

## Report on the Spring Migration of 1907

COMPILED BY WITMER STONE

The excellent work of the Migration Corps has been continued during 1907, making the seventh yearly record of the Spring Migration in the neighborhood of Philadelphia and at other points in eastern Pennsylvania and New Jersey.

The importance of the work increases yearly, and we trust that all our observers will continue their labor during the coming spring with the same care that has been exercised during previous seasons. It is desirable, especially in the case of the commoner species, that two dates of arrival be recorded where the first arrival was a single early straggler preceding by a number of days the next record.

Schedules covering the spring flight of 1907 were received from the following sixty-three stations: \*

### *New Jersey.*

Cape May, H. Walker Hand.  
Vineland, Mrs. Alice K. Prince.  
Downtown (near Newfield), W. W. Fair.  
Yardville, Rachel E. Allinson.  
Trenton, C. C. and R. M. Abbott.  
Princeton, Chas. H. Rogers.  
Bordentown, Minnie V. Flynn.  
Beverly, J. Fletcher Street.  
Burlington, Helen F. Carter.  
Rancocas, Emily Haines.  
Moorestown, Anna A. Mickle.  
Moorestown, Wm. B. Evans and Dr. S. S. Haines.  
Pensauken, C. J. Hunt.

\* Applications for blank schedules and for information should be addressed to Mr. Thos. D. Keim, 405 Radcliffe St., Bristol, Pa., who will superintend this branch of the Club's work for the season of 1908.

*Pennsylvania.*

Kennett Square, Charles J. Pennock.  
Mendenhall, Wm. Carter and wife.  
Concordville, Mrs. K. R. Styer.  
Concordville, Jos. H. Willits.  
Westtown, Chas. W. Palmer and students.  
Swarthmore, Samuel C. Palmer.  
Swarthmore, David E. Harrower.  
Lansdowne, John D. Carter.  
Lansdowne, Louisa M. Jacob.  
Lansdowne, Anna D. White.  
Lansdowne, Friends' School.  
Lansdowne, W. R. White.  
Lansdowne, Ethel A. Shrigley.  
Collingdale, Paul L. Lorrilliere.  
Media, Lydia G. Allen.  
Media, Philip H. Moore.  
Media, Alice Fussell.  
Media, Ellen Fussell.  
Ardmore, Wm. L. Baily.  
Haverford, M. Albert Linton.  
Radnor Twp., A. C. Redfield.  
Radnor Twp., John Patton.  
Radnor Twp., L. S. Pearson.  
Bryn Mawr, Emily H. Thomas.  
Wissahickon, John R. Pickering.  
Germantown, Paul C. Brewer, Jr.  
Germantown, Thos. R. Hill.  
Germantown, Mrs. Thos. R. Hill.  
Germantown, Miriam F. Solis-Cohen.  
Chestnut Hill, Wm. H. Trotter.  
West Fairmount Park, Elmer Onderdonk.  
Olney, George S. Morris.  
Oak Lane, John W. Allen.  
Melrose Park, Saml. H. Barker.  
Frankford, Richard F. Miller.  
Fox Chase, Alexander Patman.  
Holmesburg, H. W. Fowler.

Bristol, Thomas D. Keim and Sidney V. Morris.  
Glenside and Edge Hill, Richard C. Harlow.  
Fort Washington, James L. Camblos.  
Woodbourne, Edward Pickering, Jr.  
George School, Students.  
George School, Wm. E. Roberts.  
George School, Jesse Packer.  
George School, Robt. E. Atkinson.  
Easton, Edw. J. F. Marx.  
Perkasie, Albert C. Rutter.  
Columbia, Wm. F. Rochow.  
Marietta, W. H. Buller.  
Lopez, Otto Behr.

Particular interest attaches to the migration of 1907 on account of the unusual weather that prevailed during April and May, unprecedented within the memory of most of our observers.

February was noteworthy in showing no evidence of migration. The flight of Purple Grackles, Redwings and Robins which usually marks the latter part of the month, was entirely lacking.

March, in most respects, was nearly normal. The mean temperature for the month at Philadelphia was  $44^{\circ}$ , four degrees above the mean of the past thirty-seven years, while the rainfall (including snow) was less than usual. There were three marked increases in temperature during the month, the mean daily temperature increasing fourteen degrees between the 1st and 2d, twenty degrees between the 12th and 14th, twenty-six degrees between the 21st and 23d and thirty degrees between the 26th and 29th. On the last date the maximum was  $86^{\circ}$ , the highest March temperature registered at Philadelphia during the thirty-seven years covered by the Weather Bureau's record. This was followed by a fall of forty degrees, from a mean temperature of  $74^{\circ}$  on March 29th to  $34^{\circ}$  on April 1st.

We have then in March four days upon which marked increases in temperature reached their maximum, *i. e.*, March 2d, 14th, 23rd, 29th. Such days are generally followed by so-called bird-waves, and our records show this to have been the case

this year—two-thirds of all the first arrivals reported by thirty-six observers in the Philadelphia district being on these days and the day immediately following each.

*New arrivals,*

WAVE I

March 2. Bluebird, Field Sparrow.

March 3. Purple Grackle, Kingfisher, Flicker, Killdeer, Robin, Savanna Sparrow.

There was a general flight of Grackles, arrivals being reported from seven stations. Nearly all the species comprising this wave were resident at one station or another; but only actual migrant individuals have been considered in the above statement.

*New arrivals,*

WAVE II

March 13. Brown Thrasher, Myrtle Warbler.

March 14. Hermit Thrush, Phoebe, Cowbird, Fox Sparrow.

March 15. Vesper Sparrow.

From March 14th to 16th the chief migrants were: the Grackle arrived at 10 stations, Killdeer at 3, Robin at 15, Red-winged Blackbird at 16, Phoebe at 9, Fox Sparrow at 15.

*New arrivals,*

WAVE III

March 23. Chipping Sparrow, Towhee.

Main migrants: Field Sparrow arrived at 12 stations March 23rd-24th, Flicker at 11, Phoebe at 8.

*New arrivals,*

WAVE IV

March 27. Barn Swallow.

March 28. Tree Swallow, Ruby-crowned Kinglet.

March 30. Rough-winged Swallow.

Chief migrants: Chipping Sparrow arrived at 15 stations March 28th-30th, Vesper Sparrow, 6 stations, March 29th-30th.

Beginning with the extremely low mean temperature of 34° on April 1st, this month showed no sudden rise until April 28th to 30th, when there was an increase of sixteen degrees. There was, however, a steady rise of 28° continuing from April 19th to April 26th. The mean temperature of the month was 47°, four degrees below the mean of thirty-seven years, while the precipitation was nearly normal. There were severe frosts on



*New arrivals,*

## WAVE VII

April 30. Olive-backed Thrush, White-eyed Vireo, Prairie Warbler.

May 1. Canada, Blackburnian, Chestnut-sided, Magnolia and Parula Warblers, Yellow-throated Vireo, Indigobird, Least Flycatcher, Bobolink, Baltimore and Orchard Orioles.

May 2. Yellow-billed Cuckoo, Wood Pewee, Great-crested Flycatcher, Kingbird, Scarlet Tanager.

From April 29th to May 1st the Ovenbird arrived at 12 stations, Catbird 13, Wood Thrush 13, but scarcely any of the new arrivals were generally reported, being represented only by scattered individuals.

May exhibited far more phenomenal temperature conditions than April. The mean was 58°, five degrees below the mean of thirty-seven years, and only once equaled during this period — *i. e.* 57° in 1882.

The highest temperature of the month was on May 10th when 77° was reached; May 14th and 15th with 84°, and May 19th when 81° was registered; on only four other days did the maximum temperature exceed 70°.

The only marked increases in temperature were May 12th-14th, when the mean raised twenty-two degrees; May 17th-19th thirteen degrees, and May 21st to 23d eleven degrees.

Between May 10th-12th there was a fall of eighteen degrees, with frost on the last day, and a fall of twenty degrees between May 19th-21st.

The precipitation was 5.62, 2.41 above the average of thirty-six years, and only equaled in 1873 (5.83).

The real advent of summer weather was on June 15th, when conditions changed suddenly, and the cold was at an end.

## WAVES VIII AND IX

Low temperature and rain from May 2d to 9th checked migration at a most vital time, so that arrivals were scattered over these days without much concentration.

A sudden raise on May 10th brought an enormous flight on May 11th-12th, notwithstanding that the temperature dropped

on these days lower than it had been before, with frost on the 12th.

The bulk of most of the Warblers, Thrushes, Vireos, Tanagers, etc., went through at this time, and owing no doubt to concentration many Golden-winged, Hooded, Wilson's and Bay-breasted Warblers were seen—species that are usually rare.

The high temperature of May 14th–15th is not reflected in the migration record, but that of May 19th produced the last "wave" of the season, the conspicuous species being the Blackpoll and Canada Warblers and Wood Pewee.

