

Kirtland's Warbler on the North Carolina Coast in Fall: Its Occurrence and Possible Significance

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At approximately 1630 h on 28 September 1991, we saw a Kirtland's Warbler (*Dendroica kirtlandii*) perched on a bare limb low in the edge of a tall, dense clump of native evergreen shrubs beside a fence at the banker pony pen observation platform on Ocracoke Island, Hyde County, North Carolina. The bird was also seen by Christi and Shannon Stanforth, two relatively inexperienced bird watchers from Pittsboro, N.C. The four of us had been watching birds overhead (especially a Merlin, *Falco columbarius*), in the feed lot, and in the shrubs about 10 m from the northeast end of the platform for approximately 30 minutes when we noticed at least 10 Palm Warblers (*Dendroica palmarum*) of the Western race that were hawking insects from perches low in the edge of the shrubs. The mowed grassy area immediately outside the thicket, toward the platform, appeared to be a still zone protected from the fairly strong easterly winds; in that area, various flying insects (including dragonflies, beetles, and small moths) were observed with and without the aid of binoculars. At that time, Potter saw a yellow-breasted, gray-backed warbler emerge from the thicket and perch briefly in bright sunlight about 0.5 m above ground.

At first glance the bird suggested the Yellow race of the Palm Warbler or an immature Magnolia Warbler (*Dendroica magnolia*), but both possibilities were quickly eliminated when the bird made a single sortie in pursuit of an insect and returned to its perch; no tail spots were visible. The sudden movement of the bird attracted the attention of the other three observers. The warbler remained on the same perch for approximately 3 minutes, moving its tail up and down intermittently, somewhat in the manner of the nearby Palm Warblers though less rapidly and with more of a drooping and cocking action. During that time all observers studied the bird through binoculars and noted the gray upper parts streaked with black; the gray rump; narrow whitish wing bars; the solid bright yellow throat and breast, the latter heavily streaked with black on the sides; and the white belly and under-tail coverts. An indistinct whitish eye ring was the only noticeable facial marking, and there was no well-defined black streak through the eye. The faint eye ring and an overall dinginess, probably caused by remnants of buffy feather edgings, suggested a hatching-year bird, though the possibility of an adult female cannot be eliminated. Most authorities believe that age classes are impossible to separate in the field in fall, and we do not claim to be able to do so. Radovsky noted that the Kirtland's was definitely larger than the nearby Palm Warblers, being not only slightly longer but also generally more robust.

Although the four of us agreed on the significant field marks while the bird was present, no one called it by name. After it retired to the interior of the thicket, Potter (the only member of the group having previous experience with the species) turned to the double-page spread of fall-warbler illustrations in Robbins et al. (1983) and invited the other observers to find the bird; all three almost immediately selected the Kirtland's Warbler without realizing what it was until after the choice had been made. Bird guides by Peterson (1980) and

the National Geographic Society (1983) also were consulted at the site. By the time we closed the books, the flock of Palm Warblers had departed.

The Kirtland's Warbler was in the same thicket with the Palm Warblers and made a single sortie in their direction, but it appeared to be only loosely associated with them. Sykes et al. (1989) indicated that Kirtland's Warblers, even the inexperienced young of the year, tend to migrate alone in the fall rather than in groups of conspecifics. However, several observers (e.g. Darnell 1956; Potter 1975; Craighill, this paper) have mentioned seeing single migrating *D. kirtlandii* associated with flocks of other species.

PREVIOUS NORTH CAROLINA RECORDS

Kirtland's Warbler has been reported from North Carolina on four previous occasions, all during the fall migration period. The Rev. Francis H. Craighill (1942) saw single birds at Rocky Mount on 2 September 1936, 22 September 1938, and 23 September 1941; and Zora R. Weisbecker (1987) saw a male in Iredell County on 29 August 1982. Craighill's sightings were accepted by T. Gilbert Pearson, Clement S. Brimley, and Herbert H. Brimley, the authors of *Birds of North Carolina* (Pearson et al. 1942), who knew Dr. Craighill well and respected his field ability, as well as by Mayfield (1960) and Clench (1973). Nonetheless, many North Carolina bird students have expressed concern that published accounts (Craighill 1937, 1942; Pearson et al. 1942) fail to provide details that clearly eliminate the possibility of confusion with similar species.

