
Movements of House Finches (*Carpodacus mexicanus*) and Pine Siskins (*Carduelis pinus*) Through the Virginia Piedmont

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INTRODUCTION

A capture-recapture method, mist nets, was used to gain information about daily range and habitat utilization of individual birds. Robbins (1978) noted the capture-recapture method is useful during migration periods. Encounters of locally banded Fringillidae will be examined here for evidence of seasonal movement.

METHODS

Study Location - The banding station is located on the western edge of the Virginia Piedmont in Campbell County, one-quarter mile from the intersection of Route 460 and State Route 622.

Station Data - A more detailed report of the station setup, location, and operation is reported elsewhere (Hansrote and Hansrote 1991). Sixty months of station operation yielded 4178 individual birds and 47 species. The station was open 417 banding days (2946 net hours) during the period 6 April 1986 to 4 April 1991. A "banding day" is any day or part of a day the banding station is open. The definition does not depend upon the number of nets opened.

Mist nets were opened randomly between dawn and dusk but were not opened at night. Generally, only one mist net was opened, but occasionally four were used. Mist nets were checked every 15 to 30 minutes. All netted and/or trapped birds were banded, the "unflattened" wing chord was taken to the nearest millimeter using a rule fitted with an end-stop, aged, sexed, and released.

What is an Encounter? - All foreign retraps and recoveries, defined as encounters, are reported to the Bird Banding Laboratory (BBL) and they, in turn, send a report to the original bander. Robbins (1978) pointed out banding can be used to define the ranges of individual birds.

The following definitions are according to the Bird Banding Manual, Vol. 1 (Anon 1991):

"Foreign Retrap" - A banded bird captured and released in a different 10-minute block than that one in which it was banded.

"Recovery" - A banded bird killed or found dead. A recovery relates to a dead bird and is a terminal record.

"Recapture" (also defined as an "Encounter") - Records of recaptures (repeats and returns) are kept by the individual cooperator.

Expected Number of Encounters - Ehrlich et al (1988) suggested that, in spite of massive numbers of birds banded annually, less than 5% are recaptured or recovered. Waterfowl, gallinaceous birds, and doves yield a higher return percentage through the cooperation of licensed hunters.

Lincoln (1935) reported a figure of 1% as a maximum encounter value for a non-game bird species. As a word of caution, Lincoln suggested that one problem in interpretation of all banding results is that recoveries often reflect the distribution of people rather than migration pathways of the birds.

Station Banding Results

Examination of the Data - Forty-seven species totaling 4178 individuals were banded in sixty months. The most frequently banded species were Pine Siskin (*Carduelis pinus*) (38%), House Finch (*Carpodacus mexicanus*) (22%), and the American Goldfinch (*Carduelis tristis*) (14%). These three species, 74% of all birds banded, are members of the Fringillidae family. Another family member, the Purple Finch (*Carpodacus purpureus*) (1%), ranked twelfth in number of individual birds banded. Bent (1968) reported that some of these four species are found together in mixed winter flocks. Neither Purple Finch nor American Goldfinch banded at this Campbell County station have been encountered as foreign retraps or recovered.

Annual Yield - Graph 1 represents the total number of individual Pine Siskin, House Finch, American Goldfinch, and Purple Finch banded at the station each year for the five-year period. Population trends for Fringillidae in Campbell County for the past five years show that Purple Finches were present each year but at much lower numbers than the other three members of the family. American Goldfinches, whose annual numbers varied, increased over the same period of time. Annually, House Finches continued to increase in numbers. Pine Siskins irrupted in Campbell County in December 1987 and during the following spring. All four species were present in good numbers in 1989—a Fringillidae year.

Supporting Data from Other Sources

Lynchburg Christmas Bird Count - The banding station is located on the western edge of the fifteen-mile diameter Christmas Bird Count (CBC) circle. The numbers of Fringillidae detected on the Lynchburg CBC's (Wilds, 1986 to 1989) over the same time period are listed in Table 1. House Finches are major winter visitors. Note the beginning of the Pine Siskin irruption in December 1987.