The following cold weather had the effect of delaying birds that had not already passed through, and holding many stragglers until the middle of June, a week or more after their normal date of departure.

#### COMPARISON WITH OTHER SEASONS

In judging whether birds were later than usual in the spring of 1907, we must not be too hasty. It is necessary to be sure what we are basing comparisons upon, and also to differentiate between different portions of the migration.

Taking the records of thirty-six observers within about ten miles of Philadelphia, we find that Purple Grackles, Robins, Redwings and often Fox Sparrows have their first concentrated flight in February. These species did not move till March in 1907, but neither did they in 1905.

	1907.	1906.	1905.
Purple Grackle,	Mar. 3-5 (3)*	Feb. 21-24 (15)	Mar. 8-11 (F. 24)
Robin . . . .	Mar. 13-15 (3)	Feb. 20-23 (Jan. 28)	Mar. 5-8
Redwing . . .	Mar. 14-16 (9)	Feb. 23-24 (4)	Mar. 11-16 (9)
Fox Sparrow .	Mar. 14-17 (14)	Feb. 22-24 (20)	Mar. 12-16 (12)

So far as other March migrants go, the season was practically normal, with some very early stragglers during the warm days at the close of the month.

\* Date in parentheses is that of first arrival ; the other is the period of arrival at the majority of stations.

	1907.	1906.	1905.
Phoebe . . . . .	Mar. 15-17 (14)	Mar. 29-Apr. 6 (12)	Mar. 16-19 (16)
Chipping Sparrow.	Mar. 27-29 (21)	Apr. 5-8 (Mar. 24)	Mar. 26-28 (18)

In April and May we have to deal with migrants which start their flight for the most part in the tropics far south of the United States, and are of course not affected by temperature conditions prevalent here until they reach the region affected.

Taking the forty species of April and May migrants, of which we have the fullest records, we find by comparing the earliest arrivals within the Philadelphia district for 1907, 1906 and 1905 that 16 species were earlier in 1906 than in 1905; 16 earlier in 1905 than in 1906, and 8 arrived on the same day; the average date for the forty being almost the same for the two years.

1907, however, compared with 1906 shows 18 species earlier and 21 later; average for forty species one and a half days late. Compared with 1905, 15 species arrived earlier, 23 later; average for forty species one day later.

This is a very slight difference, and has probably little or no significance so far as the movement of the bulk of each species is concerned. As the most accurate means of comparing the latter, we have ascertained the date upon which each species had been reported from *at least one-half* of the stations at which it was observed. This gives a fair basis of comparison between two seasons, in one of which the migration may have been spread over a number of days, while in the other it was concentrated upon a few.

For example, the Brown Thrasher was first observed at our various stations during 1907, 1906 and 1905 as follows, the numbers in parentheses indicating the number of stations at which it was reported if at more than one:

1907. March 13, 17; April 20, 23, 25, 26 (6), 27 (7), 28(2), 29 (2), 30 (2).

1906. March 9; April 10, 16, 17 (2), 19 (3), 20, 21 (4), 22 (3), 24 (2), 25 (2), 26, 27, 28 (2), 30.

1905. April 9, 13, 14 (2), 16, 18 (2), 19 (2), 21 (2), 22 (6), 23 (3), 24 (4), 25 (2), 26, 29, 30.

It had thus reached at least half the stations as follows:

1907, April 27; 1906, April 21; 1905, April 22.

From similar comparisons of forty species of April and May migrants, we find that the dates by which they had been recorded at half of our stations, averaged four days later in 1907 than in 1906, and three days later in 1907 than in 1905. The actual difference in the various species varying from one to seven days. In only four instances was the 1907 date earlier or equal as compared with 1906, and in only six as compared with 1905.

It is noticeable that the late May migrants are later both in first appearance and in bulk arrival than those of April and early May.

In summing up the spring migration of 1907 then, we find that there was no trace of the usual February migration, the March flight was about normal, with some exceptionally early stragglers. April was characterized by a stragglng migration without any concentrated movement until the last week when birds arrived with a rush. The same stragglng migration characterized the early part of May with another phenomenal rush on the 11th and 12th, and a final movement on the 19th, followed by another delay, which kept migrants here until June 15th.

The first arrival of most species was nearly normal, but the bulk movements were seriously delayed.

DELAWARE VALLEY ORNITHOLOGICAL CLUB.

NAME.	Moorestown, N. J. N. 1; E. 12.1	Pensauken, N. J. N. 0; E. 8.	Media, Pa. S. 2; W. 12.	Swarthmore, Pa. S. 3; W. 10.	Collingdale, Pa. S. 3; W. 6.	Lansdowne, Pa. S. 1; W. 6.	Artmore and Haverford, Pa. N. 4; W. 8.	Bryn Mawr, Pa. N. 4; W. 9.	Radnor and Wayne, Pa. N. 6; W. 11.	Germanstown, Phila. N. 6; W. 1.	Chestnut Hill, Phila. N. 8; W. 1.	Oak Lane, Phila. N. 7; E. 2.	Fox Chase, Phila.	Holmesburg, Phila.	Frankford, Phila. N. 5; E. 5.	Olney, Phila. N. 6; E. 3.
Canada Goose	Mar. 14	Mar. 14	Mar. 14	Mar. 14	Mar. 14	Mar. 14	Mar. 14	Mar. 14	Mar. 14	Mar. 14	Mar. 14	Mar. 14	Mar. 14	Mar. 14	Mar. 14	Mar. 14
Green Heron	May 11	May 5	Apr. 28	Apr. 29	May 12	May 1	May 5	May 8	Apr. 26	Mar. 16	May 8	May 8	May 8	May 11	Jan. 28	Mar. 15
Night Heron	Mar. 23	Mar. 23	Apr. 21	Apr. 21	May 1	May 30	May 5	May 5	Mar. 25	Apr. 26	Apr. 17	Apr. 17	Apr. 17	May 11	Apr. 25	Apr. 26
Spotted Sandpiper	Apr. 27	Apr. 28	Apr. 29	May 10	May 12	May 22	May 5	May 5	Apr. 16	Apr. 16	Apr. 17	Apr. 21	Apr. 21	May 11	May 10	Apr. 19
Solitary Sandpiper	May 2	May 19	May 12	May 5	May 12	May 8	May 8	May 8	May 11	May 11	May 11	May 11	May 11	May 11	May 10	May 12
Killdeer	Mar. 3	Mar. 23	Mar. 15	Mar. 17	Mar. 18	Mar. 16	Mar. 16	Mar. 16	Mar. 14	Mar. 14	Mar. 14	Mar. 23	Mar. 23	Mar. 23	Mar. 23	Mar. 25
Dove	Mar. 21	Mar. 23	Mar. 31	Mar. 15	Apr. 12	Apr. 5	Apr. 5	May 6	Mar. 22	May 5	Apr. 22	Apr. 22	Apr. 22	Apr. 21	Mar. 15	Mar. 14
Osprey	Apr. 4	Apr. 13	Apr. 23	May 19	Mar. 24	Apr. 2	Apr. 2	Mar. 21	Apr. 12	May 11	Mar. 17	Apr. 21	Apr. 21	Apr. 21	Apr. 18	Apr. 20
Turkey Vulture	Apr. 16	Apr. 27	Mar. 17	Feb. 16	Mar. 24	Apr. 2	Apr. 2	Mar. 21	Mar. 3	May 11	Mar. 17	Apr. 21	Mar. 7	Apr. 21	May 8	Apr. 20
Yellow-billed Cuckoo	May 28	May 19	May 8	May 8	May 11	May 19	May 19	May 19	May 10	May 11	May 11	May 8	Mar. 7	May 23	May 23	May 12
Kingfisher	Apr. 19	Mar. 24	Mar. 24	Mar. 23	Apr. 28	Mar. 29	Mar. 28	Mar. 28	Mar. 3	Mar. 27	Apr. 4	Apr. 4	Mar. 30	Mar. 30	Mar. 21	Mar. 26
Yellow-bellied Sapsucker	.....	Apr. 21	Mar. 16	Apr. 15	Apr. 20	.....	Apr. 15	Apr. 15	Mar. 30	.....	.....	Apr. 17	Apr. 17	Apr. 17	Mar. 21	Mar. 26
Red-headed Woodpecker	.....	May 19	May 18	May 20	.....	.....	May 14	May 5	May 18	.....	.....	Mar. 14	Mar. 14	Apr. 26	Apr. 30	Apr. 30
Flicker	Mar. 22	Mar. 17	Mar. 23	Mar. 24	Mar. 17	Mar. 23	Mar. 23	Mar. 5	Mar. 3	Mar. 11	Mar. 24	Mar. 14	Mar. 14	Apr. 26	May 8	Apr. 30
Whip-poor-will	May 12	May 9	.....	.....	Apr. 29	.....	.....	May 15	May 18	.....	.....	May 12	Mar. 30	Apr. 3	Mar. 15	.....
Nighthawk	.....	May 19	May 28	May 17	.....	.....	May 19	May 19	May 17	.....	.....	May 12	.....	.....	.....	.....
Chimney Swift	Apr. 23	Apr. 27	Apr. 25	Apr. 26	Apr. 27	Apr. 26	Apr. 26	Apr. 29	Apr. 26	May 3	Apr. 28	Apr. 27	Apr. 27	Apr. 25	Apr. 28	Apr. 23
Hummingbird	May 12	.....	May 18	May 10	.....	.....	May 15	May 12	May 11	.....	.....	Apr. 27	Apr. 27	Apr. 25	Apr. 28	Apr. 23
Kingbird	May 2	May 18	May 5	May 5	May 12	May 18	May 3	May 8	May 4	May 11	May 12	May 2	May 25	May 11	May 21	May 12
Crested Flycatcher	May 5	May 11	May 4	May 3	May 12	May 5	May 5	May 5	May 10	May 11	May 12	May 2	May 18	May 11	May 3	May 3
Phoebe	Mar. 17	Mar. 30	Mar. 16	Mar. 15	Mar. 17	Mar. 15	Mar. 16	Apr. 6	Mar. 16	Mar. 16	Mar. 23	Mar. 23	.....	.....	Mar. 18	Mar. 22