The best published account is found in a letter Dr. Craighill wrote to C.S. Brimley on 6 October 1941, thirteen days after his third observation of a Kirtland's Warbler at Rocky Mount and only eight days before his death on 14 October 1941. When it was published in *The Chat* (Craighill 1942), the letter was preceded by an editor's note that read, in part: "[The letter] gives a good picture of a busy man enjoying his hobby and through it contributing to our common knowledge. His field notes are being compiled into a pamphlet on the birds of Rocky Mount."

In the second paragraph of his last letter to Mr. Brimley, Craighill (1942) listed the Kirtland's Warbler along with his other noteworthy bird observations for August and September 1941. Obviously he was, as he had stated in his opening paragraph, "out quite a lot in the early mornings, sunrise to breakfast three or four times a week." In the third paragraph he commented:

I realize, of course, that the record of the Kirtland's Warbler will be received with some grains of salt. It is the third time I have entered it on my records, the other two being Sept. 2, 1936, and Sept. 22, 1938. When I see a warbler with an eye-ring, dark head and back, citron-yellow breast with light streaking at sides, etc., answering the picture and description of a Kirtland's Warbler exactly and not matching anything else in the book, I just put it down as a Kirtland's Warbler. They have been reported from Virginia and South Carolina, and have to get across North Carolina somewhere. Perhaps this is their route.

In his concluding paragraph, Craighill added, "I use good ten-power glasses and try to be careful. ... If I ever have a chance I will try to collect a

Kirtland's Warbler; but they do not seem to wait until I can hunt up a boy with a gun."

Several years ago Potter found among the ornithological records of the late C.S. Brimley, in the archives of the North Carolina State Museum of Natural Sciences, two drafts of an unpublished manuscript entitled "Birds of the Rocky Mount Region From Notes of the Rev. F. H. Craighill" (Brimley 1942). The annotated list comprises 220 accepted species plus seven "Birds of Doubtful Occurrence." The first draft is a 21-page original typed on notebook paper. It bears a few corrections and additions printed in black ink in a style that compares favorably with known samples of Mr. Brimley's penmanship. Pencil notations (mostly the addition of the word "Eastern" to English names of birds) are in a different handwriting that is unfamiliar to Potter. Some species accounts refer to letters "Dr C." wrote to "CSB." The second draft is a carbon copy of a completely retyped 17-page version. Both drafts were prepared on a typewriter with print characteristics that match those of a machine used regularly by Mr. Brimley during the 1930s and early 1940s. A carbon of pages 2 through 21 of the first draft was also found among carbon copies of various manuscripts Mr. Brimley wrote about birds.

The second draft was sent to someone, apparently a native of Rocky Mount, for the purpose of obtaining comments on the relative abundance of the species. A cover letter written in blue ink and addressed to "Mr. Grey" (the Rev. John H. Grey, Jr., the first editor of *The Chat*) is attached to the second draft; the letter is dated 7 November 1942 and signed by "Frank" (apparently the Frank Williams mentioned in the Rough-legged Hawk and Philadelphia Vireo accounts in the Rocky Mount bird list). Terms of relative abundance appear on the bird list in black ink (apparently the work of C.S. Brimley) with amendments in Frank's handwriting. Personal information in the letter indicates that Frank would soon be attending the ant-aircraft Officers Candidate School at Camp Davis, N.C., and that future correspondence should be addressed to "Box 892, Rocky Mt., N.C."

There seems to be no reason to doubt that the Rocky Mount bird list found in the museum archives was compiled by C.S. Brimley as a memorial to Dr. Craighill (1875-1941; rector, Church of the Good Shepherd, Rocky Mount; elected a vice president of the North Carolina Bird Club at its organizational meeting, 6 March 1937; Potter 1986). No correspondence has been found that explains why the list was not published, and attempts to determine the whereabouts of Dr. Craighill's original bird notes have been unsuccessful.

The Kirtland's account from the unpublished manuscript (Brimley 1942) appears below. Although it provides a few additional details, it does not mention tail movement or the interruption of the eye ring, characteristics also omitted in the description of the bird seen in 1941 (Craighill 1942).

