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BIRD MIGRATION AT NASHVILLE

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Bird migration is the mystery of the ages. Its origin is far back in geological time. Primitive man, so largely dependent on the chase, doubtless knew of it and understood its seasonal character. The months of greatest flight in the calendars of our Indian tribes were named after certain species of birds. But the cause of bird migration has long puzzled its human observers.

Probably the earliest migration record is found in Job, XXXIX:26, but there are other Old Testament references. The classic authors of the ancients, notably Aristotle and Pliny, gave accounts of this phenomena in their natural histories. The former originated the long-enduring theory of hibernation. In the literature of the Middle Ages most references to migration occur in the annals of falconry.

In more modern times the material on this subject rapidly increased. The early naturalists kept records of the dates of arrival and departure of migrants. Gilbert White's *Naturalist's Calendar* contains many such records.

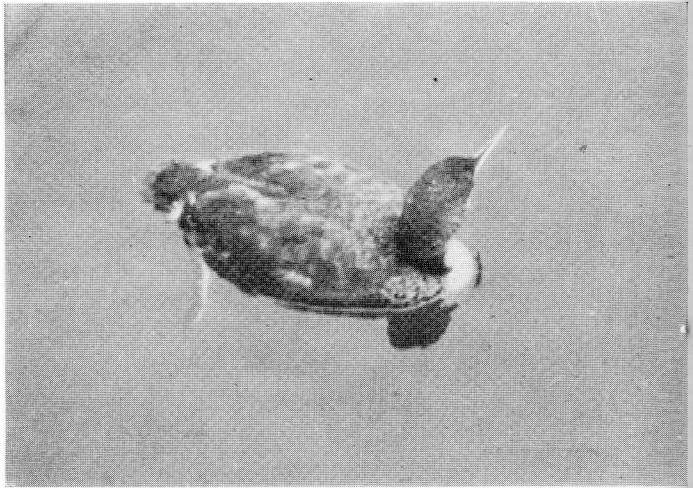
Study of the increasing migration data brought new theories and discredited the old. A great name in these annals is that of Gatke, a German, who published a celebrated work based on fifty years' intensive observation on the island of Heligoland in the North Sea. Other celebrated foreign names are those of Eagle Clark and Thomson of England. The investigations of these men added a vast amount of information to the subject.

In our own country, originally so rich in wild life, migratory movements of amazing proportions took place every spring and fall. The early settlers on the eastern coast, itself a favored highway of the birds, were the witnesses of huge flights of water and shore birds. In the interior the flocks of the Passenger Pigeon, often numbering billions of individuals, provided the world's most spectacular bird migration.

American observers and students have been many. Baird was an early writer on the subject. With the formation of the Bureau of Biological Survey in the eighties, data began to be collected from observers all over the country. The resulting files, added to yearly now contain

a vast amount of information on the migrations of North American birds. The Bureau has published many reports on the subject, chiefly by Wells W. Cooke.

Bird-banding, a development of recent years, has also furnished much data on migration. Wild birds trapped in cages are marked with a numbered aluminum band placed around the leg. The species of bird, date and locality of banding are recorded with the number. This work is under the supervision of the Bureau of Biological Survey which maintains record files on all bands placed. Recaptures of birds marked in this way give definite information of the movements of an individual where other kinds of observation only reveal the movements of the species.



Photographed by Dr. Jesse M. Shaver

FIG. 1. Loon. This bird may be seen occasionally on the larger ponds and streams during migration.

Many operators are systematically trapping and banding birds in all parts of the country and many thousands have been so marked. The available returns, while only a small percentage of the whole number banded, have given information of great value. This method has also been extensively used in Europe.

The ancients believed that many birds which disappeared in the fall hibernated beneath the surface of marshes and bodies of water. There are even records of the actual finding of birds in such places. This belief persisted almost to our own day and some of the records of hibernating birds are American.

There are several scientific theories explaining the cause of bird migration. These theories are much alike and important exceptions to them exist. There is the theory that the change of seasons in temperate

regions is the cause. Some believe it is due to the scarcity of food in winter, while others think the low temperature is the vital factor. But we know that some species leave their breeding grounds while ample food is available and others migrate in the summer long before the advent of cold weather. So it cannot be entirely due to weather or food supply.

