

Slate-colored Junco Studies at Mohonk

Preliminary Report
Research Project #1
(file 45.61)

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Bird banding was initiated at Mohonk in 1928 by A. Keith Smiley, Jr. and Daniel Smiley, Jr. Since the ~~S~~late-colored Junco (*Junco hyemalis*) was present as a species all year, we decided to investigate the following three aspects of its ecology. After various interruptions (between 1935 and 1955) these studies are again receiving attention as one of The Mohonk Trust research projects.

1. Is there a continuously resident population of juncos at Mohonk, or does its year-round presence represent summer residents, winter residents and migrants?
2. Where do Mohonk junco migrants come from and go to?
3. Are there characteristics of plumage and external body that can be used to determine sex and age of juncos?

Background - The banding record

From 1928 through 1975 some 5,655 juncos have been banded and 451 returns (retaken after 3 months without intervening handlings) have been recorded. In addition 12 recoveries have been reported. These are birds that were banded at Mohonk and retaken elsewhere, or were banded elsewhere and recaptured at Mohonk.

The following table shows this data by decades to indicate when the study has been carried out:

	<u>Banding</u>	<u>Returns</u>	<u>Foreign Retraps Recoveries</u>
1928 - 1935	2,074	149	2
1936 - 1945	230	30	2
1946 - 1955	22	0	0
1956 - 1965	1,719	142	5
1966 - 1975	<u>1,610</u>	<u>130</u>	<u>4</u>
	5,655	451 8%	13
1976	<u>211</u>	<u>20</u>	<u>1</u>
	5,866	471 8%	14

1. Resident Species or Resident Individuals?

In December 1975 a color banding study was initiated. As background for this, the banding and return information gathered through the years was compiled and studied. In order to classify the data, arrival and departure dates for winter and summer residents -- and hence migrants -- had to be established. These were determined in the following way.

During the fall of 1930; all of 1931, 1932; the first half of 1933; and most of 1938 extensive records of daily observations of species and numbers were recorded. These have been carefully culled for the dates when numbers of juncos began to increase or decrease, from or to the winter to summer ~~and~~ ^{or} summer to winter resident numbers. For other years than the above less complete records of bird observations for the last 50 years have been kept on 3 by 5 cards. These were examined and dates of "early", "height" and "late" migrants were recorded. From this data the extremes of migration dates were established for spring and fall. A few days were added to these extremes at each end to give the following:

Junco migration may occur at Mohonk:

March 10 to April 30
September 1 to November 20

Hence

Winter Residents

November 21 to March 9

Summer Residents

May 1 to August 31

Thus it is assumed that for a junco to be considered a permanent resident its banding and return handlings would have to span a migration and be "winter resident" to "summer resident" or "summer resident" to "winter resident".

The 451 return cards have been studied. Those that met the above criteria as year-round residents are listed in the following tables:

(see Tables I & II)

Nine of the sixteen summer to winter residents (Table 1) were considered hatching year (immature) birds when banded. Of these, in addition to the winter return, two were recaptured ~~and one the second summer~~ the following summer after banding. One of the five juncos banded in winter (as adult) and returning in summer was retrapped again in winter, a little more than two years later.

It is worth noting that, if ~~the~~ hatching year birds and one unknown are omitted, six summer-banded adults returned in winter and five winter-banded adult (AHY) birds returned in summer. I have no doubt that if more consistent trapping through the years

had been possible a greater number of year-round residents would have been recorded.

Of the 22 year-round birds indicated by returns, only four were determined as to sex. These were all males. In view of the article "Geographic Variation and its Climatic Correlates in the Sex Ratio of Eastern Wintering Dark-eyed Juncos" by Ellen Ketterson and Val Nolan, Jr., Ecology (1976) 57: 679-693, this raises the interesting question as to whether only males are year-round residents. A summary of the banding by sex for the last ten years (97 males, 51 females) was subjected to statistical analysis and found not to be significant.

While examining these return cards a number of individual records were noted which did not meet the above criteria (of bridging migrations), but whose pattern and frequency of returns and repeats would strongly suggest that they were ~~in fact~~ permanent residents, ^{which} ~~but~~ did not happen to qualify by getting caught at the right time. As an example: No. 104-41730 was banded (unknown age and sex) on 11/18/'62; returned 5/7/'64; returned 4/14/'65; repeated 5/11/'65; and returned 5/20/'71 when its wing chord of 80 mm. would indicate it was a male.

It should be noted that my banding activity has unfortunately ~~not~~ been ⁱⁿ consistent due to other responsibilities. There were many times, particularly in winter and summer in the last two decades, when banded juncos may have been present ^{ent} at the banding site, but were not recorded because nets and traps were not set.