On September 2nd, 1936 about 6 A.M. I was watching a number of small birds of several species playing and chasing one another through some small trees on the edge of the golf course near Rocky Mount. One of the birds lit on the ground about twenty or twenty-five yards from me. As soon as I got the glasses on it, I exclaimed to myself "Kirtland Warbler", for it was exactly the picture in the book come to life. Then with my glasses to my eyes, I recited to myself the

points of the bird I was looking at: "Warbler size and bill, dark head, back and tail, yellowish breast and spotted sides". After a minute or two on the ground, the bird flew into a small tree, where I observed it further. It did not have the intensely yellow breast shown in Peterson's Field Book, but the more subdued yellow shown in Reed's Bird Guide and corresponding to the description citron yellow. One matter of interest to me was my instinctive use of the term "eye-cere" * * [asterisks indicate omission of words]. The eye ring of the Kirtland's Warbler is not a feather marking, but is a coloring of the eye lids.

FALL MIGRATION PERIOD

Departure dates for Kirtland's Warblers leaving the breeding grounds in Michigan (Fig. 1, hatched area) have only recently begun to be understood in detail. Mayfield (1960) stated that Kirtland's Warblers begin their departure in late August and nearly all have left by mid-September. An adult female has been found on the nesting grounds as late as 1 October (Sykes and Munson 1989), and migrants have been found within 460 km of the breeding grounds as late as 25 October (Sykes et al. 1989). Results of banding during the post-breeding period (Sykes et al. 1989) indicate that diminishing, though still substantial, numbers of Kirtland's Warblers remain on the breeding grounds well into September. Migration apparently occurs in two stages, with hatching-year birds departing early, from mid-August to early September, and many adults not departing until late September (Sykes et al. 1989). The 12 records from the Carolinas span the period from 28 August (Weisbecker 1987) to 29 October [1903] (Sprunt and Chamberlain 1970).

Clench (1973) documented a layover of at least 11 days for the immature bird that was banded at the Carnegie Museum's Powdermill Nature Reserve near Rector, Pennsylvania, on 21 September 1971. That bird gained weight while it waited, apparently, until northwest winds prompted it to continue its journey southeastward to the Bahamas.

Faver (1951), Darnell (1956), Clench (1973), and Weisbecker (1987) all commented that the occurrence of the Kirtland's Warbler was associated with an unusually heavy movement of fall migrants. The Kirtland's Warbler found on Ocracoke on 28 September 1991 was undoubtedly part of a vast wave of land birds that arrived on the Outer Banks following the passage of a cold front on 26 September, a fall land-bird migratory pattern well documented by Sykes (1986). Attempts by a number of CBC members to relocate the bird on 29 September were unsuccessful.

FALL MIGRATION ROUTES

Data on the fall migration of Kirtland's Warblers are too sparse to permit a definitive description of the route or routes the birds follow. Mayfield (1960) proposed a straight-line route from the nesting grounds across the southern Appalachian Mountains to southeastern South Carolina and the Bahamas. Recently, Mayfield (1988) used existing migration data to support his belief that successful migrants not only follow the straight-line route but also make the flight non-stop. Downed migrants become more widely scattered as the