It has also been suggested that bird life originated in the tropics and spread to the temperate regions from that center. Then the changing seasons would cause an ebb and flow between the old home and the new, which in time might become hereditary. There is an opposite view, that the migrant species are native to the north and were driven out by



Photographed by Dr. Harry Vaughn

FIG. 2. Nest of the Sycamore Warbler. This warbler nests in Sycamore trees over creeks and small rivers.

the Ice Age, only to return to their birthplace at the first opportunity.

In considering such theories, we must remember that bird life dates back a considerable distance in geological time, and that many modern forms were developed when climatic conditions on the earth were very different from those of today. So we cannot make present-day climate the entire basis of our explanation; in fact, the remote origin of the habit precludes positive proof for any hypothesis.

A recent authority on this subject believes the logical explanation to rest on a combination of the above theories rather than any one. Migration is admittedly a complex affair.

In the first place, birds have an inherent tendency to wander, and naturally so, as they are very mobile creatures. After the breeding season when they have broods of young to care for, and when the instincts of reproduction and the attachment to a breeding locality are somewhat stilled, they have only the pressing need for food. Young birds have an enormous appetite. These family parties drift aimlessly about the country. One can observe this generally in Tennessee in late summer. In a region of stable climate they might do this throughout the year except for an interval given over to nesting. But a change of climate (such as has certainly occurred in the past) would drive such foot-loose groups to a more favored region. This would be the birds' first migration.



Photographed by Dr. Harry Vaughn

FIG. 3. Nest of Chuck-Will's-Widow. Usually placed on the ground among the few leaves present in an open spot.

In the place of retreat crowding would ensue, especially during the breeding season, causing a return to the original home if that were possible. In some such way it is believed that birds came to migrate. This is now one of their most distinctive characteristics.

Migration plays an important part in the ornithology of Tennessee. It brings us over half of our breeding species while scores of others cross the state en route to more northern nesting grounds. The state has a very strategic location with respect to these movements. In the western part is the Mississippi valley, a main highway for the migrant population of the whole interior of North America. On the east lie

TABLE I.

Arrival dates for spring migrants at Nashville

NAME OF SPECIES	EARLIEST	NEXT EARLIEST	AVERAGE	REMARKS
Pied-billed Grebe.	Mar. 9, 1918	Mar. 23, 1921	Mar. 28	
Loon	Apr. 2, 1925	Apr. 13, 1918		
Black Tern.	May 5, 1922	May 9		8 records only
Cormorant.	Apr. 6, 1923	Apr. 14		5 records only
American Bittern.	Apr. 13, 1923			Very few records
Great Blue Heron.	Apr. 4, 1925	Apr. 6, 1923	Apr. 26	
Green Heron.	Mar. 25, 1922	Mar. 27	Apr. 4	
Woodcock.	Feb. 13, 1921	Feb. 19	Mar. 1	
Wilson's Snipe.	Mar. 7, 1924	Mar. 19	Mar. 24	
Solitary Sandpiper	Mar. 31, 1918	Apr. 2, 1916	Apr. 12	
Osprey	Mar. 5, 1921	Apr. 4	Apr. 13	
Yellow-Billed				
Cuckoo.	Apr. 24, 1920	Apr. 26	May 2	
Nighthawk.	Apr. 8, 1917	Apr. 18	Apr. 22	
Ruby-throated				
Hummingbird.	Apr. 14, 1923	Apr. 15	Apr. 22	
Chimney Swift.	Mar. 25, 1921	Mar. 29	Apr. 3	
Kingbird.	Apr. 13, 1919	Apr. 14	Apr. 19	
Crested Flycatcher	Apr. 14, 1922	Apr. 15	Apr. 19	
Phoebe.	Feb. 24, 1923	Mar. 1	Mar. 8	
Wood Pewee.	Apr. 20, 1917	Apr. 23	Apr. 28	
Acadian				
Flycatcher.	Apr. 20, 1917	Apr. 22	Apr. 27	
Bobolink.	Apr. 19, 1920	Apr. 29	May 4	
Red-winged				
Blackbird.	Feb. 13, 1922	Feb. 21	Feb. 23	
Orchard Oriole.	Apr. 13, 1919	Apr. 16	Apr. 17	
Baltimore Oriole.	Apr. 10, 1922	Apr. 13	Apr. 16	
Pine Siskin.	Apr. 21, 1923			
Vesper Sparrow.	Mar. 1, 1924	Mar. 14	Mar. 18	Recorded in only 3 spr. seasons out of 12
Grasshopper				
Sparrow	Mar. 23, 1921	Mar. 31	Apr. 11	
Chipping Sparrow.	Mar. 3, 1923	Mar. 5	Mar. 15	
Bachman's				
Sparrow.	Mar. 17, 1921	Mar. 20	Apr. 3	
Lincoln's Sparrow.	Apr. 16, 1922	Apr. 18	Apr. 25	
Rose-breasted				
Grosbeak.	Apr. 18, 1921	Apr. 19	Apr. 23	
Indigo Bunting.	Apr. 14, 1918	Apr. 15	Apr. 19	
Dickcissel.	Apr. 29, 1920	May 1	May 6	
Scarlet Tanager.	Apr. 16, 1922	Apr. 17	Apr. 21	
Summer Tanager.	Apr. 13, 1924	Apr. 15	Apr. 19	
Purple Martin.	Mar. 17, 1921	Mar. 29	Apr. 1	
Cliff Swallow.	Apr. 16, 1920	Apr. 26		Few records
Barn Swallow.	Apr. 2, 1916	Apr. 4	Apr. 18	
Tree Swallow.	Apr. 5, 1923	Apr. 13		
Bank Swallow.	Apr. 26, 1919			Records scanty
Rough-winged				
Swallow.	Mar. 20, 1921	Mar. 24	Apr. 5	
Migrant Shrike.	Feb. 25, 1916	Mar. 3	Mar. 7	
Red-eyed Vireo.	Apr. 5, 1921	Apr. 8	Apr. 14	
Warbling Vireo.	Apr. 5, 1921	Apr. 7	Apr. 15	
Yellow-throated				
Vireo.	Mar. 28, 1920	Apr. 6	Apr. 11	
Blue-headed Vireo.	Apr. 19, 1916	Apr. 23		Only 15 records

