

depressed recapture rate in any single species. Data pooled by family, however, showed that the recapture rate of four fringillids, when analyzed as a group, was significantly depressed by bleeding.

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*Department of Zoology, The Pennsylvania State University,
University Park, Pennsylvania. Current address: Dept. of
Biological Sciences, Western Illinois University,
Macomb, Illinois 61455*

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FALL DEPARTURE OF THE YELLOW-BREASTED CHAT (ICTERIA VIRENS) IN EASTERN NORTH AMERICA

By John V. Dennis

Through a program of intensive mist netting, I established to my satisfaction that Yellow-breasted Chats begin to leave their breeding territories along the Potomac in northern Virginia by early July (Dennis, 1958). Family groups appeared to leave one at a time, and about half the population had left by the end of July. Birds departing in July had not completed their molts.

To several examples from the literature that I gave in my paper, it is worth adding another indicating early departure. Merrill Wood, speaking of the region of State College, Pennsylvania, tells me that the Chat breeding population appears to leave in July. The occasional Chat seen in August, he feels, has remained only because of a physical defect or some other impairment.

It seems to be generally assumed in the case of songbirds that winter in the tropics that departure from the breeding grounds implies departure for the tropics. That this does not seem to be the case with the Yellow-breasted Chat is indicated by two different sets of evidence: (1) large numbers of Chats appear north of the breeding range in late summer and early fall, and (2) television tower data from Florida and fall arrival dates from Central America tend to suggest that Chats are late in making their fall flight to the tropics.

Late summer and fall appearances of the Chat in the Northeast north of the breeding range have been well documented in such publications as *Audubon Field Notes* and *Records of New England Birds*. By way of summary, it may be said that 1949 was the first year that the Chat was recorded in large enough numbers to suggest that its appearance had the aspect of a well-defined movement and was not to be attributed solely to displacement by weather. Each year since 1949 the Chat movement into the Northeast has been of striking proportions. At the same time, more and more Chats have been lingering well into the fall and winter. The tendency to linger was first most conspicuous in the Northeast; in more recent years it has spread to the whole of the Middle Atlantic and Southeastern coastal regions.

Chats begin to appear in the Northeast during the last ten days or so of August. The movement gains momentum through early September. By late September and early October the movement has begun to subside. The last migrants appear to pass through in early October; presence of lingerers, however, makes it difficult to decide when the movement is over.

Neither the northeastward movement nor lingering seem to be very recent adaptations. Chats were reported as being "common" until October 2, 1876 at Locke in Ingham County, Michigan (Barrows, 1912). This is near Lansing and north of the normal breeding range. An early example of a Chat well north of the breeding range in New England and at a late date was supplied by Spinney (1902). This observer reported picking up a dead bird at the Seguin Island Light on 5 October 1900.

The records suggest, however, that up until fifteen years ago the Chat was only an occasional visitor to the Northeast. Its present increase as a fall visitor and late lingerer coincides with the altering status of a number of other "southern" species. But unlike such birds as the Tufted Titmouse (*Parus bicolor*), Mockingbird (*Mimus polyglottos*), and Cardinal (*Richmondia cardinalis*), which are pushing northward in New England, the Chat's breeding range has remained relatively stationary at its northern limits: presently in the Northeast it takes in little more than parts of Connecticut.

It should be added that mist netting, television tower casualties, and more feeding stations, and more observers are all factors that may tend to exaggerate the suddenness and scale of the Chat's recent large influx into the Northeast. A secretive bird, the Chat is easily overlooked. For this reason, it may have been building up as a common fall visitor for many more years than the records would seem to indicate.