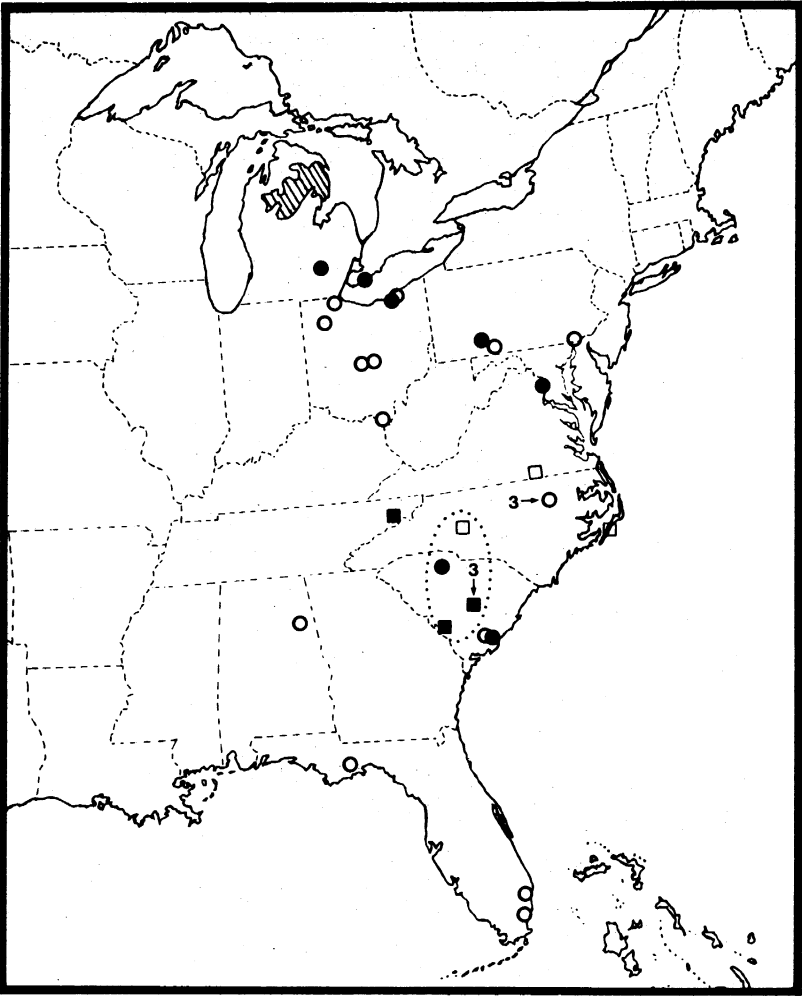


Fig. 1. The map shows fall migration records of the Kirtland's Warbler accepted by Clench (1973, figure 2) through 1972 as modified to include records from Virginia, Tennessee, and the Carolinas that she rejected or did not have available for consideration. Hatched area indicates the nesting grounds. Open circles indicate pre-1973 sight records accepted by Clench; solid circles = pre-1973 specimens and banding reports accepted by Clench; solid squares = pre-1973 published sight reports accepted by state bird records committees but omitted by Clench; open squares = published post-1973 sight records; 3 = three sight records from same locality.

birds approach their destination, like pellets fired from a shotgun (Mayfield, personal communication). Thus, sightings are considerably more numerous and widespread in the Southeast in fall than in spring.

Clench (1973) proposed a post-1935 fall migratory route eastward "from Michigan across Ohio and southern Pennsylvania (crossing the Appalachians at a relatively low point) and then perhaps following the Piedmont or the inner coastal plain to the southeast coast before the over-water flight to the Bahamas."

The first known occurrence of a Kirtland's Warbler in coastal North Carolina (present paper) and several other reports from the southeastern United States that Clench (1973) rejected or did not have available for consideration (their being unknown to her in 1972 or having occurred since then) indicate a need to re-examine the case for a pre-1935 route vs. a post-1935 route. Figure 1 shows Clench's (1973, figure 2) map of accepted fall migrants through 1972 as modified to include Greene County, Tenn. (Darnell 1956); Mecklenburg County, Va. (Potter 1975); Ocracoke Island, N.C. (present paper); Iredell County, N.C. (Weisbecker 1987); Eastover, S.C. (Faver 1949, 1951, 1967); and Aiken, S.C. (Hatcher 1960). The four reports from South Carolina have been accepted by those who maintain the ornithological records for the state (Sprunt and Chamberlain 1970, Post and Gauthreaux 1989).

Darnell (1956) provided a convincing description of a Kirtland's Warbler that she observed for approximately 30 minutes on 28 September 1956, while it associated with Palm Warblers and a Yellow-rumped (Myrtle) Warbler (*Dendroica coronata*) and fed in low pines in a woodland edge at her home near Greeneville, Greene County, Tenn.

It had a very dark back, all yellow below, dark streaks on its sides below wings, faint white wing-bars, and an eye-ring that didn't seem to be continuous; and it continually wagged its tail. ... Part of the time it was with a Myrtle Warbler and compared closely to the size of the Myrtle.

