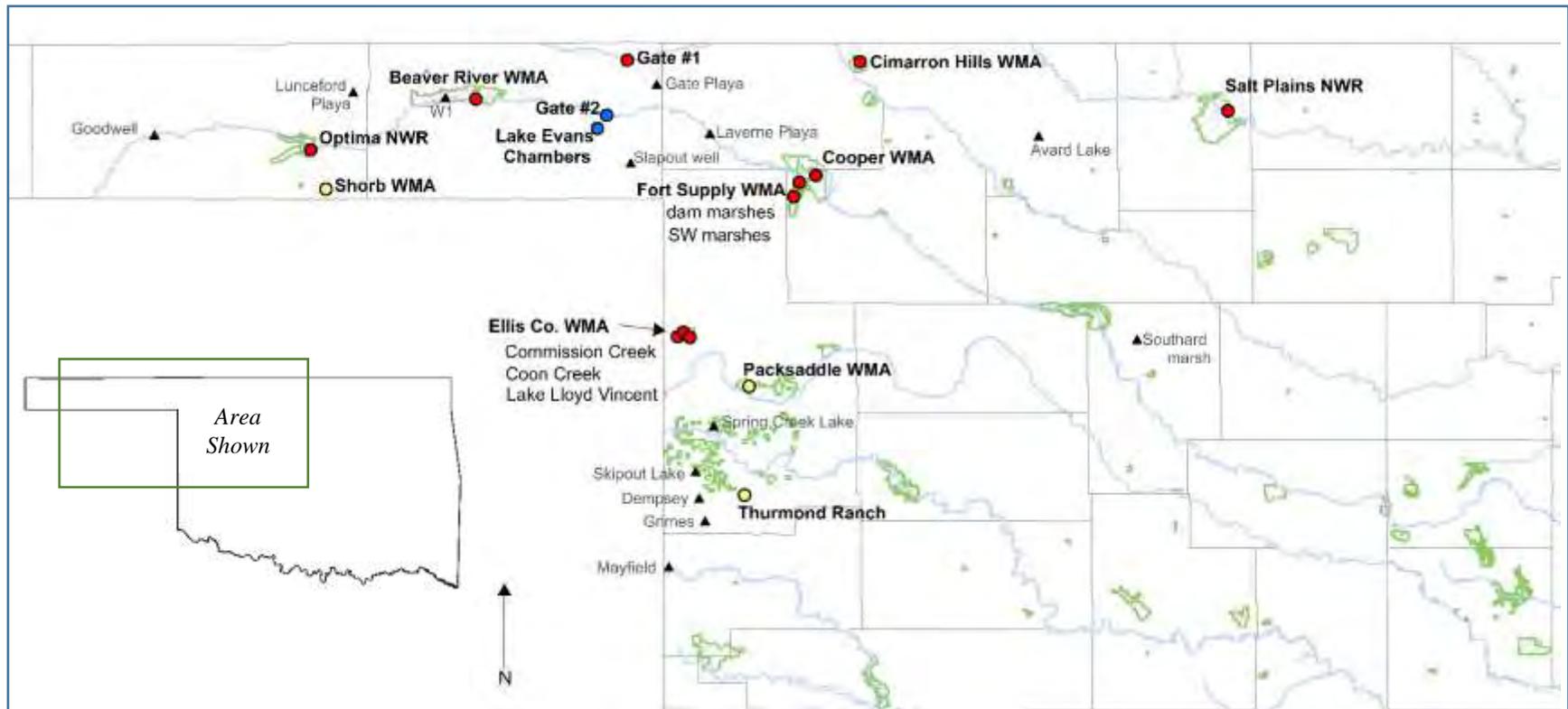


Figure 2. Sites/routes surveyed for Black Rail (*Laterallus jamaicensis*) during the 2016–2017 project. Sites visited in 2016 only, 2017 only, or in both years are color coded (blue, yellow, or red dots, respectively). In 2016, eleven sites were visited and in 2017, twelve were (due to the distance between points at Fort Supply WMA, the northern and southern points were counted as two sites). Other sites (▲) were visited opportunistically. Green outlines indicate protected areas, as provided in the 2017 “Protected Areas” geodatabase maintained by the Oklahoma Natural Heritage Inventory.