TABLE I.—*Continued*

NAME OF SPECIES	EARLIEST	NEXT EARLIEST	AVERAGE	REMARKS
White-eyed Vireo.	Mar. 31, 1917	Apr. 3	Apr. 7	
Black and White Warbler.	Mar. 18, 1922	Mar. 20	Mar. 30	
Prothonotary Warbler.	Apr. 16, 1921	Apr. 21	Apr. 23	
Worm-eating Warbler.	Apr. 16, 1922	Apr. 17	Apr. 19	
Blue-winged Warbler.	Apr. 7, 1921	Apr. 10	Apr. 15	
Nashville Warbler.	Apr. 22, 1924	Apr. 23	Apr. 26	
Tennessee Warbler.	Apr. 21, 1916	Apr. 22	Apr. 24	
Parula Warbler. . .	Apr. 8, 1924	Apr. 9	Apr. 21	
Cape May Warbler.	Apr. 16, 1919	Apr. 18	Apr. 25	
Yellow Warbler. . .	Apr. 5, 1927	Apr. 6	Apr. 9	
Black-throated Blue Warbler. . .	Apr. 21, 1916	Apr. 26	Apr. 30	
Magnolia Warbler.	Apr. 18, 1920	Apr. 19	May 2	
Cerulean Warbler.	Apr. 16, 1916	Apr. 18	Apr. 21	
Chestnut-sided Warbler.	Apr. 22, 1920	Apr. 26	May 1	
Bay-breasted Warbler.	Apr. 19, 1924	Apr. 20	Apr. 27	
Black-Poll Warbler.	Apr. 18, 1924	Apr. 19	Apr. 27	
Blackburnian Warbler.	Apr. 7, 1918	Apr. 17	Apr. 25	
Sycamore Warbler.	Apr. 5, 1918	Apr. 7	Apr. 14	
Black-throated Green Warbler. .	Mar. 20, 1921	Apr. 2	Apr. 9	
Palm Warbler. . . .	Apr. 8, 1922	Apr. 9	Apr. 15	
Prairie Warbler. . .	Apr. 12, 1919	Apr. 14	Apr. 16	
Ovenbird.	Apr. 13, 1918	Apr. 14	Apr. 26	
Louisiana Water- thrush.	Mar. 17, 1923	Mar. 20	Mar. 29	
Kentucky Warbler	Apr. 15, 1921	Apr. 16	Apr. 20	
Connecticut Warbler.	Apr. 21, 1923	Apr. 28		Only 9 records 6 records on 3 dates
Mourning Warbler	May 15, 1923	May 16		
Maryland Yellow- throat.	Apr. 6, 1922	Apr. 7	Apr. 10	
Yellow-breasted Chat.	Apr. 16, 1922	Apr. 18	Apr. 22	
Hooded Warbler. .	Apr. 8, 1917	Apr. 9	Apr. 11	
Wilson's Warbler. .	May 5, 1917	May 7	May 7	
Canadian Warbler.	Apr. 28, 1921	May 7	May 12	
Redstart.	Apr. 12, 1919	Apr. 13	Apr. 23	
Catbird.	Apr. 14, 1924	Apr. 16	Apr. 17	
Brown Thrasher. .	Feb. 14, 1916	Feb. 21	Mar. 5	
House Wren.	Apr. 1, 1922	Apr. 2	Apr. 15	
Ruby-crowned Kinglet.	Mar. 4, 1916	Mar. 15	Mar. 29	
Blue-gray Gnatcatcher. . . .	Mar. 12, 1923	Mar. 20	Mar. 25	
Wood Thrush. . . .	Apr. 5, 1916	Apr. 6	Apr. 9	
Veery.	Apr. 24, 1921	Apr. 26	Apr. 29	
Gray-cheeked Thrush.	Apr. 8, 1921	Apr. 23	Apr. 24	
Olive-Backed Thrush.	Apr. 16, 1921	Apr. 18	Apr. 20	