Mrs. Darnell's report is the only published Tennessee record of Kirtland's Warbler and the basis for its inclusion as a provisional species on the "Official List of Tennessee Birds" (Nicholson 1983 and personal communication). Greeneville lies along a straight-line route joining the breeding grounds, the Columbia-Eastover area of South Carolina, and the Bahamas. The position of Iredell County, N.C., relative to northeastern Tennessee and southeastern South Carolina further supports continued use of a fall migration route across the southern Appalachians. The cluster of one pre-1935 specimen and five post-1935 sight records within an elliptical area (Fig. 1) extending from Iredell County, N.C., to Aiken, S.C., represents the greatest concentration of fall-migrant occurrences south of Ohio.

Particularly striking from a North Carolina perspective is the absence of historical Kirtland's Warbler specimens from the Raleigh area, where C.S. Brimley collected many rare birds, including two Bachman's Warblers (*Vermivora bachmanii*) in 1891 (Pearson et al. 1942). Even more perplexing, in the light of the migratory route proposed by Clench (1973), is the absence of post-1935 banding records or sight reports from the Raleigh-Durham-Chapel

Hill area, which has been a region of intensive bird study during most of the period from the mid-1930s to the present. Although the cluster of records from southern Pennsylvania to Rocky Mount (Fig. 1) supports the Piedmont and inner coastal plain route proposed by Clench (1973), the new record from Ocracoke suggests a drifting or funneling of migrants from the Kerr Lake area (eastern Piedmont) southeastward across the outer coastal plain to the barrier islands of northeastern North Carolina. One such route would take the birds more or less down the Tar River from Rocky Mount to the Pamlico River and across Pamlico Sound to sparsely populated Ocracoke Island or to the unpopulated barrier islands lying between Ocracoke Inlet and Cape Lookout. Cape Lookout (ca. 825 km N of Great Sale Cay) might well serve as a convenient departure point for the flight over the Atlantic Ocean to the Bahamas. The Tar River route would not only avoid all of the major cities in Piedmont North Carolina, but also cause the birds to reach the coast between the intensively studied Bodie-Pea Island area (e.g. Sykes 1986) and the major centers of bird study in southeastern North Carolina (e.g. Morehead City and Wilmington). Furthermore, following a river would be consistent with the reported tendency of fall-migrant Kirtland's Warblers to frequent thickets and woodland edges just beyond the wet margins of lakes and swamps (Potter et al. 1980).

On the other hand, the Ocracoke bird might just as well have been an offshore migrant blown landward by the strong easterly winds of September 28.

Given their habit of traveling alone in fall migration or associating with birds of other species, it seems likely that Kirtland's Warblers, particularly the young of the year, follow many different routes southward. The dots on our maps may reflect nothing more than the good fortune of a few collectors, banders, and bird watchers who happened to be in the right place at the right time. However, the temptation to interpret the significance of the dots is irresistible.

Data from the Carolinas, Tennessee, and Virginia (Fig. 1) seem to support both the straight-line route (Mayfield 1960, 1988) and an easterly route via southern Pennsylvania (Clench 1973). It seems entirely possible that most of the fall-migrant Kirtland's Warblers fly non-stop to the Bahamas on a straight-line course, with a few birds stopping to rest and feed in eastern Tennessee, in southwestern North Carolina, and throughout most of South Carolina. At the same time, it appears that quite a few birds drift eastward soon after leaving the breeding grounds. Once off course, these birds may continue eastward and southward until they reach the Atlantic Ocean and begin the over-water flight to the Bahamas. So far, there is no evidence one way or the other regarding the ability of downed birds to reach the Bahamas.

Should significant numbers of Kirtland's Warblers actually migrate from Pennsylvania to the Kerr Lake region and southeastward to Ocracoke, there seems to be little hope for documenting that movement. To the best of our knowledge, only one person, Dorothy Foy at Oriental in Pamlico County, actively bands fall-migrant land birds in northeastern North Carolina, and no one salvages the birds that undoubtedly are killed each fall at the numerous radio and television transmission antennas near the Tar and Pamlico rivers. Systematic salvaging from the Voice of America sites in Pitt and Beaufort counties might not produce a Kirtland's Warbler specimen, but such a project would most certainly provide valuable information on fall migration from a part of North Carolina that has not been studied adequately.

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1. the species and sex, if known
2. what color was visible and its location on the bird, i.e. head, leg, back, breast, etc.
3. name of town where seen
4. date bird was seen
5. is bird suspected of nesting in the area or on their property?
6. name, address and phone number of person reporting.

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