Figure 3. Sonogram of audio recording made of a calling putative male Black Rail (*Laterallus jamaicensis*) present at Optima National Wildlife Area/Optima Lake, Texas County, Oklahoma, on 21 May 2016. The audio recording was made by Michael A. Patten using a digital Nagra BB+ audio recorder with a 23" Telinga Pro Universal parabolic reflector and Sennheiser ME62 omnidirectional microphone. Total length of the recording is 3 minutes and 6 seconds. Recording is archived with the Macaulay Library, Cornell Lab of Ornithology, as recording number ML46345171.



Figure 4. Aerial of Optima National Wildlife Refuge/ Optima Lake, Texas County, Oklahoma, showing beginnings of marshland growth on 5 April 2016 (top, from Google Earth). Marsh had expanded rather drastically by 11 May 2016 visit (photo left and red outline on aerial). There was much new and old growth at the location where a putative male Black Rail (*Laterallus jamaicensis*), and perhaps a second individual, were detected on 11 and 21 May 2016 (photo above right and location as red X on aerial). Photographs by Brenda D. Smith-Patten.



Figure 5. Putative male Black Rail (*Laterallus jamaicensis*) along Commission Creek at Ellis County Wildlife Management Area, Ellis County, Oklahoma, 26 June 2016. Photograph by Michael A. Patten.



Figure 6. Examples of late season vegetation at location along Commission Creek where Black Rails (*Laterallus jamaicensis*) were detected in 2016 at Ellis County Wildlife Management Area, Ellis County, Oklahoma. The vegetation was similar in appearance when surveys were conducted at this location in 2017. Photographs by Brenda D. Smith-Patten, taken 11 July 2016.

Table 1. Records of the Black Rail (*Laterallus jamaicensis*) known for Oklahoma. Twenty-three reports have been made; all are considered vetted except two possible dubious records (gray font). There are 11–13 breeding season records (light blue highlight) but only one confirmation of breeding has been made: a juvenile/fledgling photographed on 19 August 1971 at Salt Plains National Wildlife Refuge, Alfalfa County. Three breeding season records, for two new localities, were reported during the 2016–2017 study.

Phenology	Date(s)	Locality	Observer	Age, min #, sex	Data source(s)	Notes
unknown	1915	Beaver Co.: 11 km N of Gate	WE Lewis	adult, probably (n = 1)	1: Lewis 1930, Nice 1931, Sutton 1967, Baumgartner & Baumgartner 1992, Beck & Patten 2007	“caught alive in my garden following a heavy rain in the early fall of 1915.” (Lewis 1930:42)
breeding	16 May 1924	Cleveland Co.: Norman; Mussel Shoals Lake	CE Fleming	adult (n = 1, ♂)	1,7: OMNH, Nice 1931, Sutton 1967, Baumgartner & Baumgartner 1992, Beck & Patten 2007	specimen #OMNH-8446
unknown	1940	Greer Co.: vic. Mangum	A Lovett	adult, probably (n = 1)	1: Tyler 2005, Baumgartner & Baumgartner 1992, Beck & Patten 2007	reported as "about 1940"
migration	11 Oct 1951	Johnston Co.: Tishomingo NWR	EW Craven	adult (n = 1)	1: Sutton 1967, Baumgartner & Baumgartner 1992, Beck & Patten 2007	
migration	16 Sept 1957	Johnston Co.: Tishomingo NWR	EW Craven	adult (n = 1)	1: Sutton 1967, Baumgartner & Baumgartner 1992, Beck & Patten 2007	
migration	23 Apr 1971	Johnston Co.: Tishomingo NWR	GR Zahm	adult, probably (n = 1)	1: Baumgartner & Baumgartner 1992, Beck & Patten 2007	
breeding	4 May 1971	Alfalfa Co.: Salt Plains NWR, Puterbaugh Marsh	M Hatch	adult (n = 1)	1: Sullivan 1976, Baumgartner & Baumgartner 1992, Beck & Patten 2007	
breeding	19 Aug 1971	Alfalfa Co.: Salt Plains NWR, Puterbaugh Marsh	P Clover	juvenile (n = 1)	1,6: Sullivan 1976, Baumgartner & Baumgartner 1992, Beck & Patten 2007	OKLAHOMA'S ONLY DOCUMENTED BREEDING RECORD; may be a fledgling
breeding?	29 Aug 1973	Alfalfa Co.: Salt Plains NWR, Puterbaugh Marsh	RS Sullivan	adult (n = 1)	1: Sullivan 1976, Baumgartner & Baumgartner 1992, Beck & Patten 2007	date is on cusp of breeding and migration seasons
migration	22 Sept 1973	Noble Co.: Lake McMurtry	W Bartush	adult (n = 1)	1: Bartush 1975, Sullivan 1976, Baumgartner & Baumgartner 1992, Beck & Patten 2007	
breeding?	7 June 1977	Osage Co.	EC Hicks	adult (n = 1)	1: Baumgartner & Baumgartner 1992, Beck & Patten 2007	eastward location of this record is problematic, as is the brief look the observer claimed
migration	14 Sept 1999	Beaver Co.: 11 km N of Gate	JD Tyler	adult (n = 1)	1,7: CUMZ, ABA Regional Editors 2000, Beck & Patten 2007	specimen #CUMZ-1172
migration	26 Sept 1999	Tillman Co.: Hackberry Flat WMA	DJ Farrell & KN Dorrell	adult (n = 1)	1: Tyler 2005, Beck & Patten 2007	