Only 9
records
6 records on
3 dates

13 records

TABLE II.

Departure dates for spring migrants at Nashville

NAME OF SPECIES	AVERAGE	SECOND LATEST	LATEST	REMARKS
Pied-billed Grebe..	May 1	May 9, 1917	May 10, 1925	
Loon.....		May 3, 1917	May 6, 1917	
Black Tern.....		May 27	June 7, 1917	8 records only
Cormorant.....		Apr. 15	Apr. 16, 1922	5 records only
Mallard.....	Mar. 22	Apr. 5	Apr. 8, 1917	
Black Duck.....		Mar. 20	Apr. 5, 1924	Winters; re- cords too few for average
Blue-winged Teal.		Apr. 14	Apr. 18, 1920	Data meager
Canada Goose....	Feb. 25	Feb. 25	Feb. 27, 1921	
American Bittern.			May 2, 1917	Very few records
Coot.....	May 15	May 12	May 24, 1917	
Wilson's Snipe....	Apr. 21	Apr. 28	May 10, 1919	
Solitary Sandpiper	May 14	May 19	May 27, 1917	
Osprey.....	May 11	May 18	May 19, 1920	
Yellow-bellied Sapsucker.....	Apr. 24	May 1	May 9, 1921	
Bobolink.....	May 9	May 16	May 22, 1917	
Purple Finch.....	Apr. 27	May 3	May 5, 1916	
Pine Siskin.....			May 16, 1923	Recorded in only 3 sprg. seasons out of 12
Vesper Sparrow...	Apr. 14	Apr. 21	Apr. 30, 1922	
Savannah Sparrow	May 2	May 4	May 15, 1918	
White-crowned Sparrow.....	May 8	May 9	May 15, 1924	
White-throated Sparrow.....	May 17	May 22	May 25, 1917	
Slate-colored Junco.....	Apr. 23	May 1	May 2, 1928	
Song Sparrow....	Apr. 8	Apr. 9	Apr. 14, 1917	
Lincoln's Sparrow..	May 12	May 17	May 21, 1921	
Swamp Sparrow....	Apr. 28	May 8	May 13, 1917	
Fox Sparrow.....	Mar. 26	Apr. 13	Apr. 27, 1918	
Rose-breasted Grosbeak.....	May 16	May 17	May 19, 1920	
Scarlet Tanager...	May 15	May 24	May 27, 1917	
Cliff Swallow.....		May 12	May 13, 1917	Few records
Tree Swallow.....			May 24, 1917	Records scanty
Bank Swallow....			May 2, 1920	Records scanty
Cedar Waxwing...	June 3	June 12	June 16, 1922	
Blue-headed Vireo.		May 13	May 16, 1926	Only 15 records
Nashville Warbler.	May 12	May 16	May 17, 1916	
Tennessee Warbler	May 18	May 24	May 25, 1917	
Parula Warbler...	May 5	May 5	May 9, 1920	
Black-throated Blue Warbler...	May 14	May 14	May 16, 1923	
Myrtle Warbler...	May 17	May 17	May 19, 1916	
Magnolia Warbler.	May 16	May 19	May 22, 1924	
Chestnut-sided Warbler.....	May 16	May 18	May 19, 1919	
Bay-breasted Warbler.....	May 20	May 21	May 24, 1920	
Black-Poll Warbler.....	May 22	May 27	June 1, 1917	