<sup>1</sup> The relative positions of the stations are indicated by the number of miles, N. or S. and E. or W., that each one is distant from Philadelphia, Pa., i. e., its latitude and longitude with reference to the City Hall.

NAME.	Moorestown, N. J.	Pensauken, N. J.	Media, Pa.	Swarthmore, Pa.	Collingdale, Pa.	Lansdowne, Pa.	Ardmore and Haverford, Pa.	Bryn Mawr, Pa.	Radnor and Wayne, Pa.	Germanstown, Phila.	Chestnut Hill, Phila.	Oak Lane, Phila.	Fox Chase, Phila.	Holmesburg, Phila.	Frankford, Phila.	Olney, Phila.
Wood Pewee	May 2	May 18	May 16	May 8	May 15	May 15	May 14	May 14	May 14	May 12	May 18	May 2			May 11	
Acadian Flycatcher		May 19	May 20	May 16	May 14	May 14	May 30	May 14	May 14	May 18	May 18	May 2			May 8	
Least Flycatcher		May 7	May 12	May 12	May 15	May 1	May 1	May 1	May 3	May 12	May 12	May 2			May 8	
Bobolink	May 7	Apr. 28	May 19	May 15	May 2	May 12	May 12	May 12	May 3	May 12	May 12	May 2			May 15	
Cowbird	May 7	Apr. 28	May 19	May 15	May 2	May 12	May 12	May 12	May 3	May 12	May 12	May 2			May 15	
Red-winged Blackbird	Mar. 16	Mar. 9	Mar. 15	Mar. 15	Mar. 17	Mar. 14	Mar. 14	Mar. 21	Mar. 14	May 5	Mar. 15	Res.			Mar. 19	Apr. 13
Meadow Lark	Res.	Mar. 17	Mar. 17	Mar. 15	Mar. 15	Mar. 14	Mar. 16	Mar. 21	Res.	Mar. 16	May 11	Res.			Mar. 15	Mar. 25
Orchard Oriole	May 1	May 19	May 15	Apr. 20	May 11	May 18	May 12	May 9	May 9	May 11	May 14	May 8			Res.	May 4
Baltimore Oriole	May 8	May 18	May 5	May 10	May 11	May 18	May 12	May 9	May 9	May 11	May 14	May 8			May 3	May 4
Rusty Blackbird	Mar. 3	Mar. 3	Mar. 9	Mar. 4	Mar. 5	Mar. 5	Mar. 13	Mar. 14	Mar. 3	Mar. 9	Mar. 15	Mar. 3			Apr. 29	Apr. 10
Purple Grackle	Mar. 30	Mar. 30	Mar. 31	Mar. 24	Mar. 23	Mar. 30	Mar. 27	Mar. 14	Mar. 22	Mar. 22	Mar. 29	Mar. 3			Mar. 15	Mar. 12
Vesper Sparrow	Apr. 28	Apr. 28	Apr. 28	Mar. 15	Mar. 23	Mar. 30	Mar. 8	Mar. 14	Mar. 22	Mar. 22	Mar. 29	Mar. 3			Mar. 15	Mar. 26
Savanna Sparrow	Mar. 27	Apr. 11	Mar. 24	Mar. 24	Mar. 23	Mar. 23	Mar. 28	Mar. 21	Mar. 27	Mar. 29	Mar. 29	Mar. 3			Mar. 15	Mar. 27
Grasshopper Sparrow	Mar. 29	Mar. 23	Mar. 22	Res.	Res.	Res.	Res.	Mar. 21	Mar. 3	Mar. 24	Mar. 24	Mar. 22			Mar. 3	Mar. 28
Chipping Sparrow	Mar. 29	Apr. 27	Apr. 27	Apr. 27	Res.	Res.	Res.	Mar. 21	Mar. 3	Mar. 24	Mar. 24	Mar. 22			Mar. 23	Mar. 28
Field Sparrow	Mar. 29	Apr. 27	Apr. 27	Apr. 27	Res.	Res.	Res.	Mar. 21	Mar. 3	Mar. 24	Mar. 24	Mar. 22			Mar. 23	Mar. 28
Swamp Sparrow	Mar. 17	Mar. 17	Mar. 16	Mar. 15	Mar. 23	Mar. 14	Mar. 1	Mar. 14	Mar. 14	Mar. 23	Mar. 15	Mar. 14			Res.	Apr. 26
Fox Sparrow	Apr. 27	May 4	Apr. 4	Apr. 6	Apr. 30	Apr. 26	Apr. 26	Mar. 21	Mar. 14	Mar. 23	Apr. 3	Mar. 14			Res.	Apr. 26
Chewink	May 12	May 12	May 12	May 11	Apr. 26	May 8	May 10	May 6	Mar. 23	Apr. 3	Apr. 30	Apr. 20			May 11	Apr. 26
Rose-breasted Grosbeak	May 13	May 5	May 9	May 9	May 12	May 5	May 10	May 9	May 10	May 5	May 14	May 11			May 11	May 8
Indigobird	May 12	May 11	May 3	May 2	May 11	May 5	May 10	May 8	May 11	May 11	May 11	May 11			May 11	May 8
Scarlet Tanager	Mar. 30	Mar. 29	Mar. 29	Mar. 29	Mar. 29	Mar. 29	Mar. 29	Mar. 29	Mar. 29	Mar. 29	Mar. 29	Mar. 29			Mar. 27	Mar. 16
Purple Martin	Mar. 30	Mar. 29	Mar. 29	Mar. 29	Mar. 29	Mar. 29	Mar. 29	Mar. 29	Mar. 29	Mar. 29	Mar. 29	Mar. 29			Mar. 27	Mar. 16

<sup>2</sup> Next May 10.

<sup>1</sup> Next April 27.

NAME.	Moorestown, N. J.	Pensauken, N. J.	Media, Pa.	Swarthmore, Pa.	Collingdale, Pa.	Lansdowne, Pa.	Ardmore and Havertford, Pa.	Bryn Mawr, Pa.	Radnor and Wayne, Pa.	Germanstown, Phila.	Chestnut Hill, Phila.	Oak Lane, Phila.	Fox Chase, Phila.	Holmesburg, Phila.	Frankford, Phila.	Oney, Phila.
Cliff Swallow	May 8	Apr. 28	Apr. 24	Apr. 21	Apr. 30	Apr. 28	May 23		May 30							
Barn Swallow	May 7	Apr. 7	Apr. 21	Apr. 26	May 11	Apr. 21	Apr. 22		Apr. 20							
Tree Swallow	May 7	Apr. 27	Apr. 27	Apr. 26	May 12	Apr. 21	Apr. 5		Mar. 30							
Bank Swallow		May 18	May 12	May 12	May 12	Apr. 22	Apr. 22		May 12							
Rough-winged Swallow		May 19	May 12	May 10	May 12	Apr. 28	Apr. 14		Mar. 30							
Cedar Bird	May 19	May 11	May 12	May 10	May 12	May 6	May 10		May 19							
Red-eyed Vireo	May 9	May 19	May 9	May 17	May 5	May 22	May 7		May 11							
Warbling Vireo	May 9	May 19	May 9	May 17	May 5	May 22	May 7		May 11							
Yellow-throated Vireo	May 1	May 4	May 11	May 11	May 12	May 6	May 3		May 9							
Solitary Vireo		May 2	May 4	May 8	May 13	May 8	May 12		May 4							
White-eyed Vireo	Apr. 28	Apr. 28	Apr. 25	Apr. 27	May 5	Apr. 26	May 3		May 4							
Black and White Warbler		May 11	May 11	May 11	May 11	May 8	May 3		May 4							
Worm-eating Warbler		May 8	May 11	May 10	May 12	May 8	May 8		Apr. 25							
Blue-winged Warbler		May 6	May 11	May 10	May 12	May 8	May 1		Apr. 27							
Parula Warbler		May 5	May 11	May 11	May 11	May 8	May 1		May 11							
Yellow Warbler	Apr. 26	Apr. 28	Apr. 30	Apr. 30	Apr. 28	May 7	May 1		May 11							
Black-throated Blue Warbler	May 5	May 11	May 11	May 5	May 11	May 12	May 1		May 11							
Myrtle Warbler	May 10	May 19	May 12	May 1	May 12	May 20	May 1		May 11							
Magnolia Warbler	May 8	May 12	May 12	May 9	May 19	May 12	May 6		Apr. 20							
Chestnut-sided Warbler	May 17	May 19	May 15	May 16	May 15	May 15	May 15		May 8							
Black-poll Warbler	May 8	May 12	May 10	May 10	May 19	May 12	May 12		May 11							
Blackburnian Warbler	May 2	May 12	May 12	May 5	May 12	May 8	May 1		May 8							
Black-throated Green Warbler	May 2	May 12	May 12	May 5	May 12	May 8	May 1		May 8							

