

These two birds could have shown 10 possible periods of presence and actually showed nine. Let us, then, call the result: 90 percent occurrence.

So far this winter there have been four returns:

51-66282	imm ♂	8 Feb - 31 Mar 1958 5 - 31 Dec 1959 21 Dec. 1961 - 2 Mar 1962 19 Dec 1963
64-11141	♀	16 Jan - 25 Feb 1962 31 Dec 1963 -
64-11145	ad ♂	18 Jan - 18 Feb 1962 1 Jan 1964
64-11200	imm ♂	11 Feb - 3 Mar 1962 31 Dec 1963 -

These show 62 1/2 percent occurrence. On a long-term basis I should expect these birds to show about 55 percent occurrence. In good winters an estimate of the percent occurrence of all returning birds is 60.

We may conclude that some Purple Finches have one fixed winter residence and some have at least two.—Charles H. Blake, Museum of Comparative Zoology, Cambridge, Mass.

Color and wing length in the Slate-colored Junco.—In 1962 (*Bird-Banding* 33: 97-99) I discussed the wing length of some samples of *Junco hyemalis*. For three years I have tried to assess the brownness of Juncos both at banding and at return. Admittedly all the categories shown in the table below are subjective except “no brown.” However, I have uniformly assessed the color before measuring the wing. The total number of newly banded birds used is 908 and the number of returning birds is 70. All were handled at Hillsboro, N. C.

The significant points appear to be that: (1) in newly banded birds the wing length varies inversely with color and rather uniformly; (2) those birds assessed “no brown” or “trace of brown” are distinctly scarce at banding and much more frequent at return suggesting that this color is mostly a character of fully adult birds; (3) among returning birds the mean wing length shows a discontinuity between columns 3 and 4; (4) “very brown” is a coloration of first winter birds only; (5) the abrupt change in percentage of birds between “slight brown” and “some-what brown” returning birds is peculiar.

The fifth point requires discussion. If one ignored the percentages, the obvious explanation would be that the first three columns contain males and the

TABLE 1. WING LENGTH VS. COLOR IN SLATE-COLORED JUNCO

	No Brown	Trace of Brown	Slight Brown	Some- what Brown	Rather Brown	Quite Brown	Very Brown
New birds:							
Least wing length	74	72	71	71	70	69	68
Greatest wing length	82	81	82	82	80	79	77
Mean wing length	78.3	77.8	76.5	75.3	74.2	73.2	72.4
Standard Deviation	1.5	2.0	2.0	2.1	2.1	2.6	1.5
Percent of Total Birds	9	10	25	14	11	18	13
Return Birds:							
Least wing length	76	73	73	71	71	72	—
Greatest wing length	82	82	81	76	75	76	—
Mean wing length	79.3	78.7	77.1	74.2	73.2	73.7	—
Percent of Total Birds	24	23	31	9	7	6	0

TABLE 1. INFESTATIONS FOUND AT BANDING

	Cardinal			Purple Finch			Slate-colored Junco			White-throated Sparrow			All Four Species		
	No. Birds	No. Infested	Per cent	No. Birds	No. Infested	Per cent	No. Birds	No. Infested	Per cent	No. Birds	No. Infested	Per cent	No. Birds	No. Infested	Per cent
Sept	114	0	0	1	0	0	2	0	0	0	0	0	117	0	0
Oct	159	2	1-1/4	0	0	0	176	2	1	1	1/2	0	535	5	1
Nov	106	5	5	4	0	0	977	39	4	4	1-3/4	1	1462	51	3-1/2
Dec	95	1	1	44	1	2-1/2	352	6	1-3/4	1	1/2	1	756	12	1-1/2
Jan	40	0	0	87	0	0	165	2	1-1/4	2	1/2	1	538	3	1/2
Feb	47	0	0	162	3	1-3/4	211	2	1	2	1-1/4	1	579	7	1-1/4
Mar	76	1	1-1/3	244	2	3/4	397	4	1	1	1	2	912	9	1
Apr	162	2	1-1/4	111	1	1	162	2	1-1/4	2	1-3/4	10	969	15	1-1/2
May	94	0	0	0	0	0	0	0	0	0	0	0	335	0	0
'57-8	98	4	4	117	6	5-1/4	466	31	6-3/4	4	2-1/2	12	1165	53	4-1/2
'58-9	77	0	0	7	0	0	133	0	0	0	0	0	608	0	0
'59-60	63	0	0	321	1	1/3	361	4	1	1	3-1/2	9	1116	14	1-1/4
'60-1	133	1	3/4	21	0	0	356	13	3-1/2	2	1/2	1	770	15	2
'61-2	137	1	3/4	185	0	0	579	0	0	0	1/4	1	1260	2	1/5
'62-3	109	2	1-3/4	2	0	0	310	3	1	1	1	2	622	7	1