TABLE II.—Continued

NAME OF SPECIES	AVERAGE	SECOND LATEST	LATEST	REMARKS
Blackburnian Warbler.....	May 12	May 17	May 18, 1916	
Black-throated Green Warbler..	May 14	May 20	May 29, 1919	
Palm Warbler....	May 11	May 15	May 17, 1924	
Ovenbird.....	May 16	May 20	May 26, 1917	
Connecticut Warbler.....		May 10	May 22, 1919	Only 9 records
Mourning Warbler		May 16	May 17, 1919	6 records on
Wilson's Warbler..	May 13	May 20	May 21, 1923	3 dates
Canadian Warbler..	May 19	May 21	May 22, 1917	
House Wren.....		Apr. 29	Apr. 30, 1922	13 records
Winter Wren.....	Apr. 12	Apr. 17	Apr. 25, 1920	
Brown Creeper....	Apr. 11	Apr. 20	Apr. 22, 1923	
Red-breasted Nuthatch.....	Apr. 8	Apr. 27	May 16, 1924	
Golden-crowned Kinglet.....	Apr. 16	Apr. 18	Apr. 21, 1917	
Ruby-crowned Kinglet.....	May 7	May 11	May 14, 1921	
Veery.....	May 10	May 16	May 18, 1919	
Gray-cheeked Thrush.....	May 18	May 21	May 30, 1917	
Olive-backed Thrush.....	May 23	May 27	May 29, 1917	
Hermit Thrush....	Apr. 21	Apr. 25	Apr. 27, 1916	

TABLE III.

Arrival dates for fall migrants at Nashville

NAME OF SPECIES	EARLIEST	NEXT EARLIEST	AVERAGE	REMARKS
Pied-billed Grebe..	Sept. 27, 1919	Sept. 28, 1919	Oct. 6	
Horned Grebe....	Aug. 13, 1921	Aug. 14		
Loon.....	Oct. 23, 1926	Oct. 27		Only 8 records
Black Tern.....	Aug. 7, 1921	Aug. 10		Only 8 records
Cormorant.....	Sept. 20, 1916	Oct. 2		18 records
Mallard.....	Oct. 21, 1916	Oct. 22	Oct. 23	
Black Duck.....	Oct. 21, 1916	Oct. 22	Nov. 11	
Blue-winged Teal.	Oct. 6, 1917	Oct. 27	Oct. 18	
Pintail.....	Nov. 10, 1917	Nov. 11	Nov. 11	
Canvasback.....	Oct. 27, 1917	Nov. 11	Nov. 16	
Canada Goose....	Oct. 13, 1925	Oct. 15	Oct. 22	
Little Blue Heron.	July 10, 1926	July 25		7 records
Coot.....	Sept. 30, 1917	Oct. 6	Oct. 15	
Pectoral Sandpiper	Aug. 10, 1924	Aug. 13	Aug. 20	
Wilson's Snipe....	Aug. 7, 1921	Aug. 19	Aug. 24	
Solitary Sandpiper	July 10, 1926	July 17	July 27	
Spotted Sandpiper.	July 10, 1926	July 31	Aug. 8	
Marsh Hawk.....	Sept. 4, 1921	Sept. 5		Winters
Osprey.....	Sept. 19, 1923	Sept. 25	Oct. 10	
Yellow-bellied Sapsucker.....	Sept. 28, 1923	Sept. 30	Oct. 11	