Banding has offered a way to measure the volume of Chat migration, and, at the same time, with enough recoveries, it is a means by which routes and direction of migration can to some extent be determined. With large scale fall mist-netting operations underway along the Atlantic coast since 1955, more and more Chats have been banded and three recoveries have so far come to my attention. On Nantucket alone 118 individuals of this species were banded during Operation Recovery between 1955 and 1960. Nantucket lies well to the east of the Chat's breeding range. Farther south along the coast and within the breeding range the expected catch is far greater. For example, in 1963 a total of 159 Chats was banded during Operation Recovery at Island Beach, New Jersey.

The number of recoveries has been disappointingly few. Prior to Operation Recovery there is very little to report. Chats banded during Operation Recovery and recovered at a distance from the point of banding are as follows:

Band No.	Place Banded	Date Banded	Place Recovered	Dates Recovered
56-105770	Island Beach, N. J.	5 Sept. 1960	Powdermill, Pa.	7 June 1962 11 May 1963
281-90101	Island Beach, N. J.	12 Sept. 1961	Vera Cruz, Mexico	26 April 1962
101-137708	Nantucket, Mass.	28 Sept. 1965	Linwood, N. J.	3 Oct. 1965

When recovered, No. 56-105770, banded by Frank P. Frazier, was almost certainly a summer resident at Powdermill, a Nature Reserve near Rector in western Pennsylvania. Robert C. Leberman who captured the bird in a mist net for two consecutive seasons states that the bird had a brood patch and was captured again a week after the 1962 recovery. Whether the bird was an immature or an adult when banded at Island Beach in 1960 is not known. The dates and locations do, however, permit a certain amount of conjecture. Might not this bird as an immature, perhaps from a brood raised in the vicinity of the Powdermill Nature Reserve, have flown northwestward into New England or the Maritime Provinces during the late summer of 1960 and, then, adhering to an instinct to fly southwestward, have appeared with other migrants at Island Beach on September 5 or a day or so beforehand?

No. 281-90101 banded by William Pepper is well within the limits of what is already known of the Chat's migration to Mexico and Central America. The bird was captured when it entered a house in Vera Cruz.

The recovery at Linwood of No. 101-137708 banded five days earlier at Nantucket by Mrs. Roy E. Larsen fits in with a theory I held when a bander myself a few years ago at Nantucket; namely, that the many Chats reaching Nantucket in the fall were birds on "redetermined passage" and not new arrivals from the south. Although one recovery does not vindicate this view, it does fit in with a picture of Chats, along with other migrants, stopping

briefly on the island and then moving on to points farther south. Diurnal movement in fall on Nantucket is toward the west or northwest (Baird *et al.* 1958); therefore, it is not unreasonable to believe that before reaching Linwood the Chat in question first flew to the northwest, and then possibly southwestward to Connecticut or Long Island. However, again, this is purely speculation and it only serves to emphasize the need for many more recoveries before the Chat's movement in and out of New England can be plotted with any certainty.

Little is also known about the Chat's migration southward from our borders or of its arrival in the Tropics. The few sources of information that I have consulted show the Chat to be a relatively late migrant. Stoddard (1962) has reported 48 Chat casualties in the fall at the WCTV tower in Leon County near Tallahassee, Florida. Chat casualties were recorded every year between 1955 and 1960. The earliest date a bird was found was September 4 and the latest was December 7. Six birds were killed on the night of 8-9 October 1955 and nine on the night of 4-5 October 1957. Stoddard calls the very late dates of December 6 and 7, 1955, when single individuals were killed each night, difficult to explain.

In comparison with most other warbler species, many of which begin hitting the tower in late July, the Chat would appear to be a late migrant indeed. However, the relatively small size of the Chat kill does not permit sweeping conclusions as to the timing of its migration.

Data from Central America are also scanty. Skutch (in Bent, 1953) states that Chats arrive in northern Central America toward the end of September. They are at first noisy and easy to find. Later they become extremely secretive. Early arrival dates in Bent are as follows: Guatemala, September 24 and 29; Honduras, October 1; El Salvador, October 10; Costa Rica, October 26.

