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Author(s): Auriel M. V. Fournier, Mark C. Shieldcastle, Tom Kashmer and Kristin A. Mylecraine
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Comparison of Arrival Dates of Rail Migration in the Southwest Lake Erie Marshes, Ohio, USA

Auriel M. V. Fournier[1], Mark C. Shieldcastle[2,*], Tom Kashmer[2] and Kristin A. Mylecraine[2,3]

[1]Arkansas Cooperative Fish and Wildlife Research Unit, Department of Biological Sciences, University of Arkansas, 1 University Drive, Fayetteville, Arkansas, 72701, USA

[2]Black Swamp Bird Observatory, 13551 West State Route 2, Oak Harbor, Ohio, 43449, USA

[3]Current address: New Jersey Audubon, 9 Hardscrabble Road, Bernardsville, New Jersey, 07924, USA

[*]Corresponding author; E-mail: mcshieldcastle@gmail.com

Abstract.—Several studies have documented the arrival time of spring migration of Virginia Rails (*Rallus limicola*), King Rails (*R. elegans*), and Soras (*Porzana carolina*) on the southwestern shore of Lake Erie, though not in recent decades, and most of this information is based on anecdotal records. These three species were captured in wetlands on Ottawa National Wildlife Refuge in Ottawa and Lucas Counties, Ohio, USA, from 2004 to 2009. Virginia Rails and Soras were documented arriving in northern Ohio earlier than previous research, but not older anecdotal records. King Rails were within the bounds of all previous records. Using traps with playback may have allowed us to detect these species at earlier dates than previous research. Documenting current spring migration arrival timing of these three secretive marsh bird species is important for future monitoring, research and wetland management. *Received 20 February 2015, accepted 11 June 2015.*

Key words.—King Rail, *Porzana carolina*, *Rallus elegans*, *Rallus limicola*, Sora, spring migration, Virginia Rail.

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Understanding the timing of migration is important for habitat management, monitoring and research. Virginia (*Rallus limicola*) and King (*R. elegans*) rails and Sora (*Porzana carolina*) may be experiencing population declines, and the role migration plays in these declines is unknown (Conway 1994, 2011; Poole 2005). To understand the role migration plays, we first need to know when each species migrates. However, the secretive nature and habitat of these species can make detection difficult, and few records exist. Here, we present the results of 6 years (2004-2009) of trapping in the southwestern Lake Erie marshes for Virginia and King rails and Sora (hereafter rails) and compare them to the earliest dates of Andrews (1973), eBird (2015), Bent (1926) and Campbell (1968).

Methods

We captured Virginia and King rails and Sora on the southwestern shore of Lake Erie on Ottawa National Wildlife Refuge in Ottawa and Lucas Counties, Ohio, USA, from 2004 to 2009. We used walk-in clover leaf traps with an audio lure (Kearns *et al.* 1998). Starting in 2004, the traps played the call continuously. Calls alternated between Virginia Rail and Sora in all traps except one trap in 2006 and 2007 that played the King Rail call. Gradually, we changed the audio lures to solar powered systems that only played calls from sunset to sunrise. Differing numbers of traps were used each year, as well as different numbers of traps with playback devices, and not all traps with playback had operating playback the entire season. No records were kept of changes in effort, when traps were switched from continuous to nighttime calls, when trap sound systems failed or the opening/closing days each year, which limits our ability to analyze these data.

We opened traps each spring as early as weather conditions allowed. The traps were closed in late May each year after 3 consecutive days of no captures. We checked traps each morning, weighed each rail, measured the culmen, tarsus, and middle toe, and banded each rail with a standard U.S. Geological Survey aluminum band.

We found four previous studies and collections of anecdotal records relating to the first sightings of rails during spring migration in northern Ohio (Bent 1926; Campbell 1968; Andrews 1973; eBird 2015). Andrews (1973) studied rails at Winous Point Shooting Club on the southern shore of Lake Erie, Ohio, USA, focusing on the breeding ecology of rails. The eBird database contains observations provided by recreational and professional bird watchers; while secretive birds like rails may not be well represented in the database, there are records over many years (eBird 2015). The two collections of anecdotal records are from Campbell 1968 and Bent 1926.

Results

From 2004 to 2009, we captured Virginia Rails ($n = 711$), King Rails ($n = 5$) and Soras ($n = 211$). We had no inter-year recaptures. Our

Table 1. Earliest capture dates by year and species at Ottawa National Wildlife Refuge, Ohio, USA. The start date of trapping was not documented and was not the same each year.

Species	2004	2005	2006	2007	2008	2009
Virginia Rail	14 April	6 April	30 March	24 March	31 March	26 March
King Rail	—	—	28 April	—	—	—
Sora	17 April	10 April	3 April	27 March	8 April	2 April

Table 2. Earliest dates pulled from the literature for arrival of Virginia Rail, King Rail and Sora on the southern shore of Lake Erie in Ohio, USA.

Species	Andrews (1973)	Campbell (1963)	Bent (1926)	eBird (2015)
Virginia Rail	21 April	14 April	27 March	1 April
King Rail	10 April	10 April	10 April	15 April
Sora	15 April	10 April	8 March	8 April

earliest captures of Virginia Rails, King Rails and Soras were 24 March 2007, 28 April 2006 and 27 March 2007, respectively (Table 1). For each of the earlier studies and anecdotal records (Bent 1926; Campbell 1968; Andrews 1973; eBird 2015), we summarized earliest sightings, along with their locations (Table 2).

Discussion

Our captures of King Rails fall within the bounds of previous studies. Our earliest captures of Virginia Rails and Soras are earlier than those reported by Andrews (1973), who conducted more systematic work, and the eBird records (eBird 2015), but are similar to the anecdotal observations of Bent (1926).

Using traps with playback may have allowed us to detect rails earlier than Andrews (1973). As a result, we cannot attribute these earlier dates to changes in arrival. However, knowledge of these earlier arrival dates may be important for the monitoring and wetland management of rails in northern Ohio. The incorporation of the anecdotal records of Bent (1926) was important when examining rail migration because little work has been done on their migration ecology due to their secretive nature.

Our arrival timings should not be interpreted as changes in timing from past decades. Andrew (1973) was focused on breeding ecology and may have missed early arriving individuals as a result. Bent (1926) and Campbell (1968) are both collections of anecdotal records that are informative when studying a secretive species but need to be interpreted correctly. Data from eBird (2015) is also not collected in a rigorous way by citizen scientists, but allows us to take in additional observations by bird watchers.

A key element to understanding how migration impacts the population dynamics of a species is knowing when the species is present. Here, we have added to a small body of literature on the natural history of three rail species to inform future research and monitoring of rails during spring migration.

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