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Pine Warbler .....	Apr. 27	Apr. 21	Apr. 14	Apr. 6	Apr. 30	Apr. 22	Apr. 20	Apr. 20	Apr. 20	Apr. 21	Apr. 15	Apr. 17	Apr. 17	Apr. 17	Apr. 16	Apr. 20
Yellow Palm Warbler .....	May 12	May 12	May 12	May 12	May 12	May 3	May 11	May 11	May 11	May 13	May 13	May 13	May 13	May 13	May 12	May 12
Prairie Warbler .....	Apr. 28	May 5	Apr. 29	May 1	Apr. 29	Apr. 30	Apr. 26	May 8	Apr. 26	May 11	May 6	Apr. 28	Apr. 28	Apr. 28	Apr. 29	Apr. 26
Ovenbird .....	May 19	May 5	May 5	May 5	May 8	May 1	Apr. 27	May 1	Apr. 27	May 12	May 2	May 2	May 2	May 11	May 8	May 2
Water Thrush .....	May 19	May 10	May 5	May 5	May 19	May 3	May 3	May 22	May 5	May 11	May 13	May 2	May 2	May 11	May 3	May 2
Kentucky Warbler .....	Apr. 28	Apr. 27	Apr. 26	Apr. 28	Apr. 26	Apr. 30	Apr. 30	May 8	Apr. 26	May 8	May 11	May 4	May 4	May 11	May 10	Apr. 27
Maryland Yellow-throat .....	Apr. 18	May 12	May 5	May 5	May 10	May 1	May 1	May 12	May 11	May 11	May 21	May 2	May 2	May 11	May 8	May 2
Chat .....	May 31	May 16	May 11	May 11	May 12	May 8	May 8	May 12	May 11	May 11	May 21	May 5	May 5	May 11	May 8	May 2
Canada Warbler .....	May 8	May 11	May 11	May 11	May 11	May 8	May 5	May 5	May 3	May 11	May 12	May 5	May 5	May 11	May 8	May 2
Redstart .....	May 2	May 5	Apr. 29	Apr. 27	Apr. 29	May 1	May 1	May 1	Apr. 28	May 5	May 11	May 4	May 4	May 11	May 8	Apr. 25
Catbird .....	Apr. 28	May 4	Apr. 26	Apr. 27	Apr. 27	Apr. 26	Apr. 26	Apr. 29	Apr. 26	Apr. 27	Apr. 27	Apr. 25	Apr. 27	Apr. 27	Apr. 29	Apr. 23
Brown Thrasher .....	Apr. 28	May 11	Apr. 26	Apr. 28	May 5	May 1	Apr. 26	May 1	Apr. 27	May 30	Apr. 27	Apr. 27	Apr. 27	Apr. 27	Apr. 29	Apr. 23
House Wren .....	May 18	May 18	Apr. 21	Apr. 20	Apr. 21	Apr. 21	Apr. 21	Apr. 18	Apr. 18	May 1	May 1	May 2	May 2	May 2	May 8	May 2
Long-bill'd Marsh Wren .....	Apr. 12	Apr. 21	Apr. 21	Apr. 20	Apr. 21	Apr. 21	Apr. 21	Apr. 18	Apr. 18	May 1	May 1	May 2	May 2	May 2	May 12	May 2
Ruby-crowned Kinglet .....	May 1	May 4	Apr. 28	Apr. 30	Apr. 27	Apr. 26	Apr. 26	Apr. 27	Apr. 27	May 2	May 6	May 2	May 2	May 4	Apr. 22	Apr. 27
Wood Thrush .....	May 12	May 19	May 11	May 9	May 11	May 4	May 5	May 5	May 6	May 5	May 12	May 2	May 2	May 11	Apr. 25	May 2
Wilson's Thrush .....	May 23	May 19	May 18	May 17	May 12	May 17	May 2	May 5	May 6	May 5	May 12	May 2	May 2	May 11	Apr. 25	May 2
Gray-cheeked Thrush .....	May 23	May 19	May 18	May 17	May 12	May 17	May 2	May 5	May 6	May 5	May 12	May 2	May 2	May 11	Apr. 25	May 2
Olive-backed Thrush .....	Apr. 22	Apr. 21	Apr. 7	Apr. 6	Apr. 18	Apr. 14	Apr. 21	Apr. 6	Apr. 13	Apr. 6	Apr. 14	Apr. 20	Apr. 20	Apr. 22	Apr. 3	Apr. 19
Hermit Thrush .....	Mar. 3	Mar. 17	Mar. 13	Mar. 14	Mar. 14	Mar. 14	Mar. 14	Mar. 14	Mar. 8	Mar. 9	Mar. 14	Mar. 14	Mar. 14	Mar. 23	Mar. 14	Mar. 9
Robin .....	Res.	Feb. 23	Res.	Feb. 12	Feb. 12	Feb. 26	Mar. 3	Mar. 3	Res.	Feb. 14	Mar. 15	Feb. 17	Mar. 30	Mar. 15	Mar. 5	Mar. 8
Bluebird .....	Res.	Feb. 23	Res.	Feb. 12	Feb. 12	Feb. 26	Mar. 3	Mar. 3	Res.	Feb. 14	Mar. 15	Feb. 17	Mar. 30	Mar. 15	Mar. 5	Mar. 8

NAME	Cape May, N. J.	Vineland, N. J.	Downtown, N. J.	Kenneth Square, Pa.	Mendenhall, Pa.	Concordville, Pa.	Westtown, Pa.	Rancocas, N. J.	Beverly, N. J.	Burlington, N. J.	Bristol, Pa.	Bordentown, N. J.	Yardville, N. J.	Trenton, N. J.	Princeton, N. J.	Glenside, Pa.	Ft. Washington, Pa.	Woodbourne, Pa.	George School, Pa.	Easton, Pa.	Perkasie, Pa.	Columbia, Pa.	Martetta, Pa.	Lopez, Pa.
Flicker	Res.	May 10	Mar. 23	Mar. 23	Mar. 23	Mar. 17	Mar. 17	Mar. 24	Mar. 17	Mar. 17	Mar. 20	Feb. 13	Mar. 22	Apr. 26	Feb. 18	Apr. 29	Mar. 6	Mar. 16	Mar. 16	Mar. 19	Mar. 16	Mar. 24	Res.	Apr. 4
Whip-poor-will	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Nighthawk	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chimney Swift	Apr. 30	May 2	May 3	Apr. 26	May 1	Apr. 26	Apr. 23	Apr. 27	Apr. 25	Apr. 26	Apr. 26	Apr. 21	Apr. 29	May 15	Apr. 26	May 6	May 21	Apr. 30	Apr. 22	Apr. 30	May 18	May 2	Apr. 20	Apr. 20
Hummingbird	May 1	May 12	May 1	May 10	May 7	May 7	May 7	May 12	May 12	May 14	May 14	May 14	May 17	May 3	May 8	May 18	Apr. 30	Apr. 26	Apr. 22	Apr. 30	May 10	May 2	Apr. 26	Apr. 26
Kingbird	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Crested Flycatcher	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Phoebe	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bobolink	May 11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cowbird	Res.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Red-winged Blackbird	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Baltimore Oriole	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Purple Grackle	Feb. 2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chipping Sparrow	Mar. 21	Mar. 27	Mar. 28	Mar. 29	Apr. 26	Mar. 26	Apr. 21	Mar. 28	Mar. 24	Mar. 24	Mar. 29	Mar. 23	Mar. 23	Mar. 27	Apr. 3	Mar. 21	Mar. 29	Mar. 28	Mar. 28	Mar. 30	Mar. 29	Mar. 24	Apr. 3	Apr. 27
Chewink	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Indigobird	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Scarlet Tanager	May 11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Purple Martin	Apr. 25	Apr. 23	Apr. 25	Apr. 23	Apr. 23	Apr. 22	Apr. 22	Apr. 28	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Barn Swallow	Apr. 25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Red-eyed Vireo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Black and White Warbler	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chestnut-sided Warbler	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ovenbird	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Maryland Yellowthroat	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chat	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Catbird	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Brown Thrasher	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
House Wren	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wood Thrush	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hermit Thrush	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Robin	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bluebird	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Midway between Trenton and Bordentown.