TABLE III.—Continued

NAME OF SPECIES	EARLIEST	NEXT EARLIEST	AVERAGE	REMARKS
Prairie Horned Lark	Oct. 11, 1917	Oct. 20	Oct. 22	Occurred in only 3 falls Data meager
Starling	Oct. 9, 1927	Oct. 18	Oct. 18	
Purple Finch	Oct. 21, 1923	Oct. 29	Nov. 5	
Pine Siskin	Oct. 27, 1919	Oct. 29		
Vesper Sparrow	Oct. 18, 1921	Oct. 29		
Savannah Sparrow	Oct. 9, 1915	Oct. 10	Oct. 19	
White-crowned Sparrow	Oct. 7, 1916	Oct. 15	Oct. 21	
White-throated Sparrow	Oct. 5, 1918	Oct. 18	Oct. 11	
Slate-colored Junco	Oct. 6, 1923	Oct. 14	Oct. 16	
Song Sparrow	Oct. 2, 1923	Oct. 5	Oct. 13	
Swamp Sparrow	Oct. 5, 1921	Oct. 8	Oct. 15	
Fox Sparrow	Oct. 18, 1925	Oct. 27	Nov. 7	
Rose-breasted Grosbeak	Sept. 22, 1924	Sept. 24	Oct. 3	
Tree Swallow	Aug. 22, 1914	Aug. 31		
Cedar Waxwing	Sept. 1, 1918	Sept. 2	Sept. 28	
Migrant Shrike	Aug. 5, 1916	Aug. 13	Aug. 15	
Blue-headed Vireo	Oct. 11, 1916	Oct. 13		
Nashville Warbler	Sept. 30, 1916			2 records
Tennessee Warbler	Aug. 29, 1915	Sept. 4	Sept. 20	
Cape May Warbler	Oct. 21, 1917			2 records
Myrtle Warbler	Oct. 4, 1925	Oct. 6	Oct. 12	
Magnolia Warbler	Aug. 27, 1922	Aug. 28	Sept. 14	
Chestnut-sided Warbler	Sept. 4, 1915	Sept. 6	Sept. 25	
Bay-breasted Warbler	Sept. 27, 1922	Sept. 28	Oct. 7	
Black-poll Warbler	Sept. 2, 1919	Sept. 3	Sept. 25	
Blackburnian Warbler	Sept. 4, 1915	Sept. 25	Sept. 26	
Black-throated Green Warbler	Sept. 2, 1918	Sept. 17	Sept. 24	
Palm Warbler	Aug. 28, 1921	Sept. 2	Sept. 22	
Connecticut Warbler	Oct. 13, 1921			
Wilson's Warbler	Sept. 5, 1923	Sept. 9	Sept. 12	
Canadian Warbler	Aug. 27, 1921	Sept. 1		4 records
American Pipit	Nov. 13, 1927	Nov. 19		
Winter Wren	Oct. 7, 1922	Oct. 9	Oct. 14	
Brown Creeper	Oct. 5, 1923	Oct. 6	Oct. 19	
Red-breasted Nuthatch	Sept. 26, 1916	Sept. 30		9 records
Golden-crowned Kinglet	Oct. 5, 1923	Oct. 6	Oct. 9	
Ruby-crowned Kinglet	Oct. 1, 1921	Oct. 2	Oct. 14	
Gray-cheeked Thrush	Sept. 20, 1916	Sept. 22		5 records
Olive-backed Thrush	Sept. 14, 1918	Sept. 24	Sept. 26	
Hermit Thrush	Sept. 29, 1918	Oct. 5	Oct. 11	

TABLE IV.

