winter. Some of them evidently winter in this region. Migration begins at about October 1 and appears to be over at approximately November 20. Thus the period of fall migration is about 50 days.

13. In general, fall migration covers a greater period of time and is less regular than the corresponding spring period. This is true for both Slate-colored Juncos and White-throated Sparrows.

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WINTER RETURNS OF SLATE-COLORED JUNCO AT NORRISTOWN, PENNSYLVANIA

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SLATE-COLORED JUNCOS (*Junco hyemalis hyemalis* (Linn.)) are common winter residents of the countryside surrounding Philadelphia. They arrive at Norristown which is some eighteen miles north of Philadelphia, about October 1st and are present until the last of April; we have only one May record, the 7th in 1940.

Our banding station which is on the edge of a well-built up community with open fields beyond and around three sides is composed of a small deciduous woods, a white pine grove, many thickets and lawn, about five acres in all.

The first flocks to arrive in autumn are rather restless and roving, here one day and missing the next; one has the feeling they are merely transients and must soon press on; when trapped at this time nearly all are taken where water is used as bait. This continues through October and it is only after the fall migration has about ceased and the colder weather of November comes that they begin to show any interest in traps where small grains are used as bait.

Rarely do any of the October birds repeat in the traps and never do we get any returns from them in subsequent years. One may

assume that the first fall arrivals of this species are probably those that started the southward journey first and will continue to lead the migration parade all down the line to the southern limit of their winter range. Likewise in late spring when those that remained here to winter move north as milder temperatures prevail, again we have those late flocks coming through, among them we capture an occasional one of the early fall arrivals from the previous season. These are not included in the tables of returned birds, only those that were taken from one winter to another are so classed.

Juncos roam over all the neighboring farming country and some may remain in the general vicinity throughout the winter without again visiting the traps unless a snowfall covers their natural food supply. When one leaves out the early fall arrivals and also disregard the late spring flocks one finds that the general winter group is here between the middle of November and April 1st, a period of four and a half months. There are a few individuals that become consistent repeaters in the traps and may remain through part of April but the main winter group is nearly all gone early in the month.

We have only nineteen birds that the records prove were present over one hundred days; all were banded in late November or early December, the longest record being 148 days, two having remained for this length of time.

One should always keep in mind that an early or very late snowstorm and a heavy average snowfall not only increases the winter's total capture but may bring the birds in near the traps from nearby fields earlier and also keep them here later than normal.

Before going over the records of those banded each winter and the lists of returned birds a short description of our outfit of traps is in order. When our station was established in July of 1921 we had one government sparrow trap. We continued with this one trap for seven years and in 1928 about 20 traps of three types were constructed and put in use. From then till now more have been added from time to time and at present we have 60 in operation; these are of six different types and about half have water in motion for bait while the balance have small grains that are suitable for the seed-eating birds.

The following table lists the total number of birds banded in each of the months for the period from July, 1921 to July, 1941; it also lists the number of returns taken from each of the monthly totals as well as the months that the returned birds came back in;

	Total Banded	*Total Returns*	*Monthly Returns*
September	1	none	none
October	89	none	none
November	228	9	8

December	366	44	23
January	307	37	47
February	245	25	35
March	225	11	13
April	90	1	1
May	1	none	none

From this table we find that the October banded birds yielded no returns, the November birds gave a 4% return, the December birds gave a 12% return, the January birds gave a 11.75% return, the February birds gave a 10.2% return, the March birds gave a 4.9% return while the April birds only 1.1% return.

The following résumé gives the number of birds banded in each winter as well as the number of returned birds taken in succeeding winters:

1921 & 22— 7 banded, none returned.
1922 & 23— 1 banded, this returned in 1924–25, 1927–28 and 1928–29.
1923 & 24— 21 banded, 1 returned in 1924–25 and 1 in 1926–27.
1924 & 25— 33 banded, 1 returned in 1925–26.
1925 & 26— 16 banded, none returned.
1926 & 27— 15 banded, 1 returned in 1929–30.
1927 & 28— 33 banded, 5 returned in 1928–29, 5 in 1929–30, 2 in 1930–31.
1928 & 29— 76 banded, 2 returned in 1929–30, 1 in 1930–31, 1 in 1931–32, 2 in 1932–33, 2 in 1933–34.
1929 & 30— 72 banded, 1 returned in each of the succeeding 5 winters, the same individual each year.
1930 & 31— 84 banded, 1 returned in 1931–32, 1 in 1932–33, 1 in 1933–34.
1931 & 32—127 banded, 7 returned in 1932–33, 2 in 1933–34, 3 in 1934–35, 3 in 1935–36.
1932 & 33—173 banded, 6 returned in 1933–34, 3 in 1934–35, 3 in 1935–36, 1 in 1936–37.
1933 & 34—199 banded, 8 returned in 1934–35, 5 in 1935–36, 4 in 1936–37, 1 in 1937–38, 1 in 1938–39, 1 in 1941–42.
1934 & 35—102 banded, 6 returned in 1935–36, 3 in 1936–37, 2 in 1937–38, 1 in 1938–39, 1 in 1940–41.
1935 & 36—162 banded, 1 returned in 1936–37, 1 in 1937–38, 1 in 1938–39, 1 in 1939–40.
1936 & 37— 78 banded, 1 returned in 1937–38, 1 in 1938–39.
1937 & 38— 55 banded, 4 returned in 1938–39, 3 in 1939–40, 1 in 1940–41, 1 in 1941–42.
1938 & 39— 80 banded, 3 returned in 1939–40, 2 in 1940–41, 2 in 1941–42.
1939 & 40—137 banded, 3 returned in 1940–41, 5 returned in 1941–42.
1940 & 41— 89 banded, 1 returned in 1941–42.