Table 1. Records of the Black Rail (*Laterallus jamaicensis*) known for Oklahoma. Twenty-three reports have been made; all are considered vetted except two possible dubious records (gray font). There are 11–13 breeding season records (light blue highlight) but only one confirmation of breeding has been made: a juvenile/fledgling photographed on 19 August 1971 at Salt Plains National Wildlife Refuge, Alfalfa County. Three breeding season records, for two new localities, were reported during the 2016–2017 study.

Phenology	Date(s)	Locality	Observer	Age, min #, sex	Data source(s)	Notes
migration	27 Aug 2002	McCurtain Co.: Red Slough WMA, Unit 16	D Arbour	adult (n = 1)	1,2: ABA Regional Editors 2003, Beck & Patten 2007, eBird	reported in error as immature bird (Beck & Patten 2007); eBird S7331942
breeding	9 May– 14 June 2006 (7 days)	Beaver Co.: vic. 11 km N of Gate	E Beck	adult (n = 2)	1,4*: Beck & Patten 2007	called (sonogram in Beck & Patten 2007)
breeding	4 June 2006	Woodward Co.: Fort Supply WMA, marsh near dam	S McConnell	adult (n = 1)	1*: McConnell 2008, Beck & Patten 2007	called; visited site approx. 20 times, 4 June to 29 July, but Black Rail detected only once
breeding	25 June– 24 July 2006 (9 days)	Ellis Co.: Packsaddle WMA	S McConnell & DB Shepard	adult (n = 4, pair?)	1,4*: McConnell 2008, Beck & Patten 2007	possible pair present; called, growled, responded to playback
breeding	27–30 July 2006 (3 days)	Woodward Co.: Fort Supply WMA, south end	S McConnell	adult (n = 1)	1,4*: McConnell 2008, Beck & Patten 2007	called
breeding	15 May 2009	Beaver Co.	E Beck	adult (n = 3)	1: ABA Regional Editors 2009	
migration	9 Oct 2012	Pittsburg Co.: Caravella Cabin	P Crowe	adult (n = 1)	2: eBird	eBird S11767010
breeding	11–21 May 2016 (2 days)	Texas Co.: Optima NWR	BD Smith-Patten & MA Patten	adult (n = 1)	1,3,4*: Cornell Lab Macaulay Library, eBird	ML 46345171 & eBird S33889433; called, growled, responded to playback
breeding	28 May– 11 July 2016 (3 days)	Ellis Co.: Ellis County WMA, Commission Creek	MA Patten & BD Smith-Patten	adult (n = 3, pair?)	1,3,6*	two individuals, assumed to be male and female, in same area; called, growled, responded to playback
breeding	25–26 May 2017 (1 day)	Ellis Co.: Ellis County WMA, Commission Creek	WF Oakley	adult (n = 1)	1,3,4,5*	called, growled, responded to playback

The assumed phenology, based on date and location of record, is indicated as “breeding” or “migration” with two records as “unknown” due to the month and day of observation not being reported by the observer. The number of days a bird(s) was reported is indicated if a date range was provided above. When known or assumed, the age of the bird(s) was provided. Minimum number of individuals encountered is also provided as is sex of individuals, if reported. Records obtained from scientific studies are indicated by an asterisk (*) in data source column. Data sources presented by code are: 1 = literature citation, 2 = sight record, 3 = field survey, 4 = audio recording, 5 = video recording, 6 = photograph, and 7 = specimen. Institutional codes are: CUMZ = Cameron University, Museum of Zoology, Lawton; Oklahoma, eBird = Cornell Lab of Ornithology (<http://ebird.org/content/ebird/>), Ithaca, New York; ML = Macaulay Library (formerly Library of Natural Sounds), Cornell Lab of Ornithology, Ithaca, New York; and OMNH = Sam Noble Oklahoma Museum of Natural History, Norman, Oklahoma. Literature references are provided in the “Literature Cited” section of this report.