Departure dates for fall migrants at Nashville

NAME OF SPECIES	AVERAGE	SECOND LATEST	LATEST	REMARKS
Pied-billed Grebe..	Nov. 27	Nov. 29, 1925	Nov. 30, 1922	Sometimes winters 8 records only
Loon.....		Aug. 26	Aug. 27, 1921	
Black Tern.....	Dec. 15	Nov. 11	Dec. 1, 1923	
Blue-winged Teal.	Dec. 17	Dec. 25	Dec. 26, 1925	
Pintail.....	Nov. 23	Dec. 10	Dec. 24, 1927	
Great Blue Heron.	7 records	Nov. 26	Dec. 25, 1924	
Little Blue Heron.	Oct. 10	Aug. 16	Aug. 26, 1922	
Green Heron.....	Nov. 13	Oct. 13	Oct. 14, 1916	
Woodcock.....	Dec. 16	Nov. 13	Nov. 25, 1920	
Wilson's Snipe...	Nov. 2	Dec. 25	Dec. 26, 1925	
Solitary Sandpiper		Nov. 12	Nov. 14, 1925	
Spotted Sandpiper.		Sept. 28	Oct. 6, 1917	
Osprey.....	Oct. 1	Oct. 23	Nov. 20, 1921	
Nighthawk.....	Oct. 17	Oct. 11	Oct. 16, 1917	
Chimney Swift....		Oct. 25	Oct. 27, 1919	
Ruby-throated Hummingbird..	Oct. 4			
Kingbird.....	Aug. 28	Oct. 11	Oct. 16, 1915	
Crested Flycatcher	Sept. 11	Sept. 5	Sept. 19, 1915	
Phoebe.....	Nov. 20	Sept. 26	Sept. 28, 1919	
Wood Pewee.....	Oct. 17	Dec. 1	Dec. 3, 1921	
Acadian Flycatcher.....	Aug. 25	Oct. 28	Nov. 6, 1915	
Red-winged * Blackbird.....	Nov. 22	Aug. 28	Sept. 2, 1918	Sometimes winters
Orchard Oriole....	Aug. 19	Nov. 27	Nov. 30, 1921	
Baltimore Oriole..	Sept. 7	Sept. 2	Sept. 6, 1920	
		Sept. 10	Sept. 14, 1918	
			Sept. 14, 1924	
Pine Siskin.....		Nov. 23	Nov. 29, 1925	Only 3 fall records Data meager
Vesper Sparrow...		Dec. 1	Dec. 10, 1916	
Grasshopper Sparrow.....		Aug. 7	Oct. 9, 1915	
Lark Sparrow.....		Aug. 14	Sept. 1, 1918	
Chipping Sparrow.	Oct. 31	Nov. 26	Nov. 29, 1925	
Bachman's Sparrow.....	Sept. 7	Oct. 10	Oct. 17, 1920	
Rose-breasted Grosbeak.....	Oct. 8	Oct. 13	Oct. 15, 1921	
Indigo Bunting...	Oct. 15	Oct. 25	Oct. 28, 1923	
Summer Tanager..	Oct. 1	Oct. 10	Oct. 13, 1914	
Purple Martin....	Aug. 31	Sept. 19	Sept. 26, 1920	
Barn Swallow....	Sept. 2	Sept. 30	Oct. 6, 1917	
Tree Swallow....		Aug. 31	Oct. 10, 1925	
Rough-winged Swallow.....	Aug. 30	Sept. 26	Oct. 10, 1925	
Red-eyed Vireo...	Oct. 6	Oct. 13	Oct. 14, 1921	
Warbling Vireo...	Sept. 3	Sept. 6	Sept. 16, 1919	
Yellow-throated Vireo.....	Sept. 10	Sept. 30	Oct. 8, 1921	
Blue-headed Vireo.		Oct. 23	Nov. 9, 1924	
White-eyed Vireo.	Oct. 3	Oct. 13	Oct. 15, 1921	
Black and White Warbler.....	Oct. 10	Oct. 13	Oct. 26, 1922	