Thus we find in twenty years 1560 were banded, of these 80 individuals returned to the station in later years, the return percentage being 5.12. It must be kept in mind that those birds banded in the last three winters will probably bring in many returns during the coming three or four winters so that the return percentage is really not a final figure.

The 80 birds that returned also came back in later winters to the

total of 47 times in all. By adding the returned birds that were present each year to the newly banded birds and using this figure to compare the total of 127 actual times they returned we have a percentage return of 7.5.

The following table gives the return records of the 80 birds in later years after they came back for their first time:

80 returned once—of these 28 returned a second year or 35%.
28 returned two years—of these 13 returned three years or 46.4%.
13 returned three years—of these 4 returned 4 years or 31%.
4 returned four years—of these 2 returned 5 years or 50%.

In the twenty years we captured one bird banded elsewhere, on March 15th after having been banded at Belchertown, Massachusetts on the previous November 11th.

Also one banded here on April 3rd was taken by another bander at Rahway, New Jersey, five days later.

Of the 80 birds that returned in later years we find a number of them did not come back the next year after the winter in which they were banded:

20 did not return until two years after being banded.
6 did not return until three years after being banded.
1 did not return until five years after being banded.

The records of the following individuals seem worthy of mention:

31015—banded.....December 6, 1922
returned 1 on January 27, 1925
" 2 on December 22, 1927
" 3 on February 7, 1929
A122801—banded.....November 27, 1928
returned 1 on December 25, 1929
" 2 on March 23, 1931
" 3 on March 10, 1932
" 4 on November 16, 1933
B170269—banded.....January 7, 1932
returned 1 on December 26, 1932
" 2 on November 28, 1933
" 3 on January 14, 1935
" 4 on December 25, 1935
C35309—banded.....December 1, 1929
returned 1 on January 25, 1932
" 2 on February 5, 1933
" 3 on February 9, 1934
" 4 on February 22, 1935
" 5 on January 21, 1936
L73047—banded.....February 16, 1934
returned 1 on February 5, 1935
" 2 on December 27, 1935
" 3 on February 16, 1937
" 4 on March 27, 1938
" 5 on January 21, 1939
34-53865—banded.....December 9, 1934
returned 1 on January 23, 1936
" 2 on January 16, 1941

SUMMARY

The absence of any return records of the first groups to arrive in the fall and the last to depart northward in spring is evidence that these are entirely migratory and do not winter in this area.

Those banded in December, January and February give the highest return percentages.

The amount of snowfall determines the winter's total of birds that will enter the traps.

Very few remain in this area over 100 days in any winter.

Most of the returned birds are taken during January and February.

Those that came back here a second year yield a much higher rate of return for future years than newly banded birds.

Our return records prove that some lived to the following ages:

80 reached the age of 2 years
28 " " " " 3 "
13 " " " " 4 "
4 " " " " 5 "
2 " " " " nearly 7 years

Norristown, Pennsylvania.

ADDITIONAL RETURNS AND RECOVERIES OF THE SNOW BUNTING

By OSCAR MCKINLEY BRYENS

SINCE writing up my returns of the Snow Bunting (*Plectrophenax nivalis nivalis* (Linn.)) for the winter of 1932–33, which appeared in *Bird-Banding*, Oct. 1933, page 206, many more have been recovered and are given below. A few of those listed in past reports have been retaken since that time, and all of the return dates are given.

The additional returns are as follows:

Band Number	*Date Banded*	*Returning Dates*	
B80275	February 28, 1929	January 21, 1931	
		February 19, 1933	Return—2
		January 20, 1934	Return—3
B160566	February 4, 1932	January 18, 1935	
B160580	March 7, 1932	March 3, 1933	
		February 13, 1934	Return—2
B160582	March 8, 1932	January 20, 1934	
B160591	March 11, 1932	February 5, 1933	
		February 23, 1934	Return—2
C98315	January 31, 1931	March 17, 1932	
		February 5, 1933	Return—2
		February 1, 1934	Return—3