Table 1. Christmas Bird Count - Lynchburg, VA.
Source: American Birds

Year	1985-6	1986-7	1987-8	1988-9	1989-90
House Finch	170	508	314	866	550
Pine Siskin	14	1	205	0	89
Purple Finch	86	126	125	31	63
Amer. Goldfnch	229	171	404	191	21

Middle Atlantic Coast Region - Campbell County is located within the piedmont area of the middle Atlantic coast region (defined in *American Birds* as the District of Columbia and the eastern portions of Maryland and Virginia). Examination of middle Atlantic coast region reports (Armistead, 1986 to 1990) show little mention of the "northern finches" during the 1 June - 31 July season. The 1 March - 31 May season lists variable appearances. The 1 August - 30 November season revealed Pine Siskins had a good flight year in 1986, yet very poor or light numbers in 1987, 1989 and 1990. The best opportunity to observe Fringillidae was during the 11 December - 28 February season (Table 2). House Finches were reported as heavy or high in numbers during this season. Pine Siskins were noted as medium, low, or scarce in numbers. Purple Finches were listed as low or not even mentioned. American Goldfinches were only mentioned in 1987. Over the past five years, the House Finch and Pine Siskin winter populations in Campbell County, Virginia, are comparable to winter populations reported in the middle Atlantic coastal region.

Table 2. Winter Season - 11 Dec. to 28 Feb.
Source: American Birds N/A = not mentioned

Year	1986	1987	1988	1989	1990
House Finch	high	high	high	high	v. high
Pine Siskin	poor	common	low	scarce	poor
Purple Finch	few	low	low	102	N/A
Amer. Goldfnch	N./A	N/A	high	N/A	N/A

BBL Encounter Reports for Station - BBL returned nine reported encounters: six encounters were with House Finches and two were with Pine Siskins. A recovery of a Blue Jay (*Cyanocitta cristata*) was within the same ten minute map plot.

**Examination of BBL Reported Encounters
House Finch - Background**

In the early 1940's, the House Finch was accidentally introduced on Long Island, New York, and spread west to the Mississippi River and south to the southernmost tier of states (Mundinger and Hope 1982). Stewart (1989) assumes that House Finches are on their nesting grounds during May through July and on their wintering grounds during December through February. Bent (1968) noted that House Finches winter in North America and breed/nest in arid scrub, open woodland, urban areas and cultivated land. Ehrlich et al. (1988) considered the House Finch an urban bird species. House Finch behavior as an urban bird, coupled with Lincoln's observation that encounters and recoveries reflect distribution of people, explain the high number of encounters with banded House Finches. Annually, two separate movements of House Finches through Campbell County are detected. Graph 2 shows the number of banded House Finches per month peak in November and again in March, corresponding to the flight of the finch in the fall/winter and again in the spring.

House Finch - Encounter Data

One foreign retrap and five recoveries were received from the BBL (Table 3). These six encounters are 1% of the total House Finches banded at the station. Movement of transient House Finches through Campbell County was confirmed by the foreign encounters.

Stewart (1989) examined BBL records of House Finches banded in New York and Pennsylvania. His analysis included House Finches banded during the nesting season and encountered during the winter and banded during the winter and encountered during the nesting season. His work demonstrated the effect of seasonal movement on northern populations of House Finches.

Stewart's analysis technique was applied to the Campbell County House Finch encounters (Table 3). Three House Finches banded in the fall (October - November) were encountered (March - April) 60 to 100 miles south of Campbell County. One House Finch banded in November was encountered in April 300 miles northeast. Two House Finches banded in the winter months (February - March) were encountered (April - June) 200 to 300 miles north or northeast of the banding station.

Interpretation

The encounters revealed seasonal movement through Campbell County, Virginia. Analysis of the six encounters fit a north-south zone of House Finch movement through Campbell County from winter to summer seasons. Figure 1 locates Campbell County in the 1979 winter range core defined by Mundinger and Hope (1982) as a broad swath running southwest from Boston through metropolitan New York, Philadelphia, Washington, DC, and on to the Carolinas. The data from the limited number of encounters suggest that Campbell County, possibly even the piedmont area of Virginia, serves as a staging area or a rest area in the north and south movement of House Finches. Additional House Finch encounters are needed to validate this inference.

