

dences of these phenomena.—JOHN P. RYDER AND DAVID J. CHAMBERLAIN, *Department of Biology, Lakehead University, Thunder Bay "P," Ontario, 4 October 1971.*

**Swallow-like behavior in the Rusty-margined Flycatcher, *Myiozetetes cayanensis*, in Colombia.**—On 20 November 1970, while collecting birds near Mitú, Vaupes, Colombia, I noticed a curious swallow-like behavior in a pair of Rusty-margined Flycatchers (*Myiozetetes cayanensis*). During two rainstorms, the flycatchers flew low over the surface of the water (a river), in company with more than a dozen swallows engaged in the same type of behavior. Such behavior is of course typical of feeding swallows, but I find no published description of tyrannids behaving in this manner.

The flycatchers flew like this throughout both rainstorms, each of which lasted approximately fifteen minutes. They sustained glides for two or three seconds, then regained their speed with strong and rapid wing beats before gliding again. At least once every five minutes they rested for about a minute on a branch at the edge of the river, but did not preen while perched at this time. At the termination of each rainstorm, they resumed feeding in a fashion typical of this species.

The pair did not appear to exhibit extraordinary powers of flight, as flycatchers are capable of gliding up to several seconds during routine movements to new perches. Nor did they appear to endure exceptionally long periods of flight.

The purpose of this behavior was not clear, and it could possibly represent bathing. I could not ascertain if the flycatchers obtained food while flying in this fashion, but this possibility cannot be ruled out, as the family exhibits considerable versatility with regard to feeding behavior. The Great Kiskadee (*Pitangus sulphuratus*) is reported to take small fish by "diving just like a kingfisher" (Haverschmidt, *Birds of Surinam*, 1968); *Myiozetetes similis*, in Central America, captures aquatic animals by wading out into shallow water, and picks up food by flying down to the surface of the water (Skutch, *Pacific Coast Avifauna*, 34:428, 1960).

I was unable to remain in the Mitú vicinity for more than one day, so I could not determine if swallow-like behavior was typical of this pair of Rusty-margined Flycatchers. Professor Jose-Ignacio Borrero, at the Universidad del Valle in Cali, had not observed comparable behavior in this or any other flycatcher during his extensive studies of Colombian birds.

One of the specimens is now in the Zoological Collections at Texas Tech University. The study that made this observation possible was supported in part by the International Center for Medical Research and Training, Cali, Colombia.—MICHAEL KENT RYLANDER, *Department of Biology, Texas Tech University, Lubbock, Texas 79409, 12 February 1972.*

**The recent history of Bachman's Warbler.**—The recent history of Bachman's Warbler (*Vermivora bachmanii*) can best be understood against a background of its earlier history (1880–1910). For this purpose, it should suffice to mention the records of only a few observers in Florida—that is, south of the species' known breeding range, but on its chief migration route. In the spring migration, Brewster and Chapman (Brewster, 1891) encountered large, but unspecified, numbers in March, 1890. Of these, 46 specimens were collected! In the same general area, Arthur T. Wayne (1893) collected 50 specimens in 1892 and 1893, but also made no reference to the total number seen. Farther north, he collected eight specimens on the Wacissa River in 1894 (Wayne, 1895).

In the fall migration, the best documented records were made at Key West, where J. W. Atkins (Scott, 1887, 1888, 1890 $\alpha$ ) encountered the species in July and August, 1887 to 1889, collecting at least 58 specimens and seeing a total of perhaps 150 to 200! He mentioned a peak of "25 or 30" on 8 August 1889. Oddly, there seems to be no mention of the bird's occurrence there in spring, although two collected on the Dry Tortugas in 1890 were about 65 miles farther west (Scott, 1890 $b$ ).

Although the numbers seen on the species' breeding grounds during these early years were hardly comparable, it seems likely that the chief migration pathway was relatively narrow, thus concentrating the birds much more, and that Florida received more ornithological attention than other states in those days. Even so, Embury (1907) found at least 22 singing males in Kentucky in 1906, and collected five of them.