Table 2. Of the 23 Black Rail (*Laterallus jamaicensis*) records known from Oklahoma, these seven provided habitat descriptions. Six records noted other rail species at or nearby the marsh at which one or more Black Rails were detected.

Date(s)	Locality	Habitat	Other rails noted?
9 May– 14 June 2006 (7 days)	Beaver Co.: vic. 11 km N of Gate	Ephemeral marsh complex, comprised of two wet meadows and four marshes with dense vegetation (under- and overstory) and water 2–10 cm deep, located 75–100 m south of the Cimarron River. Dominated by sedges (Cyperaceae, 80%) with about 20% cattail (<i>Typha</i>) and other aquatic vegetation.	none reported
4 Jun 2006	Woodward Co.: Fort Supply WMA, marsh near dam	"3-4 ha wetland (ponds, cattails [<i>Typha</i> sp.], sedges) near Fort Supply Lake" (McConnell 2008:2)	Sora ($n = 1$, on 6-7 July, calling on the 6th)
25 June– 24 July 2006 (9 days)	Ellis Co.: Packsaddle WMA	"One wetland [PSWL01] was ~2 ha and surrounded by large trees, mostly cottonwoods (<i>Populus deltoids</i>), with a tree-lined road on 1 side. Cattails and sedges were the dominant vegetation; there also were a few small willows (<i>Salix</i>)...The other wetland [PSWL02] (~17 ha) was 0.5 km east of the first and was long, narrow, mostly dry, and dominated by sedges." (McConnell 2008:2)	Virginia Rail ($n = 1$, calling evenings of 26-27 June)
27–30 July 2006 (3 days)	Woodward Co.: Fort Supply WMA, south end	"cattail-dominated slough" (McConnell 2008:2)	King Rail ($n = 2$, adult female and immature on 27 July), Virginia Rail ($n = 2$, 1 immature on 27, 1 adult on 28 July)
11–21 May 2016 (2 days)	Texas Co.: Optima NWR	Ephemeral marsh; bird found within dead and live cattails (<i>Typha</i> sp) up to 1m tall; marsh dried by mid-summer	Sora (nearby creek, not at Black Rail marsh) on 11 May; Virginia Rail ($n = 2$) on 21 May
28 May– 11 July 2016 (3 days)	Ellis Co.: Ellis County WMA, Commission Creek	Marsh along creek; birds found within dead and live cattails (<i>Typha</i> sp) and mixed herbaceous cover up to 1m tall	Virginia Rail ($n = 4$, on 28 May; $n = 2$, 26 June) at marsh or other marshes at WMA
25–26 May 2017 (1 day)	Ellis Co.: Ellis County WMA, Commission Creek	Marsh along creek; bird found within dead and live cattails (<i>Typha</i> sp) and mixed herbaceous cover up to 1m tall	Virginia Rail ($n = 1$)

King Rail = *Rallus elegans*, Virginia Rail = *R. limicola*, Sora = *Porzana carolina*.

Table 3. Results of breeding Black Rail (*Laterallus jamaicensis*; BLRA) surveys conducted April through July 2016 in Oklahoma.