Although there are many gaps in knowledge, it is possible to visualize departure from the breeding grounds in July and August, arrival in New England and the Northeast in late August and September, and departure for the tropics anywhere from early September to early December. There is no indication in this that birds depart for the tropics as soon as they leave the breeding grounds. At the same time, it would be putting too much emphasis upon a northern movement to suggest entire populations moving northward before the long journey southward. But it does seem reasonable to believe that a portion of the population does migrate northward at the end of the breeding season. Other birds may retire to suitable habitat away from the exact breeding locality. This would not be an unprecedented occurrence in passerines. Dorst (1962) describes what he calls a "postjuvenile dispersion" among certain Starling populations in Europe. Young, in many instances, travel northward immediately after they are fledged. Birds from Switzerland, for example, are known to turn up in Belgium and elsewhere to the north. Dorst states that these are premigrational movements that have nothing to do with the main migration of the species.

Whether or not the Chat movement into the Northeast offers a close parallel to the Starling movements described by Dorst is difficult to say on the basis of present evidence. But it is perhaps significant that nearly all birds examined, for which I have records, were immatures. I am indebted to James Baird for furnishing me age data on a number of Chats that he collected or for which he had information. Included are several birds from south of the New England Region.

No. Chats	Locality	Date	Age
5	Needham, Mass. TV Tower	23-24 Sept., 1957	Imm.
2	Empire State Bldg. N. Y.	19-20 Sept., 1958	Imm.
1	Middletown, R. I.	2 Dec., 1958	?
2	Middletown, R. I.	29 Aug. 1959	Imm.
1	Middletown, R. I.	4 Sept., 1959	Imm.
1	Needham, Mass. TV Tower	4 Sept., 1959	Imm.
1	Middletown, R. I.	6 Sept., 1959	Imm.
1	Island Beach, N. J.	8 Sept., 1959	Imm.
1	Kingston, R. I.	9 Sept., 1959	Imm.
1	Kingston, R. I.	12 Sept., 1959	Imm.
1	Kingston, R. I.	20 Sept., 1959	Imm.
1	Kingston, R. I.	3 Oct., 1959	Imm.

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The skull of the bird taken on December 2 was ossified. But at such a late date this would probably be true in all Chats regardless of age. Baird states that he did not personally examine the four birds from Kingston and therefore cannot vouch for the accuracy of their age determination.

Whatever the age composition of the northeastward flights in late summer may be, it does appear highly probable that the Yellow-breasted Chat is given to wide-scale post breeding season wandering. An appreciable number of birds, and in all probability immatures, appear to wander all the way to New England and the Maritime Provinces. This movement appears to have gained in magnitude within the last fifteen years. The birds are undoubtedly aided in achieving their goal by southwesterly winds. Baird *et al.* (1959) report that most Chats appear to arrive at coastal locations under conditions of southwest winds and within Tropical warm sectors. The return flight or "redetermined passage" sees Chats joining other migrants that are headed for warmer climes.

Besides being indebted to James Baird for age data, I owe thanks to William Pepper, Frank P. Frazier, and William E. Savell for details on the several recoveries listed and for permission to use this information. I am indebted to Earl B. Baysinger of the Bird Banding Laboratory for furnishing all recovery records of the Yellow-breasted Chat.

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Box 389, Leesburg, Virginia

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RECOVERIES OF BIRDS BANDED BY ENCEPHALITIS FIELD STATION, 1957-1965¹

By K. S. Anderson, E. J. Randall, A. J. Main, and R. J. Tonn²

Bird recoveries add greatly to knowledge of bird distribution and migration. They also help contribute to the understanding of the role birds might have as transport hosts of certain arboviruses. Many of the problems faced in the study of the epidemiology of Eastern, Western and St. Louis Encephalitis perhaps could be solved if more were known of the northward, southward and reverse migrations of birds.

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²Encephalitis Field Station, Lakeville Hospital, Middleboro, Massachusetts.