Note: The number of infestations in the upper part of the table, except Purple Finch, is greater than in the lower part since the observations for October and November, 1963 are included in the upper part.

second three females. The mean wing lengths (point 3) seem to confirm this. The conclusion would be that the sample consists of more than three times as many males as females. This conclusion is acceptable only if it can be shown that some other part of the winter range has a similar preponderance of apparent females. A more reasonable view is that the shorter winged birds in the first three columns are also females. If all birds in those columns with wing lengths under 77 mm. are considered females then there would be 1 1/2 males to one female, a more credible, but not necessarily correct, result.

Reasonable conclusions are that: (1) adult birds do not show the category "very brown" and average distinctly less brown than immatures; (2) the sexual difference in wing length may prove to be about 4 mm. (Ridgway 1901, Bul 50, U. S. N. M., p. 278, gives about 4 1/2 mm.).—Charles H. Blake, Museum of Comparative Zoology, Cambridge, Mass.

Observations on Bird Ticks.—At Hillsboro, N. C. I have kept records of ticks found on banded birds. How many species of ticks have been seen is unknown but the great majority of individuals agree in appearance with specimens kindly identified by Dr. J. C. Bequaert as *Ixodes brunneus*. This species is peculiar to birds in the Western Hemisphere. Males have never been found and its life history is unknown.

My own observations show that these ticks are only present on the head of the host. It is quite possible that a tick attaching anywhere else would be discovered and picked off with the beak. All the individuals I have seen appeared to be in the last instar. The engorged tick drops off its host and there is no evidence that the eggs are attached to the host. I am reasonably certain that engorgement does not require more than about 10 days. Ticks have been found in all months from October to April inclusive. Repeating birds show evidence for new infestation or reinfestation during the winter. Ticks have been observed on the following species: Carolina Wren, Mockingbird, Hermit Thrush, Cardinal, Purple Finch, Rufous-sided Towhee, Slate-colored Junco, Field Sparrow, White-crowned Sparrow, White-throated Sparrow, Song Sparrow.

I have chosen to examine more particularly the infestations found at banding of the four species shown in Table I.

The restriction of infestation to the winter months is certainly real. Cardinals and Field Sparrows are handled in some numbers throughout the year but no ticks have been seen except in the months noted. The records for October and November, 1963 reinforce the indication in the table of a three-year cycle of abundance. The simultaneous presence of two or three ticks on the same bird is not at all uncommon. The heaviest infestation I have seen was ten ticks.

A small area around the point of attachment of a tick is usually denuded of feathers. These are replaced soon after the parasite drops off. Attachment very close to the eye is accompanied by partial closing of the lids. I have not been able to find any damage to the eye itself.

The majority of the infestations are found at banding and practically none are first found on repeaters taken during the first two or three weeks after banding. Either the birds bring their ticks from somewhere else or few birds are captured until they have been in the vicinity for several days. The first alternative seems much more probable, at least in October and November. Recovery data show that our individuals of the species in the table are confined to the Atlantic slope. My own experience in eastern Massachusetts and, with Purple Finches, in central Vermont gives no evidence of tick infestation, even in winter. This leads to the possible conclusion that infestations are acquired a rather short distance north of the banding point. It is clear that the questions implied in this discussion will only be answered by data obtained over a much wider area.

See also the findings of Ali in Proc. XIII Internat. Ornith. Congress, 1963 p. 354 in which he emphasizes the restriction of rather different ticks largely to ground-feeding birds. Charles H. Blake, Museum of Comparative Zoology, Cambridge, Mass.