During the present century, numbers apparently dwindled steadily. By the time Howell's "Birds of Alabama" appeared (1928) the species was considered "one of the rarest and least known of the warblers." He cited only nine records at widely separated localities, plus one nest in Bear Swamp. Other states experiencing declines in the number of records during this period (1910-1930) were Louisiana, Georgia, and South Carolina, and it seems obvious that there was indeed a sharp decrease in its total population.

During the time I studied birds in north Alabama (1930's and early 1940's) the species still persisted in small numbers where the habitat was suitable. It may be pertinent to itemize these records here, though some have been published before (Wilson Bull., 50: 36-41, 1938).

1. Irondale, a presumed migrant seen and heard singing on 9 and 13 April, 1936 (with Harry Wheeler on the 13th).
2. Moody Swamp, Tuscaloosa, 9 April 1937, a singing male; 1 May 1937, pair and nest containing three young "scarcely a week old"; with Harry Wheeler. None could be found there on 29 May, when my journal indicated that "a lot of timber had been cut."
3. Bear Swamp (Autauga Co.), 8 May 1937, singing male; with Harry Wheeler, et al. None found on return trip, 1-5 June.
4. Moody Swamp, 25 March 1939, two singing males.
5. Moody Swamp, 27 March 1939, two singing males and one female.
6. Moody Swamp, 8 April 1939, "several"; one male displaying on or about this date, but female not seen. (Trips to swamp interrupted by illness, c. April 14-20).
7. Moody Swamp, 22 April 1939, "one" (sex?).

Thus there were no records after 22 April 1939, in Moody Swamp, or 1 May 1937, in that swamp, or 8 May 1937, in Bear Swamp. Early nesting in this species is presumably followed by early diminution of song, early molt, and early fall migration.

By 1950 Bachman's Warbler had become truly rare, as a search for *published* records since that time reveals. Most of these records appeared in various issues of *Audubon Field Notes*, and most records involved a single male. The breakdown of numbers of individuals by years follows: 1950, 2; 1951, 3; 1952, 3; 1953, 0; 1954, 3; 1955, 2; 1956 and '57, 0; 1958, 3; 1959, 3; 1960, 6; 1961, 2; 1962, 1; 1963, 1; 1964 and 65, 0; 1966, 1; no record since 1966. It is interesting to note that nearly all of these records were made within, or at least not south of, the bird's geographic breeding limits and involved singing males. It is under just such conditions that discovery would be enhanced. In other words, the *hundreds* formerly seen on migration in Florida stand in striking contrast to the *two* reported there since 1949.

It is not necessary to argue for the validity of all of the 30 sight records (no specimens, one photograph) over the past two decades, or to hold that all unpublished records

should be summarily dismissed. The point is simply that the number of records—published or unpublished—is roughly proportional to the total population of the species, thus the picture is a bleak one by any standard. With the full realization of the species' previous ups and downs, and the consequent risk of being wrong, I nevertheless believe Bachman's Warbler to be on the verge of extinction.

At least one experienced ornithologist around 1960 indicated to me a belief that the bird was probably being overlooked among the hordes of other small, migrating land birds. However, note that Brewster and Chapman made *direct comparisons* of its degree of abundance with that of other species. Although they ranked it less common than the Parula, Myrtle, Black-and-white, and Yellow-throated Warblers, the Blue-gray Gnat-catcher, and the Ruby-crowned Kinglet, it *outnumbered* such relatively common species as the Orange-crowned Warbler, and the Red-eyed, Solitary, and Yellow-throated Vireos. Thus, they specified, it ranked seventh in abundance among small woodland transients along the lower Suwannee River in March.