2. Travels of Mohonk Juncos

During the 49 years of banding at Mohonk there have been seven recoveries of Mohonk banded juncos recorded elsewhere and conversely five birds have been taken at Mohonk that were banded at other stations. The record of these travels is presented in Tables III and IV.

Summarized geographically, these indicate a rather narrow band of movement, mostly to the southeast of a northeast-southwest line through Mohonk. In other words, they travel east of the Alleghenys. The records show:

	<u>Recoveries</u>	
	<u>Banded at Mohonk, to:</u>	<u>Taken at Mohonk, from:</u>
Farthest SW	Alabama 900 miles April - Dec.	Maryland 170 miles Dec '60 to Oct 2 -Dec. '63 and Apr. '65
Farthest NE	^B New Brunswick, Canada 500 miles 8 Apr to 11 May	Massachusetts 170 miles Nov. '61 to Mar. '65
Exchange between stations: Mohonk and North Stillwater, N.J. on southern Shawangunks. 65 mi.	7 Apr. '62 to 2 Apr. '65	23 Oct. '73 to 20 Oct. '75 and 22 Feb. '76

Slate-colored Juncos Banded at Mohonk
and Recovered Elsewhere

Table III

Date Banded	Place of Recovery	Date Recovered	Airline Distance (miles)
9 April 1933	Kelleyton, Ala.	25 + Dec '33 (3/4 year)	900
15 April 1933	Kipling, N.C.	16 Jan 1935 (1-3/4)	510
2 April 1939	Golts, Md.	25 Jan. 1940 (3/4)	190
12 April 1939	Wilson ⁿ , N.C.	26 Mar. 1940 (1)	470
8 April 1958	Plaster Rock, New Brunswick, Canada	11 May 1958 (33 days)	500
7 April 1962	North Stillwater, N.J.	2 Apr 1965 (3 years)	66
17 Apr 1968 (Female)	Strong, Me.	27 Oct 1969 (found dead) (1½)	300

Slate-colored Juncos Banded Elsewhere
and Recovered at Mohonk

Table IV

<u>Date Banded</u>	<u>Place of Banding</u>	<u>Date Recovered</u>	<u>Airline Distance (miles)</u>
20 Dec 1960	Elkton, Md.	25 Oct 1963 (2-3/4 yrs) and 14 Dec 1963 (3) and 2 Apr 1965 (4 1/2)	170
13 Nov 1961	South Lincoln, Mass.	30 Mar 1965 (3 1/2) Repeat: Apr 2, 4, 7/65	170
19 Feb 1967	Sayville, L.I., N.Y.	1 Jan. 1971 male (4)	93
23 Oct 1973	Stillwater, N.J.	20 Oct 1975 (2) 22 Feb 1976 (2 1/2) Repeat 9 Mar 1976	66
9 Apr 1975	Snyders, Pa.	29 Mar 1976 male (1) Repeat 4, 10, 14 April 1976	120

Summarized temporally, recoveries were for a year or longer, except for the Canadian record which made possible ^{the} calculation of a flight speed of at least 15 miles per day for over a month.

	Recoveries	
	Banded at Mohonk	Taken at Mohonk
Shortest	Mohonk to New Brunswick, Ca. - 33 days	Pennsylvania to Mohonk - 1 year
Longest	Mohonk to New Jersey - 3 years	Long Island to Mohonk - 3-3/4 years Maryland to Mohonk - 2-3/4 and 4 1/2 years

The following patterns of migration are suggested by the limited recovery records:

<u>Migrants</u>	<u>Time Span</u>
Mohonk (spring) - New Brunswick, Ca. (spring)	33 days
Mohonk (spring) - New Jersey (spring)	3 years
Mohonk (spring) - North Carolina (spring)	1 "
Mohonk (spring) - Maine (fall)	1½ "
Pennsylvania (spring) - Mohonk (spring)	1 "
Massachusetts (fall) - Mohonk (spring)	3½ "
New Jersey (fall) - Mohonk { (fall)	2 "
(also winter)	2½ "

Winter Residents

Mohonk (spring) - Maryland (winter)	3/4 year
Mohonk (spring) - Alabama (winter)	3/4 "
Mohonk (spring) - North Carolina (winter)	1-3/4 "
Long Island (winter) - Mohonk (winter)	4 "
Maryland (winter) - Mohonk { (fall)	2-3/4 "
(also winter)	3 "
(also spring)	4½ "

Summer Residents

(none)

Before attempting to suggest an interpretation of the above, it should be noted that in the last 15 years banding at Mohonk was done more consistently in the spring than in the fall. Almost no banding was done in summer especially while juncos were on nesting territories. A few attempts in 1976 to net juncos on breeding territories with tape recordings of song showed that their response was not as strong or ^{as} protracted as winter wrens, and the method was abandoned as unproductive.