Table 3. House Finch encounter data.

R = Recovery, FR = Foreign Recovery

Month/Year Banded	Month/Year Encountered	Time Since Banded	Direction	State	Distance (mi)	Type Encounter
Nov. 86	Mar. 87	3 mo 28 day	S	N C	100	R
Feb. 87	Jun. 87	3 mo 20 day	N E	D E	250	R
Nov. 88	Nov. 88	0 mo 25 day	S	V A	60	R
Oct. 86	Mar. 89	2 yr 4 mo	S	N C	100	R
Mar. 90	Apr. 90	1 mo 4 day	N	P A	240	FR
Nov. 90	Apr. 91	5 mo 21 day	N E	N J	300	R

Speculations

What role does the Virginia Piedmont play in the annual movement of the House Finch? The numbers and length of stay of House Finches and other finches in Campbell County appear, in part, to be dependent upon weather and the lack of food supply at the Finch's northern wintering grounds. Campbell County, which lies in a southwesterly direction from New York, provides needed food, shelter and the James River corridor. Clark (1991) mentions these criteria as necessary for a staging area. Winter flocking of House Finches has been noted in Campbell County, which may serve as a gathering place for House Finches during movement back and forth between their northernmost breeding range and southernmost winter range. This observation suggests that the role of Campbell County as a satellite area (Mundinger and Hope 1982) in the Virginia Piedmont has changed to a new role as a staging or rest area. This north-south movement of birds continues to affect the range expansion of the House Finch in the Southeastern United States as outlined by Mundinger and Hope (1982).

Resident Population

Is there a permanent resident House Finch population in Campbell County, Virginia? Breeding and nesting House Finches were reported in 1979 at this geographic location (Mundinger and Hope 1982). House Finches have been observed nesting within two hundred yards of the banding station in Campbell County. Evidence for House Finch breeding and the introduction of a local resident population is available, yet the question remains: Does the local breeding bird population stay in Campbell County throughout the year? Recapture data should provide evidence of year-round presence of local House Finches.

2. Pine Siskin- Background

Pine Siskins have an irregular breeding season. At the close of the breeding season—usually early summer—the birds generally leave the breeding localities, although the extent and often the direction of this movement is unknown (Bent 1968). Bent (1968) lists the Pine Siskin's range to include Alaska, Ontario, and Labrador south to northern

Mexico and the Gulf Coast States. The center of abundance is from the Rocky Mountains westward.

Encounters

Only two of over 1500 Pine Siskins banded at the Campbell County station have been reported to the BBL. One Pine Siskin was a foreign retrap in eastern Canada and the other a recovery in central Canada (Table 4).

Table 4.

Banded	Encount.	Time	Direct.	Dist. (mi)
Feb 88	Feb 90	2 yr 2 da	NW of Montreal	615
Mar 87	May 87	2 mo 4 da	N of Quebec	770

Significance

These encounters support Bent's (1968) claim that the Pine Siskin's breeding grounds are in Canada. The hatching site of the two encountered Pine Siskins is unknown.

CONCLUSIONS AND SUMMARY

1. Foreign retraps and recoveries of locally banded birds contributed useful data involving House Finch movement.
2. House Finch movement has been detected through Campbell County, Virginia. This movement is between nesting birds in the north and wintering birds in the Carolinas.
3. Foreign retraps and recoveries of six of over 900 banded House Finches agree with the winter range suggested by Mundinger and Hope (1982).
4. A foreign retrap and a recovery, from over 1500 banded Pine Siskins, were from Canada, which is in agreement with known breeding grounds.

ACKNOWLEDGMENTS

Thanks go to Dr. Raymond Underwood and Dr. Elza Tiner for helpful comments on early drafts of this paper. Dr. Douglas Shedd was helpful in locating A.O.U. checklist references to Fringillidae.