County	Site/Route	Date of visit	Survey/pts	Surveyor	BLRA detected	Notes
Alfalfa	Salt Plains NWR	30 April	Full/9	BS-P, BS	negative	Site was mostly flooded; High winds; Playback unit malfunction
Alfalfa	Salt Plains NWR	13 May	Full/9	BS-P, SK	negative	
Alfalfa	Salt Plains NWR	29 June	Full*/8	BS-P, GH	negative	Flooding in some areas, completely dried in others
Beaver	Gate/Evans Chambers	23 April	Full/5	MAP	negative	High winds
Beaver	Gate/Evans Chambers	10 May	Full/5	BS-P	negative	High water at Gate
Beaver	Gate/Evans Chambers	24 May	Full/5	BS-P	negative	High winds at all points
Beaver	Beaver River WMA	22 April	Full/6	MAP	negative	
Beaver	Beaver River WMA	10 May	Full/5	BS-P	negative	
Beaver	Beaver River WMA	24 May	Full/0	BS-P	negative	Weather prohibited survey (tornadoes at site)
Ellis	Ellis County WMA	24 April	Full/7	MAP	negative	
Ellis	Ellis County WMA	13 May	Full/7	MAP	negative	One Sora present
Ellis	Ellis County WMA	28 May	Full/6	MAP	positive	Likely pair of Black Rails present; Four Virginia Rails present: dam spillway and Commission Creek #1
Ellis	Ellis County WMA	26 June	Spot	MAP	positive	Two, possibly three, Black Rails present, photos of one; Two Virginia Rails present: dam spillway and Commission Creek #1
Ellis	Ellis County WMA	11 July	Spot	BS-P	positive	One, possibly two, Black Rails present at Commission Creek #1
Texas	Optima NWR	23 April	Full/6	MAP	negative	
Texas	Optima NWR	11 May	Full/4	BS-P	positive	One Black Rail present on "lake" marsh; One Sora present on Coldwater Creek after survey was done
Texas	Optima NWR	20 May	Full/4	MAP	negative	Surveyed Coldwater Creek and spot checked the lake marsh after dark
Texas	Optima NWR	21 May	Full/4	MAP	positive	Surveyed "lake" marsh; One Black Rail present, voice recording made (ML46345171); Two Virginia Rails present
Texas	Optima NWR	25 June	Spot	MAP	negative	"Lake" marsh mostly dry
Texas	Optima NWR	12 July	Spot	BS-P	negative	"Lake" marsh completely dry
Woods	Cimarron Hills WMA	9 May	Full/3	BS-P	negative	
Woods	Cimarron Hills WMA	28 May	Full/4	MAP	negative	
Woodward	Cooper WMA	11 May	Full/5	BS-P	negative	
Woodward	Cooper WMA	23 May	Full/3	BS-P	negative	Weather conditions (tornado) cut surveys short
Woodward	Fort Supply WMA	12 May	Full/4	BS-P	negative	
Woodward	Fort Supply WMA	25 May	Full/5	BS-P	negative	

Site/Route: NWR = National Wildlife Refuge, WMA = Wildlife Management Area; Note that Gate/Evans Chambers = Three sites: Cimarron River near Gate, Beaver River near Gate, and Lake Evans Chambers were combined into one route. The eight routes comprised eleven survey sites, most with multiple survey points within the site.

Survey: Full = survey using NAMBM, Spot = spot-check of location where Black Rail(s) reported during protocol surveys

Surveyors: BS = Barry Smart, BS-P = Brenda D. Smith-Patten, GH = Glen Hensley, MAP = Michael A. Patten, SK = Shane Kasson

Result: negative = no Black Rails recorded, positive = Black Rail(s) recorded

Table 4. Rails, marsh birds, and other birds of interest noted during 2016 breeding Black Rail (*Laterallus jamaciensis*) surveys.

Site/Route	Date	BlRa	ViRa	Sora	AmCo	GBHe	BwTe	Mall	MaWr	RwBl	CoYe	RnPh	other species noted
Salt Plains NWR	30 April				X			X		X		X	teal (sp. not recorded), Wood Duck
Salt Plains NWR	13 May						X			X			Wilson's Phalarope, Great Egret
Salt Plains NWR	29 June					X				X		X	Bell's Vireo, Dickcissel
Gate/Evans Chambers	23 April												Canada Goose (on nest), Killdeer, Spotted Sandpiper
Gate/Evans Chambers	10 May					X				X	X		Killdeer, Spotted Sandpiper, Osprey, Wild Turkey
Gate/Evans Chambers	24 May									X			
Beaver River WMA	22 April						X	X		X			Northern Shoveler
Beaver River WMA	10 May					X		X		X	X		Bell's Vireo
Beaver River WMA	24 May												
Ellis County WMA	24 April						X			X	X		
Ellis County WMA	13 May			X					X	X	X		
Ellis County WMA	28 May	X	X							X			
Ellis County WMA	26 June	X	X										
Ellis County WMA	11 July												Wood Duck
Optima NWR	23 April				X	X				X			
Optima NWR	11 May	X		X						X			Northern Harrier
Optima NWR	20 May									X			
Optima NWR	21 May	X	X			X				X	X		Yellow-headed Blackbird
Optima NWR	25 June												
Optima NWR	12 July												
Cimarron Hills WMA	9 May									X		X	
Cimarron Hills WMA	28 May												
Fort Supply WMA	12 May									X			
Fort Supply WMA	25 May					X				X			Great Horned Owl, Green Heron
Cooper WMA	11 May					X				X			
Cooper WMA	23 May												