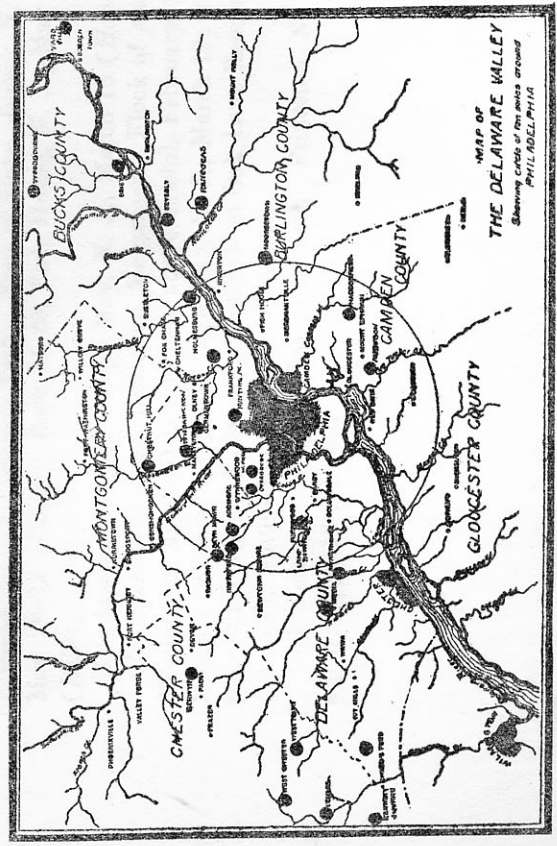


TABLE II.

SPRING MIGRATION, 1907.

EARLIEST DATES OF ARRIVAL OF THIRTY-TWO SPECIES AT TWENTY-FOUR STATIONS OUTSIDE THE PHILADELPHIA CIRCLE.

*List of Other Species Reported by Observers During 1907, and  
Additional Notes. Winter Notes Relate to Winter of  
1906-7. Localities are in Pennsylvania  
Unless Otherwise Indicated.*

*Colymbus auritus*, Horned Grebe. One on Broomall's Lake, Media, April 16 (Allen); Wayne, April 26 (Redfield and Pearson); Richmond, Phila., April 29 (Miller).

*Podilymbus podiceps*, Pied-billed Grebe. Beverly, N. J., April 10-25 (Street); Easton, March 30 (Marx); one shot October 29, 1906, La Anna, Pike Co., Pa. (Harlow); Bridesburg, Phila., March 19 (Miller); Tinicum, March 23, April 6 and 13 (Redfield); Wayne, one, March 30-April 20 (Pearson); Princeton, N. J., November 5, 1905 and April 8, 1906 (Rogers).

*Gavia imber*, Loon. Cape May, N. J., May 9; heard several in fog (Hand).

*Larus argentatus*, Herring Gull. Plentiful on the coast and on the lower Delaware throughout the winter. Occurred Sept. 3 to May 12 at Frankford (Miller); casual at Trenton, N. J., (Abbott); occurred in early spring on the Susquehanna at Columbia (Rochow); last seen at Tinicum, April 16 (Harlow); Princeton, N. J., January 13, March 18 and 23 (Rogers).

*Larus atricapillus*, Laughing Gull. Colony at Stone Harbor, N. J., visited May 28-29; birds estimated at 500, some nests were noted with one egg each, others empty. No extended search was made for fear of disturbing the birds (Carter). Cape May, N. J., arrived April 11 (Hand).

*Sterna hirundo*, Common Tern. Four at Stone Harbor, N. J., May 28-29 (Carter); flock of 20, Fish House, N. J., May 16 (Miller).

*Sula bassana*, Gannet. Cape May, N. J., March 18 (Hand).

*Merganser americanus*, American Merganser. Flock of about 20 wintered on the Delaware just above Bristol, February 10-March 3 (Keim and Morris); Cape May, N. J., March 19; very plentiful April 8-13 (Hand); wintered on Oak Lane Reservoir (Harlow), wintered at Tinicum (Harlow).

*Lophodytes cucullatus*, Hooded Merganser. Princeton, N. J., a pair, April 16 (Rogers).

*Anas boschas*, Mallard. Bristol, March 23 (*Keim and Morris*); frequent during March at Tinicum (*Harlow*).

*Anas obscura*, Black Duck. Bristol, March 23 (*Keim and Morris*); Tinicum, one shot April 13 (*Pearson and Redfield*); Princeton, N. J., flock of four April 8 (*Rogers*); Cape May, N. J., May 24; Pike Co., Pa., five November 1, 1906 (*Harlow*).

*Querquedula discors*, Blue-winged Teal. Common during March at Tinicum (*Harlow*).

*Glaucionetta clangula*, Goldeneye Duck. Winter resident at Tinicum (*Harlow*).

*Charitonetta albeola*, Bufflehead. Beach Haven, N. J., March 12 (*Harlow*); Princeton, N. J., a pair March 17 (*Rogers*).

*Branta canadensis*, Canada Goose. Last seen at Edge Hill, December 5, 1906 (*Harlow*); all winter on the Delaware at Richmond, Phila. (*Miller*).

*Botaurus lentiginosus*, American Bittern. Yardville, N. J., May 5 (*Allinson*); Radnor, Sep. 2, 1906 (*Pearson*); April 8 (*Rogers*); Cape May, N. J., April 25 (*Hand*); Frankford, March 27 and W. Palmyra, N. J., May 19 (*Miller*).

*Botaurus exilis*, Least Bittern. Pensauken, N. J., May 19 (*Hunt*); arrived at Richmond, Phila., in April, had eggs May 29 (*Miller*).

*Ardea herodias*, Great Blue Heron. Media, May 19 (*A. Fusesell*); Kennett Square, April 9 (*Pennock*); Yardville, N. J., May 12 (*Allinson*); Fort Washington, March 30 (*Camblos*); Radnor, April 13 (*Patton*); April 17 (*Pearson*); May 11-12 (*Redfield*); Princeton, N. J., Oct. 8, 1905, May 12, 1907 (*Rogers*); Cape May, N. J., March 14 (*Hand*); Frankford, March 27 (*Miller*).

*Herodias egretta*, White Egret. One along Ridley Creek, April 21 (*Allen*); one shot at Cheltenham, last of July, 1906 (*Harlow*).

*Nycticorax n. naevius*, Night Heron. Wayne April 23 (*Pearson*); about 20 pairs nesting at Valley Forge, May 30 (*Redfield*).

*Rallus elegans*, King Rail. Nest found at Tinicum, May 26, contained seven eggs, June 2 (*Carter*).

*Rallus crepitans*, Clapper Rail. Two nests with eggs, Stone Harbor, N. J., May 28-29 (*Carter*); Cape May, N. J., March 14 (*Hand*).

*Ionornis martinica*, Purple Gallinule. Cape May, N. J., May 10 (*Hand*).

*Gallinula galeata*, Florida Gallinula. Richmond, Phila., arrived April 28, had eggs May 29 (*Miller*).

*Philohela minor*, Woodcock. Ardmore, March 3 (*Baily*); old with half-grown young, April 26, on Maurice River, N. J., (*Prince*); Woodbourne, Nov. 1, 1906 (*Keim* and *Morris*); plentiful at Cape May, N. J., during and immediately after each cold snap with strong N. W. winds, strings of 10 to 42 killed during October and November, 1906, arrived March 14, 1907 (*Hand*); Wayne, April 13 (*Pearson*); Princeton, N. J., March 18 and 25, 1906 (*Rogers*).

*Gallinago delicata*, Wilson's Snipe. Bristol, March 28 (*Keim* and *Morris*); Perkasio, April 23 (*Rutter*); Glenside, April 23 (*Harlow*); Radnor, May 4 (*Patton*); Princeton, N. J., April 8 and 21 (*Rogers*); Radnor Hunt, April 27 (*Redfield* and *Pearson*); Cape May, N. J., March 14, very plentiful April 8-10 (*Hand*).

*Tringa canutus*, Knot. Saw 25 "Robin-breast snipe" that had been shot, Cape May, N. J., May 29 (*Hand*).

*Tringa minutilla*, Least Sandpiper. Cape May, N. J., April 25 (*Hand*); two at Princeton, N. J., May 29, 1906 (*Rogers*).