TABLE IV.—Continued

NAME OF SPECIES	AVERAGE	SECOND LATEST	LATEST	REMARKS
Prothonotary Warbler		July 15	Aug. 6, 1921	
Worm-eating Warbler		Aug. 7	Aug. 18, 1917	
Blue-winged Warbler		Aug. 14	Sept. 5, 1929	
Tennessee Warbler	Oct. 29	Nov. 7	Nov. 8, 1925	
Parula Warbler		Oct. 3	Oct. 4, 1919	
			Oct. 4, 1925	
Yellow Warbler	Aug. 14	Aug. 18	Aug. 22, 1915	
Magnolia Warbler	Oct. 10	Oct. 20	Oct. 21, 1916	
Cerulean Warbler		Aug. 18	Oct. 9, 1921	
Chestnut-sided Warbler	Oct. 6	Oct. 8	Oct. 13, 1921	
Bay-breasted Warbler	Oct. 20	Oct. 25	Nov. 21, 1925	
Black-poll Warbler	Oct. 15	Oct. 23	Oct. 29, 1921	
Blackburnian Warbler	Oct. 7	Oct. 16	Oct. 19, 1923	
Sycamore Warbler		Oct. 10	Oct. 13, 1918	
Black-throated Green Warbler		Nov. 1	Nov. 2, 1919	
Pine Warbler		Oct. 26	Oct. 28, 1922	
Palm Warbler	Oct. 18	Oct. 22	Nov. 2, 1919	
Prairie Warbler	Aug. 19	Sept. 1	Sept. 6, 1914	
Ovenbird	Oct. 12	Oct. 21	Oct. 26, 1916	
Louisiana Water- thrush	Sept. 7	Oct. 5	Oct. 11, 1919	
Kentucky Warbler	Sept. 27	Oct. 5	Oct. 18, 1921	
Connecticut Warbler			Oct. 18, 1921	
Maryland Yellow- throat	Oct. 6	Oct. 16	Oct. 19, 1923	
Yellow-breasted Chat	Sept. 10	Oct. 3	Oct. 4, 1925	
Hooded Warbler	Oct. 9	Oct. 10	Oct. 14, 1916	
Wilson's Warbler	Oct. 5	Oct. 3	Oct. 10, 1925	
Canadian Warbler		Sept. 2	Sept. 22, 1922	
Redstart	Oct. 9	Oct. 12	Oct. 28, 1921	
Catbird	Oct. 11	Oct. 18	Oct. 20, 1922	
Brown Thrasher	Oct. 11	Oct. 20	Oct. 22, 1921	
Red-breasted Nuthatch		Oct. 14	Oct. 21, 1916	Sometimes winters
Ruby-crowned Kinglet	Nov. 8	Nov. 27	Nov. 30, 1917	
Blue-gray Gnatcatcher	Sept. 16	Sept. 28	Sept. 30, 1917	
			Sept. 30, 1921	
Wood Thrush	Oct. 2	Oct. 9	Oct. 15, 1920	
Gray-cheeked Thrush		Oct. 6	Oct. 12, 1916	5 records
Olive-backed Thrush	Oct. 11	Oct. 13	Oct. 18, 1923	

the mountains, another natural feature affecting migration. Then, too, the continent narrows noticeably towards the south, even in our latitude. This directs the fly lines towards the Gulf coast. Our state lies so close, relatively, to that region that it receives a large share of the transients which enter and leave by these routes. All of the above factors tend to bring a large and varied group of birds within our borders.

The Nashville region is a veritable pathway for migrant birds. It lies about half way between the Gulf of Mexico and the Great Lakes and both of these bodies of water are crossed by important migration routes. It also lies almost equal distant from the Appalachian Mountains and the Mississippi River, both of great importance in bird migration. In fact, the variety of Nashville bird life is limited only by the variety of available habitats. This has been well illustrated by the number of water bird records secured at an artificial lake near the city. Nashville is poorly supplied with aquatic habitats, so that this one lake, with its surrounding hills, is the best single observation point in the region.

Bird migration study, in the Nashville region, dates from the founding of the Tennessee Ornithological Society in October, 1915. Continuous observations have been carried on by the members since that date to the present time. The following tables present a summary of some of the data secured. These studies have been made mainly in Davidson county, much of the work being carried on in the parks and college campuses in the city of Nashville. A few especially favorable localities outside the county are also covered. These areas are all within a radius of twenty-five miles of the city of Nashville.

The tables presented here have been compiled from the notes of three observers, Dr. G. R. Mayfield, Mr. A. F. Ganier and Harry C. Monk, each of whom has from twelve to sixteen years' field experience in this locality. If a "field list" of one day's observations of one person be considered a unit, then the available records number two thousand. About half were from Dr. Mayfield's files, since he has averaged ten field trips for studying birds per month for the period covered by these studies. The remainder came in about equal parts from Mr. Ganier and the writer. It is regretted that the notes of other active students were unavailable at the time of this compilation. The notes began in 1915 and continued through 1928. Each contributor is responsible for the accuracy of his own records, but no doubtful records were included. The common names used in the tables are those of the American Ornithological Union's checklist (1910).

Aside from the interest and value of these tables to other ornithologists, particularly in this state, it is believed that beginners will find them to be useful. The task of learning to identify birds is greatly simplified if one knows when to expect the various species in his locality. While the dates in these tables apply especially to the Nashville region, they may easily be made to serve other parts of the state. For localities west and south a difference of a few days should be allowed, as the

migration is earlier in those portions of Tennessee. For localities east and north of Nashville, the same differences, to allow for the later migration, should be made. These corrections are for the spring season, the opposite corrections should be made in the fall. It frequently happens that a species "breaks the record" by appearing in a locality at an earlier or later date than ever before known. Such occurrences are of course exceptional and but lend zest to the pleasure of observing bird migration. The great majority of the birds one sees are conformists and make their appearances at the proper time.