BlRa = Black Rail (*Laterallus jamaicensis*), ViRa = Virginia Rail (*Rallus limicola*), Sora = Sora (*Porzana carolina*), AmCo = American Coot (*Fulica americana*), GBHe = Great Blue Heron (*Ardea herodias*), BwTe = Blue-winged Teal (*Anas discors*), Mall = Mallard (*Anas platyrhynchos*), MaWr = Marsh Wren (*Cistothorus palustris*), RwBl = Red-winged Blackbird (*Agelaius phoeniceus*), CoYe = Common Yellowthroat (*Geothlypis trichas*), RnPh = Ring-neck Pheasant (*Phasianus colchicus*)

Table 5. Results of breeding Black Rail (*Laterallus jamaicensis*; BLRA) surveys conducted May through September 2017 in Oklahoma. Surveys conducted by William F. Oakley unless otherwise noted.

County	Survey Site	Date of Visit	BLRA detected	Other marsh bird species detected	Notes
Alfalfa	Salt Plains NWR	14 May	negative		
Alfalfa	Salt Plains NWR	15 May	negative		
Ellis	Ellis County WMA	16 May	negative	Virginia Rail	scouting trip, with BD Smith-Patten
Ellis	Ellis County WMA	21 May	negative		spot check, MA Patten visit to Commission Creek and area below dam
Alfalfa	Salt Plains NWR	22 May	negative	Least Bittern, Common Gallinule	
Alfalfa	Salt Plains NWR	23 May	negative		
Beaver	11 km N of Gate	23 May	negative		bridge on Rd N1610
Beaver	Beaver River WMA	23 May	negative		scouting trip
Texas	Optima WMA	23 May	negative	Virginia Rail	
Texas	Optima WMA	24 May	negative	Virginia Rail	
Woodward	Fort Supply WMA	24 May	negative		dam and south end surveys
Ellis	Ellis County WMA	25 May	positive		One Black Rail detected at Commission Creek site in the evening; it sang and growled; vocalizations were recorded
Ellis	Ellis County WMA	26 May	positive	Virginia Rail	One Black Rail detected at Commission Creek site in the morning; it sang and growled; vocalizations were recorded (audio and video)
Ellis	Packsaddle WMA	26 May	negative		
Woodward	Fort Supply WMA	26 May	negative		dam and south end surveys
Beaver	11 km N of Gate	26 May	negative		bridge on Rd N1610
Ellis	Packsaddle WMA	2 June	negative		
Ellis	Ellis County WMA	2 June	negative	Virginia Rail	the previously detected BLRA at the Commission Creek site was not detected during this nighttime survey by WF Oakley; MA Patten independently visited the site (Commission Creek and area below dam) earlier in the day

Table 5. Results of breeding Black Rail (*Laterallus jamaicensis*; BLRA) surveys conducted May through September 2017 in Oklahoma. Surveys conducted by William F. Oakley unless otherwise noted.

County	Survey Site	Date of Visit	BLRA detected	Other marsh bird species detected	Notes
Texas	Shorb WMA	2 June	negative		MA Patten survey
Woodward	Fort Supply WMA	3 June	negative		dam and south end surveys
Texas	Optima WMA	3 June	negative		heavy rain/approaching thunderstorm; short nighttime survey
Texas	Optima WMA	4 June	negative	Virginia Rail	
Beaver	11 km N of Gate	4 June	negative		bridge on Rd N1610
Woods	Cimarron Hills WMA	4 June	negative		scouting trip (afternoon visit)
Ellis	Ellis County WMA	4 June	negative		
Alfalfa	Salt Plains NWR	5 June	negative		
Woodward	Fort Supply WMA	14 June	negative		dam and south end surveys; rained out the night before
Ellis	Ellis County WMA	14 June	negative		no BLRA detected at Commission Creek site
Texas	Optima WMA	14 June	negative	Virginia Rail	
Woodward	Cooper WMA	15 June	negative		scouting trip
Ellis	Ellis County WMA	16 June	negative	Virginia Rail	
Ellis	Packsaddle WMA	16 June	negative		
Roger Mills	Thurmond Ranch	29 June	negative		scouting trip, BD Smith-Patten
Ellis	Ellis County WMA	8 July	negative		night survey
Ellis	Ellis County WMA	9 July	negative		morning survey
Ellis	Ellis County WMA	2 September	negative		MA Patten visit to Commission Creek
Texas	Shorb WMA	3 September	negative		MA Patten survey

Virginia Rails (*Rallus limicola*) were detected multiple times. Least Bittern (*Ixobrychus exilis*) and Common Gallinule (*Gallinula galeata*) were detected on one visit each.