*Ereunetes pusillus*, Semipalmated Sandpiper. Bridesburg, May 14 (*Miller*); four at Princeton, N. J., May 29, 1906 (*Rogers*); Cape May, N. J., March 14 (*Hand*); flock of 15 at Richmond, Phila., May 17 (*Miller*).

*Totanus melanoleucus*, Greater Yellowlegs. Oxford Valley near Bristol, Nov. 1, 1906 (*Keim* and *Morris*); one at Tinicum, May 26 (*Carter*); Wayne, April 25 (*Pearson*) May 25 (*Redfield*).

*Helodromas solitarius*, Solitary Sandpiper. Near Trenton, N. J., still present May 30 (*Abbott*); Frankford last seen May 23 (*Miller*).

*Bartramia longicauda*, Bartramian Sandpiper. Mendenhall, May 6 (*W. Carter*); Norristown, April 24 (*Roberts*); George School, May 1, (*Roberts*); Fish House, N. J., May 12 (*Miller*).

*Numenius hudsonicus*, Hudsonian Curlew. Stone Harbor, N. J., May 28-29 (*Carter*); Cape May, N. J., arrived April 12, "ten days ahead of usual time" saw flock of 50. "On May 23, found a Curlew 'roost,' a place where they sit during the night. It was conspicuous from the tracks and droppings, the ground being quite white. Went out in the evening to see them

come in. They came from 7.50 to 8 p. m. in big bunches with little or no whistling, but their wings roared like ducks. The flocks were so big I could not imagine where so many birds spend the day without being seen. Had it not been for the moon I could not have been able to see them'' (*Hand*).

*Squatarola squatarola*, Black-bellied Plover. Stone Harbor, N. J., May 28-29 (*Carter*); Cape May, N. J., May 20, 25 and 29 (*Hand*).

*Aegialitis semipalmata*, Ring-neck Plover. Stone Harbor, N. J., May 28-29 (*Carter*).

*Oxyechus vociferus*, Killdeer. Half-grown young at Vineland, N. J., May 21 (*Prince*); last seen at Glenside, November 1, (*Harlow*); Tinicum, April 16 (*Harlow*).

*Arenaria interpres*, Turnstone. Cape May, N. J., May 20, 25 and 29 (*Hand*).

*Colinus virginianus*, Bobwhite. Edge Hill, May 1 (*Harlow*); Tinicum, July 3 (*Harlow*); Pt. Kennedy, May 30 (*Patton* and *Pearson*).

*Zenaidura macroura*, Mourning Dove. Edge Hill, December 24 (*Harlow*.)

*Circus hudsonius*, Marsh Hawk. Wintered at Cape May, N. J., (*Hand*); none seen at Concordville where it usually winters (*Styer*); none on the Bridesburg Meadows (*Miller*). Seen now and then in the interior, Glenside, November 4 (*Harlow*); Ardmore, May 12 (*Baily*); Radnor, September 29 and March 3 (*Patton*); Edge Hill, November 4 and April 6, scarce (*Harlow*); wintered plentifully at Tinicum, October to April 16 (*Harlow*).

*Accipiter velox*, Sharp-shinned Hawk. Irregular resident, rather scarce during winter at Glenside (*Harlow*); nest with eggs, May 13 (*Miller*); arrived at Lopez April 1 (*Behr*); one shot with a robin in its claws, May 7, Mendenhall (*W. Carter*); Princeton, N. J., April 24 and May 21 (*Rogers*); nest just finished, Cape May, N. J., May 27 (*Harrower*).

*Accipiter cooperi*, Cooper's Hawk. Rare at Trenton, N. J., October-May (*Abbott*); one at Bristol, October 20 to March 17 (*Keim*); resident at Glenside but scarce, nest and eggs April 20 (*Harlow*); two or three all winter at Frankford (*Miller*); one shot at Mendenhall, May 1, was very destructive to chicks during April (*W. Carter*).

*Astur atricapillus*, Goshawk. One seen at Fort Washington, February 26 and March 3; one shot in December (*Camblos*); one shot at Argus in November (*Rutter*); Edge Hill, January 5 (*Harlow*).

*Buteo borealis*, Red-tailed Hawk. Generally winter resident; last seen at Glenside, April 22 (*Harlow*); Radnor, November 10 to April 6 (*Redfield*); Frankford, September 11 to May (*Miller*); nesting at Trenton, N. J., March 22 (*Abbott*); Tinicum, last seen April 16; Princeton, N. J., October 15 to May 7 (*Rogers*).

*Buteo lineatus*, Red-shouldered Hawk. Winter resident at many stations, Radnor, October 14–May 4 (*Pierson*), Frankford, October 16–April 30 (*Miller*); last seen at Glenside, April 20 (*Harlow*); Princeton, N. J., October 22–February 18 (*Rogers*).

*Buteo platypterus*, Broad-winged Hawk. Wayne, April 25 (*Redfield*); nest June 1 (*Patton*); Princeton, N. J., February 7, June 3, December 9, 1906, and April 22, May 22, 1907 (*Rogers*).

*Archibuteo lagopus sancti-johannis*, Rough-legged Hawk. Princeton, N. J., January 30, February 15 and December 11, 1906 (*Rogers*).

*Haliaeetus leucocephalus*, Bald Eagle. Stone Harbor, N. J., May 28 (*Carter*); Nockamixon, April 18 (*Harlow*); Cape May, N. J., April 14 (*Hand*).

*Falco peregrinus anatum*, Duck Hawk. Princeton, N. J., Jan. 24, 1906 (*Rogers*).

*Falco columbarius*, Pigeon Hawk. West Phila., March 6 (*Carter*); Princeton, N. J., April 21 (*Rogers*).

*Falco sparverius*, Sparrow Hawk. Resident generally, rather scarce in winter; arrived at Lopez, March 27 (*Behr*).

*Pandion haliaetus carolinensis*, Osprey. Cape May, N. J., March 21 (*Hand*).

*Asio wilsonianus*, Long-eared Owl. One seen flying about Yardville at dusk, did not roost in firs as usual (*Allinson*); Frequently seen at Glenside, August 12–March, two flocks, one of six, the other of four; wintered (*Harlow*).

*Asio accipitrinus*, Short-eared Owl. Edge Hill, March 3 (two) and noticed at intervals until May 28 (*Harlow*); Tinicum, April 6 and April 13 (*Redfield* and *Pearson*).

*Nyctala acadica*, Saw-whet Owl. Edge Hill, Dec. 13, 1906, and one shot LaAnna, Pike Co., Nov. 1, 1906 (*Harlow*).

*Megascops asio*, Screech Owl. Resident, had eggs at Frankford, March 23 (*Miller*).

*Ceryle alcyon*, Kingfisher. One at Holmesburg throughout Jan. and Feb. (*Fowler*); One wintered at Tinicum (*Harlow*).

*Dryobates villosus*, Hairy Woodpecker. Common winter resident at Glenside, two pairs bred (*Harlow*); winter resident at Radnor, Ardmore, etc. Concordville, April 20 (*Styer*); Perkasie, April 27, May 3 (*Rutter*); Media, Feb. 19 (*Allen*); Swarthmore, Jan. 2, March 8, (*Palmer*); Collingdale, Feb. 9 (*Lorriliere*); Vineland, N. J., April 29 (*Prince*); eggs at Pensauken, N. J., May 11 (*Miller*).

*Dryobates pubescens medianus*, Downy Woodpecker. Common resident, most abundant in winter east of the mountains. West of Glenside, May 21 (*Harlow*); scarcer than usual at Downstown, N. J. (*Fair*).

*Sphyrapicus thyroides*, Yellow-bellied Sapsucker. Edge Hill, Dec. 27, 1906 (*Harlow*); Wayne last seen April 18 (*Redfield*); Princeton, N. J., April 20-21 (*Rogers*.)

*Melanerpes erythrocephalus*, Red-headed Woodpecker. "A bird in the juvenal plumage arrived at Yardville, N. J., the latter part of October and remained until the middle of May. He molted during this time, the red becoming apparent early in February. He would drive the Downy Woodpecker, Nuthatches and other birds from the suet we had put up, tear off a piece and put it in cracks in the bark, a hole in the clothes-line post or any convenient place, scolding all the while. Another favorite occupation was to pick holes in the shingle roofs. Saw another individual in May" (*Allinson*).

*Colaptes auratus luteus*, Flicker. Radnor, December 15, Ardmore, December 19, Paoli, February 16 (*Redfield*).

*Trochilus colubris*, Hummingbird. Nest and eggs, Swarthmore, June 13 (*Harrower*).

*Sayornis phoebe*, Phoebe. Nest with eggs, Swarthmore, May 9 (*Harrower*); new nest, Fox Chase, Phila., March 22 (*Miller*); beginning nest at Haverford, March 28, and Paoli, March 29 (*Redfield*); one wintered at Wayne, 1905-6 (*Pearson*).