Six of the records were apparently only migrants at Mohonk, on their way to or from somewhere else. Of course, it is possible that some of these spring birds stayed on to breed.

Three of the recoveries banded at Mohonk in spring subsequently were captured at varying distances southwest.

Juncos may shift their wintering area from year to year, for reasons unknown. This is indicated by a Long Island banded bird (Feb.) which was trapped at Mohonk (Jan.) nearly four years later. Another banded in Maryland (Dec.), 2-3/4 years later was recorded at Mohonk during migration (Oct.) and repeated that same year in December. And, a year and a half later it was again recorded here (Apr.).

An interesting exchange of juncos has been recorded with a banding station at Stillwater, N.J. operated by R. G. McCullough. The location is 65 miles to the southwest on the eastern side of the Kittatinny, which is the southwestern extension of the Shawangunks. A bird banded at Mohonk at 7 April 1962 was retaken at Stillwater 2 April 1965. And, a junco banded by Mr. McCullough on 23 October 1973 was caught at Mohonk two years later on 20 October 1975. Thus it appears that our two stations are on a regular migration route, followed by certain birds going both north and south over a period of years. However, it seems that the pattern is not that definitive, for the latter bird apparently remained at Mohonk for the winter of 1975-76. It was retrapped on 22 February and 9 March.

Obviously more recoveries are needed to clarify the seasonal pattern of migration and residence. The question has been raised as to whether it can be assumed that summer and especially winter populations are geographically stationary ^{both} within a season and from year to year. Additional summer banding would be especially important.

Summary

1. The 49 years of banding suggest that there is a year-round resident population of juncos at Mohonk, i.e. they breed and winter here. There have been returns that show ^{that} summer-banded hatching-year birds spent their first winter at Mohonk.

2. Recoveries (now known as "foreign retraps") indicate that juncos that migrate through or from Mohonk travel in a narrow geographical band ~~in a general~~ ^{from} southwest ^{to} northeast. ~~direction.~~

3. The plumage data has not yet been analyzed.

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Table I

Slate-colored Junco Returns
Summer to Winter

Band No	Date of Banding	Age & Sex	Date of Return	Other returns
A-101997	1928 8/25	HY-U	1929 3/2 1929 11/29	
A-101994	1928 8/25	HY-U	1930 12/22	1930 8/14
B-99195	1929 2/11	A-U	1930 12/28	1930 8/13
C-265	1929 9/1	-	1931 1/25	1930 3/31
C-94523	1930 8/15	HY-U	1930 12/22	
C-94534	1930 8/16	HY-U	1930 12/22	1932 4/11
C-94562	1930 8/21	HY-U	1930 12/22	
F-32466	1931 8/12	HY-U	1932 12/16	1932 7/6
101-16496	1962 4/2, 5/3	A-M	1967 1/2	1964 4/6 1965 4/2 1968 4/6 1969 5/11
103-53864	1962 5/9, 8/4	A-U	1964 12/20	1964 4/23
103-53874	1962 7/10	HY-M	1963 3/7	1965 11/24 1967 3/17
103-53876	1962 7/12	A-U	1963 1/13 1963 12/18	1964 9/2 1965 4/24
103-53913	1962 7/21	A-U	1963 12/20	1962 11/16 1964 4/2 1965 4/26
103-53931	1962 7/29	HY-M	1967 5/3	1964 4/30 1965 4/29
104-97245	1963 5/4, 5/12	A-U	1964 12/5	1964 4/6
104-97280	1963 7/7	HY-U	1964 11/30	1965 4/2 4/25

Table II

Blue-colored Junco Returns
Winter to Summer

Band No.	Date of Banding	Age & Sex	Date of Return	Other returns
32-71629	1961 1/22	A-U	1962 5/4	1963 3/2 1964 4/22 1965 3/16 1965 11/11
104-41635	(1962 10/26)			
	1965 1/10	U-U	1966 5/8	1965 was returned.
105-37282	1963 12/1	A-U	1965 5/12	1964 4/2 1965 4/18 1967 11/14
108-85701	1964 11/25	U-U	1967 5/22	1965 4/12 1966 4/1
113-69604	1967 3/22	A-M	1970 5/2	1967 11/8 1968 3/26
110-97231	1971 1/1	A-U	1976 4/9(M)*	1974 3/21 1976 12/2 & 27

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* Note: Recaptured in net on Spring Path responding to a recorded song.