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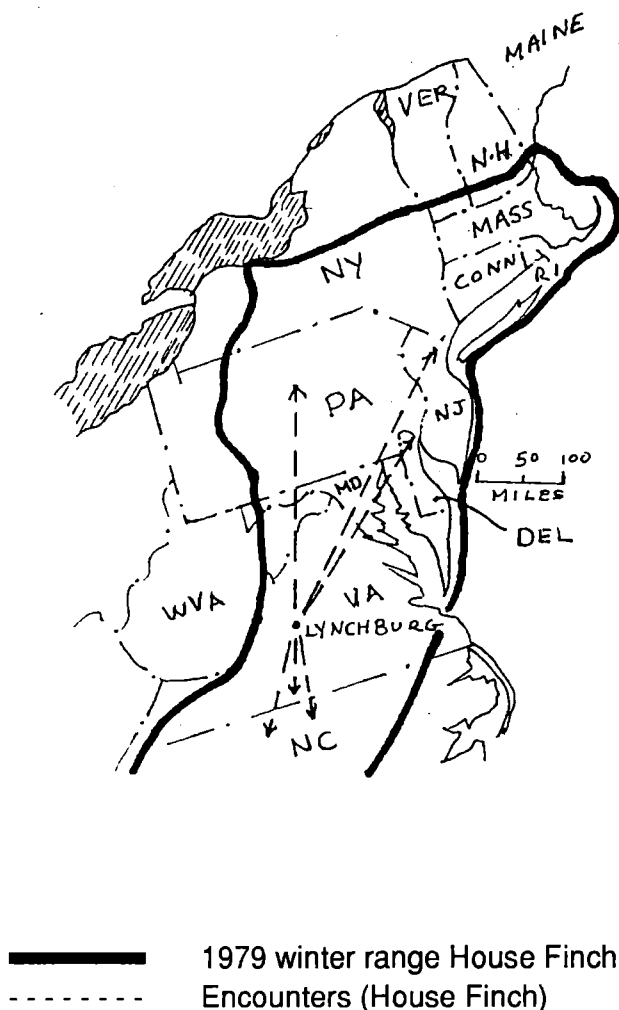
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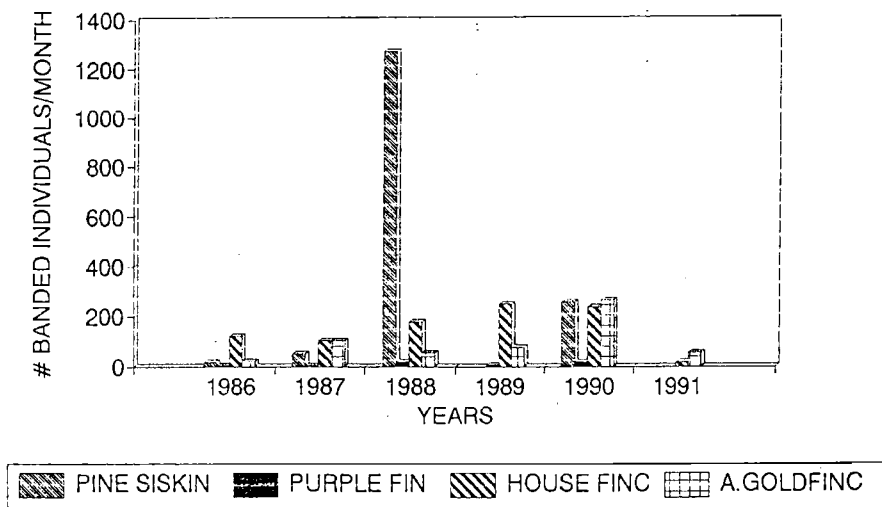
Figure 1. 1979 winter range of the House Finch.



Source: American Birds 1982

Graph 1.

CAMPBELL COUNTY VIRGINIA BANDED FRINGILLIDAE



Graph 2.

CAMPBELL COUNTY VIRGINIA MONTHLY TOTALS 5 YEAR PERIOD