*Nuttallornis borealis*, Olive-sided Flycatcher. Arrived at Lopez, June 10.

*Empidonax virescens*, Acadian Flycatcher. Nest and three eggs, Swarthmore, June 13 (*Harrower*).

*Empidonax flaviventris*, Yellow-bellied Flycatcher. Kennett Square, June 2 (*Pennock*); Burlington, N. J., May 19 (*Carter*).

*Otocoris alpestris*, Horned Lark. Flocks all winter at Cape May, N. J., (*Hand*); November to April at Trenton, N. J. (*Abbott*); Downstown, N. J., February 8 (*Fair*); Concordville, February 6 (*Styer*); Bristol, December 29—March 10 (*Keim*); Tinicum, January 1 (*Lorrilliere*); Glenside, March 8 and 11 (*Harlow*); George School, February 9 (*Parker*); Tinicum, January 1-18 (*Harlow*); flock of seven at Princeton, N. J., November 12, 1905; 50 on January 7, 1906, and 19 on February 7, 1907.

*Cyanocitta cristata*, Blue Jay. Reported as plentiful at Trenton, Yardville, N. J., Kennett Square and some other stations but generally considered unusually scarce during the winter of 1906-7. Not seen until May 11 at Swarthmore (*Palmer*); April 29 at Lansdowne (*A. D. White*); April 28 at Radnor (*Redfield*), May at Frankford, (*Miller*); May 6 at Mendenhall (*Carter*).

*Corvus ossifragus*, Fish Crow. Observed at Fox Chase, Holmesburg, Frankford, Bristol and Trenton, N. J. Also on the coast at Cape May, N. J. Nest and eggs, Tinicum, April 16 (*Harlow*).

*Corvus brachyrhynchos*, Crow. Generally abundant resident, scarcer than usual at Downstown, N. J. (*Fair*); only about one-quarter of the usual number in the daily flight at Concordville (*Styer*); eggs April 5 at Glenside (*Harlow*); eggs April 4, young April 18 at Holmesburg (*Miller*); eggs Swarthmore April 6 (*Harrower*).

*Sturnus vulgaris*, European Starling. Princeton, N. J., first noted Dec., 1905, flock of 21 on June 8, 1907, now permanent resident (*Rogers*).

*Dolichonyx oryzivorus*, Bobolink. Remained at Ardmore until June 5 (*Baily*); male in abnormal plumage, Tinicum, June 8 (*Miller*).

*Agelaius phoeniceus*, Red-winged Blackbird. Moorestown, N. J., Nov. 25, 1906 (*Evans*).

*Sturnella magna*, Meadow Lark. Wintered at Wayne (*Redfield*).

*Euphagus carolinus*, Rusty Blackbird. Tinicum, Feb. 10 (Carter); flock wintered at Tinicum (Harlow).

*Quiscalus quiscula*, Purple Grackle. Eggs Swarthmore, April 27 (Harrower); one stayed through Dec. and Jan. at Ardmore (Baily); one at Rosemont, Dec. 13, 1906 (Redfield).

*Carpodacus purpureus*, Purple Finch. Occurred Oct. 7–May 24 at Radnor (Redfield); Dec. 23–May 18, at George School (Packer); Oct. 11–May 17, at Easton (Marx); arrived during Feb. at Lansdowne, Ardmore, Olney, Beverly, N. J., and Trenton N. J. Observed March 14, at Oak Lane (Allen); March 24, at Moorestown, N. J. (Evans); very plentiful May 1–10, at Haverford (Linton); May 4–8, at Concordville (Styer); May 12, at Media (Allen); arrived at Lopez, April 27 (Behr).

*Loxia curvirostra minor*, Crossbill. A single bird Lansdowne, May 22 (Carter); Moorestown, N. J., Dec. 16, 1906 (Evans).

*Loxia leucoptera*, White-winged Crossbill. Occurred at Lopez, from end of Oct. 1906, to Feb., the first time they have been here for several years (Behr).

*Acanthis linaria*, Redpoll. Media, Feb. 23, flock of six, during bitter cold weather (Allen); five seen March 3, (Moore); Swarthmore, Feb. 13 (Harrower); Clifton, March 9, flock of 200 (Harrower); Kennett Square, Feb. 25, flock of 30–40, March 13, two (Pennock); Paoli, Feb. 16, and Wayne, March 9–14 (Redfield); four with Goldfinches at Princeton, N. J., Feb. 18, two on March 17 (Rogers).

*Astragalinus tristis*, Goldfinch. Generally resident but less common and at some stations absent during the winter.

*Spinus pinus*, Pine Finch. Atlantic City, N. J., Feb. 6 (Evans); Ridley Park, Jan. 5 (Harrower); Lansdowne, Jan. 6, Feb. 20–21 (Carter); Tinicum, Feb. 10 (Carter); Edge Hill, Dec. 24, 1906 (twenty) (Harlow); several, all winter at Frankford (Miller); St. Davids, Oct. 27, 1906 and Feb. 13–16, at Wayne, (Redfield); Princeton, N. J., Oct. 13–15, 1906, and two on May 16–17, 1907 (Rogers).

*Poæcetes gramineus*, Vesper Sparrow. Pensauken, N. J., young left nest May 26 (Hunt); eggs May 12 (Harlow).

*Ammodramus henslowi*, Henslow's Sparrow. Three pairs seen near Cape May, N. J., May 24 (Harlow); Princeton, N. J., May 5 (Rogers).

*Zonotrichia leucophrys*, White-crowned Sparrow. Lansdowne, May 8 (*W. R. White*); Princeton, N. J., Oct. 14, 1906, and May 21, 1907, one each time (*Rogers*).

*Zonotrichia albicollis*, White-throated Sparrow. Arrived in autumn, 1906, at Frankford, Sept. 11, Radnor, Sept. 15 (*Patton*); Germantown, Sept. 20 (*Brewer*); Bryn Mawr, Sept. 24 (*Thomas*); last seen Bryn Mawr, May 8; Mendenhall, May 10; Swarthmore and Germantown, May 11; Media, Concordville and Kennett Square, May 12; Moorestown, N. J., May 13; Haverford, May 15; George School, May 17; Pensauken N. J., and Glenside, May 19; Lansdowne, May 20; Radnor, May 29 (*Pearson*); Frankford, May 30; spring migrants arrived at Olney Mar. 14; Yardville, N. J., Mar. 24; reached Easton Mar. 26, and Lopez, Apr. 29; Princeton, N. J., Oct. 13–Nov. 4, 1906, and April 7–May 12, 1907 (*Rogers*).

*Spizella monticola*, Tree Sparrow. Arrived in autumn, 1906; at Frankford, Oct. 1; Moorestown, Oct. 2; Radnor, Oct. 12; Princeton, N. J., Nov. 4; Easton, Nov. 17; last seen in spring 1907; Bristol, Mar. 17; George School, Mar. 30; Radnor, April 13; Tincum, Apr. 16 (*Harlow*); Glenside, April 18; Princeton, N. J., Apr. 22; Easton, May 2.

*Spizella pusilla*, Field Sparrow. Radnor, Dec. 15, 1906, and Feb. 17; also at Tincum, Feb. 22 (*Redfield*); Edge Hill, Dec. 29 (several) (*Harlow*); wintered at Tincum (*Harlow*).

*Junco hyemalis*, Junco. Arrived in autumn, 1906; at Radnor (*Pearson*) and Bryn Mawr (*Thomas*), Sept. 28; Frankford, Oct. 1; Germantown, Oct. 4; George School, Pa., and Bordentown, N. J., Oct. 10; Media, Oct. 13; Princeton, N. J., Oct. 14; Easton, Oct. 25; Moorestown, N. J., Oct. 28; last seen in spring, 1907; Yardville, N. J., Media and Bryn Mawr, Apr. 21; Holmesburg, Apr. 22; Downstown, N. J. and Bristol, Apr. 23; Westtown, Apr. 24; Frankford and Perkasio, Apr. 27; Princeton, N. J., Glenside and Concordville, Apr. 28; George School, May 1; Easton, May 2; Pensauken, N. J., May 5; Marietta, May 10; Bordentown, N. J. and Radnor, May 12; Germantown, May 18; absent from the Alleghany plateau at Lopez from Dec. to Mar. 1.

*Melospiza cinerea melodia*, Song Sparrow. Generally resident

east of the mountains, most plentiful in the river bottoms; eggs May 1 at Frankford, and young out of the nest May 15 at Torresdale (*Miller*); arrived at Lopez on top of the Alleghanies, Mar. 8.

*Melospiza georgiana*, Swamp Sparrow: Tinicum, four nests with eggs, May 26 (*Carter*); wintered at Tinicum (*Harlow*) and at Bridesburg (*Miller*).