My recent attempts to find Bachman's Warbler in two swamps where it formerly nested have proven futile in each case. I looked for it in early April of 1964 and 1966 in Moody Swamp, near Tuscaloosa, Alabama, where it was last known to nest, and Dan Holliman wrote me that he had spent a week in this swamp without success a few years earlier. In Bear Swamp, northwest of Montgomery, which is the site of the *other* Alabama nest, four of us failed to find it in early April, 1970 and 1972. In other recent years I have searched unsuccessfully in two other swamps slightly south of its known breeding range.

If Bachman's Warbler is, indeed, on the verge of extinction, what causes may be assigned to its sharp decrease? The answers are not easy to find. Although some have maintained that the draining of swamps is to blame—and it may be in some cases—the two swamps I revisited in the last ten years appeared much the same as they did when the bird was there 30 years ago. If they have somehow been made less appealing to the bird, the difference is too subtle for me to see. Thinking that there may have been widespread habitat destruction on its wintering grounds (Cuba and the Isle of Pines), I contacted Senor Orlando Garrido about the bird's status in Cuba. He concurred that it was becoming very rare, the last specimens having been taken in 1942, with sight records of three females as recently as 1963 and '64. However, he emphasized that there had been no important habitat destruction. In the case of the Isle of Pines, Dr. Albert Schwartz made the same point.

The possibility of over-collecting in the early years has also been mentioned. Some fragmentary data, along with a bit of reasoning, should exonerate these collectors. The largest number collected in one day by Brewster and Chapman on the Suwannee River in 1893 was 10 on 23 March on which date they saw "upwards of 30"; in other words, less than one-third of the number seen along one small part of the river on a single day were actually collected. Their records, however, indicated that the bird occurred at all points along the river except near the Gulf over a period of at least two weeks. How many additional thousands may have been in other parts of its migration route during that period, if not still on its wintering grounds or already on its breeding grounds? How long should it take such a population, for that matter, to compensate for the entire number of merely 46 specimens these observers collected that year? Data given by Atkins at Key West in 1888 are similar in that few were collected on the days when the largest numbers were estimated: July 26, 4 out of "2 dozen"; August 6, 5 out of "2 dozen"; August 8, 5 out of 17. In summary, only 14 out of about 40 were collected. Key West, like the lower Suwannee River, evidently was only a minute part of the bird's total migration route. Furthermore, I do not know of a single specimen collected in the United

States since 1940, when I had the impression that the bird was in no danger of extinction. Only three specimens have been collected in Cuba, all in 1942 (Orlando Y. Garrido, pers. comm.).

Taking a parallel case, Swainson's Warbler is also a swamp-inhabiting bird, and its population today may be less than that of Bachman's Warbler during the 1880's and 1890's. Yet I venture to state that if all licensed collectors living today set out to collect every Swainson's Warbler they saw, they would scarcely make a dent in the total population.

Thus, despite the fact that man has played the major role in the decline of so many organisms, I doubt that he is guilty in this instance. For some reason, Bachman's Warbler seems to be poorly equipped for survival even under the conditions it demands and is not sufficiently adaptable to survive under different conditions. In the long process of the evolution, flourishing, and eventual extinction of species, perhaps this is one whose time has come. In this pessimistic outlook, however, I sincerely hope that I may be proven wrong.

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**Winter habitat of Kirtland's Warbler.**—The alarming decline of Kirtland's Warblers (*Dendroica kirtlandii*) on the nesting ground in northern Lower Michigan (Mayfield, Auk, 89:263-268, 1972) has stimulated interest in its survival problems on the wintering ground in the Bahama Islands. As an aid to those who may be looking for the bird in the Bahamas, I am bringing together what we know about the winter habitat.

Observers have found Kirtland's Warbler on several of the major islands of the Bahamas from the northernmost to the southernmost, but no one has seen it in winter on the nearby mainland of Florida nor on the nearby islands of Cuba and Hispaniola. The greatest numbers of reports have come from those islands visited by the greatest numbers of bird students. On New Providence near Nassau collectors took 45 specimens between 1884 and 1915; and on Grand Bahama visiting groups of the Florida Audubon Society and local residents have found it every year from 1959 through the 1960s.