*Passerella iliaca*, Fox Sparrow. Lansdowne, Jan. 6, singing (*Carter*); Wayne last seen Mar. 28 (*Redfield*); Princeton, N. J., Nov. 4–Dec. 11, 1906; Mar. 17–Apr. 8, 1907 (*Rogers*); very scarce at Lopez where they are usually common in spring (*Behr*).

*Pipilo erythrophthalmus*, Chewink. Swarthmore, January 1 (*Harrower*).

*Cardinalis cardinalis*, Cardinal. Resident all along the low grounds of the Delaware from Trenton south, one pair wintered at Ardmore (*Baily*); young left nest May 15 at Wissahickon (*Pickering*) and Torresdale (*Miller*).

*Zamelodia ludoviciana*, Rose-breasted Grosbeak. Nest and eggs, Torresdale, May 28 (*Miller*); great flight on May 12 at Edge Hill, (*Harlow*).

*Lanius borealis*, Northern Shrike. Trenton, N. J., seen several times (*Abbott*); once at Beverly, N. J. (*Street*); Easton, February 5–26 (*Marx*); Princeton, N. J., February 17 (*Rogers*).

*Lanius ludovicianus migrans*, Migrant Shrike. One at Moorestown, N. J., March 8–29, (*Mickle*); Ardmore, March 16 (*Baily*); Bristol, March 3 (*Keim*); Edge Hill, November 22, one shot (*Harlow*).

*Vireo flavifrons*, Yellow-throated Vireo. At least three pairs bred at Yardville, N. J. (*Allinson*).

*Vireo noveboracensis*, White-eyed Vireo. Nest and eggs, Bustleton, May 23 (*Miller*).

*Helminthophila chrysoptera*, Golden-winged Warbler. Moorestown, N. J., May 12 (*Evans*); May 11, four at Swarthmore (*Palmer* and *Harrower*); Burlington, N. J., May 19 (*Carter*); Yardville, N. J., May 24, (*Allinson*); St. Davids, May 11 (*Redfield*); Edge Hill, May 10 (*Harlow*); Frankford, May 4 (*Miller*).

*Helminthophila peregrina*, Tennessee Warbler. Princeton, N. J., May 22 (Rogers).

*Helminthophila rubricapilla*, Nashville Warbler. Moorestown, N. J., May 8 (Mickle); Yardville, N. J., May 12 (Allinson); Edge Hill, May 12, (Harlow); Wayne, May 12 (Redfield); Frankford, May 3 and 21 (Miller).

*Dendroica coronata*, Myrtle Warbler. Ridley Park, January 5 (Harrower).

*Dendroica castanea*, Bay-breasted Warbler. Media, May 31 (Fussell); May 21 (Moore) and May 28 (A. Fussell); Swarthmore, May 11, 20, 29 (Harrower); Lansdowne, May 19 (A. D. White); Ardmore, May 19 (Baily); Bryn Mawr, May 30 (Thomas); Kennett Square, May 25 (Pennock); Yardville, N. J., May 19 (Allinson); Wayne, May 30 (Redfield and Pearson).

*Dendroica striata*, Blackpoll Warbler. Moorestown, N. J., still present June 16 (Evans); Ardmore, June 16 (Baily).

*Seiurus moticilla*, Louisiana Water Thrush. Moorestown, N. J., Sept. 9-10, 1906 (Evans); Fox Chase, Phila., April 22 (Miller).

*Geothlypis philadelphia*, Mourning Warbler. One at Lansdowne, June 11, it was heard singing for two or three days especially in the early morning, before it was identified (Carter); Edge Hill, one at close range May 12, and another June 1 positively identified (Harlow); Holmesburg, May 21, "identification positive" (Miller).

*Wilsonia mitrata*, Hooded Warbler. Media, May 21 (Allen); May 12 (Fussell); Ardmore, May 12 (Baily); Germantown, May 14 (Brewer); May 11 (Hill); George School, May 12, (Roberts); Radnor, May 11 (Redfield, Pearson and Patton); Princeton, N. J., May 11-12 (Rogers).

*Wilsonia pusilla*, Wilson's Warbler. Pensauken, N. J., May 19 (Hunt); Media, May 30 (Fussell); May 21 (Moore); Haverford, May 15 (Linton); Chestnut Hill, May 26 (Trotter); Kennett Square, May 30 (Pennock); Edge Hill, May 12 (Harlow); Wayne, May 18-30 (Redfield and Pearson); Princeton, N. J., May 16, 1906 (Rogers).

*Wilsonia canadensis*, Canada Warbler. Moorestown, N. J., still present June 4 (Evans).

*Setophaga ruticilla*, Redstart. Moorestown, N. J., still present June 4 (*Evans*); June 9, Ardmore (*Baily*).

*Anthus pensilvanicus*, Titlark. Kennett Square, Apr. 9, flock 30-40 (*Pennock*); near Trenton Apr. 19 during snow storm (*Abbott*); Tinicum, Apr. 6 and 13 (*Redfield* and *Pearson*); Ithan, Apr. 14; Wayne, Apr. 25-27 (*Redfield*); Princeton, N. J., Oct. 14-27, 1906, and Apr. 8-May 12, 1907 (*Rogers*); Frankford, March 19, and flock of 30-35 at Lawndale April 22 (*Miller*).

*Galeoscoptes carolinensis*, Catbird. Great flight of Catbirds and other small birds May 8 at Cape May, N. J.; moved southwest with fog during previous night, saw 40 to 45 Catbirds (*Hand*); nest and eggs at Radnor May 7 (*Pearson*).

*Toxostoma rufum*, Brown Thrasher. Media, Mar. 17 (*Moore*); Swarthmore, Feb. 12-17 (*Harrower*).

*Thryothorus ludovicianus*, Carolina Wren. Resident locally throughout the lower Delaware Valley; absent from Pensauken, N. J., this year (*Hunt*); one all winter at Ardmore (*Baily*); George School, rare, one seen Sept. 10, 1906.

*Olbiorchilus hiemalis*, Winter Wren. Generally reported as wintering in small numbers. Last seen in spring at Glenside and Easton April 6, George School April 16, Radnor April 18. Did not remain through depth of winter.

*Certhia familiaris americana*, Brown Creeper. Generally present throughout the winter; last seen at Princeton, N. J., April 21, Radnor April 28, Germantown April 6, Frankford, April 16, Moorestown, N. J., May 3 (*Mickle*); arrived at Frankford October 2, 1906, Radnor September 28, Germantown October 4; permanently resident at Lopez.

*Sitta carolinensis*, White-breasted Nuthatch. Generally reported as more plentiful than usual throughout the winter, mostly disappearing in spring.

*Sitta canadensis*, Red-breasted Nuthatch. Moorestown N. J., continually from early November to February 13 (*Evans*), also October 9-31 (*Mickle*); Media, September 21, October 2-3, 1906 (*Allen*), Haverford, May 6 (*Linton*); Holmesburg, May 3, plentiful during autumn, 1906, at Frankford (*Miller*); Wayne, September 28, October 27, 1906 (*Redfield* and *Pearson*).

*Bæolophus bicolor*, Tufted Titmouse. Resident in the low grounds of the Delaware valley; rare at Glenside, very rare at Ft. Washington; eggs May 10 Edge Hill (*Harlow*).

*Penthestes atricapillus*, Black-capped Chickadee. Radnor, Nov. 3–Apr. 3 (*Redfield*); Bristol, Nov. 18–Mar. 17 (*Keim*); Easton, Oct. 23–Apr. 4; present during winter at most stations in Pennsylvania.

*Penthestes carolinensis*, Carolina Chickadee. New Jersey—Vine-land, Downstown and Cape May resident; the status of some of the other records is in doubt, they may refer to either species.

*Regulus satrapa*, Golden-crowned Kinglet. Winter resident at most stations; Germantown, Oct. 4–Apr. 6; Radnor, Sep. 22–Apr. 27; Frankford, Sep. 21–Apr. 23; last seen at Glenside, Apr. 2; at George School, Apr. 21; Princeton, N. J., Oct. 14–Apr. 22 (*Rogers*).

*Regulus calendula*, Ruby-crowned Kinglet. Last seen at Wayne May 10 (*Redfield*).

*Hylocichla fuscescens*, Wilson's Thrush. Last seen at Wayne, May 30 (*Redfield*).

*Hylocichla ust. swainsoni*, Olive-backed Thrush. Remained at Ardmore, until June 8 (*Baily*); June 6, Oak Lane (*Miller*).

*Hylocichla guttata pallasii*, Hermit Thrush. Haverford, March 14 (*Linton*); last seen at Wayne, May 11, also seen Dec. 5, 1906 (*Redfield*).

*Merula migratoria*, Robin. Had eggs Frankford, April 27 (*Miller*); increased at Cape May, N. J., March 14, March 18 and 19 (*Hand*).

*Sialia sialis*, Bluebird. Had eggs Frankford April 29 (*Miller*); eggs April 5, Edge Hill, (*Harlow*).