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Rise and Decline of House Finch Feeder Populations

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INTRODUCTION

Much information has been published on the 1940's introduction and subsequent remarkable increase in numbers of House Finches (*Carpodacus mexicanus*) in the eastern United States (Aldrich and Weske 1978, Bock and Lepthien 1976, Bosakowski 1986, Cant 1972, Elliott and Arbib 1953, Gill and Lanyon 1965, Kricher 1983, Mundinger and Hope 1982, and Paxton 1974). The first recorded appearance of the species in eastern, upstate New York was a male that appeared at my Schenectady feeder on 29 April 1964. At the time, it was the most northward occurrence of the species in New York, about 275 km north of its original 1940's release site on Long Island.

Using data that I gathered from 1964 through 1994 at my feeder, I document here the gradual increase of the species, peaking sharply in the mid-1980's, and its even more rapid decline thereafter. These data are compared to data at some other banding and feeding stations, and to some regional Christmas Count data.

METHODS

In 1963, I began a bird feeding and banding operation in my backyard at Schenectady, New York. Most of the feeding was done on two approximately 76 X 102-cm (30 x 40-in) platform traps (Yunick 1971) using sunflower seed as bait. Due to the large size of this feeder/trap, I could capture large numbers of House Finches and other gregarious fringillids that tended to feed compactly on these platforms. Some House Finches were also caught in four mist nets set at the yard's perimeter.

Banding was conducted throughout the year (though less regularly in July and August after 1970) before and after work and on weekends.

Various data were gathered, but only total captures and some recapture data are used here.

I relied additionally on personal field note data published by the Schenectady Bird Club (later, Hudson-Mohawk Bird Club) in *Feathers* and used *American Birds* to obtain Christmas Bird Count (CBC) data. I used three local CBC counts: Schenectady, Troy, and Southern Rensselaer County. All CBC data were normalized by dividing total reported House Finch sightings by total party-hours of observer effort to give birds sighted per party-hour.

For additional comparison, I used prior published data on House Finch bandings in Pennsylvania (Middleton 1979) and a supplement thereto (Pepper pers. comm. 1986); a central New York Feeder Survey (Burt and Burt 1984) and a supplement thereto (Burt pers. comm. 1994). I extended Bosakowski's (1986) 1959-1981 House Finch analysis on four northern New Jersey CBC's to 1993; as well as Kricher's (1983) 1958-1979 House Finch CBC analyses for New Jersey and Massachusetts, also through 1993.

RESULTS

The annual House Finch banding totals at my feeder (42°49'N latitude) for the years 1964-1994 are presented in Figure 1. For comparison, as a measure of feeder and banding activity, I have included also the annual March-June combined totals of five species of winter finches: American Goldfinch (*Carduelis tristis*), Common Redpoll (*C. flammea*), Pine Siskin (*C. pinus*), Evening Grosbeak (*Coccothraustes vespertina*), and Purple Finch (*Carpodacus purpureus*).

Figure 1. Annual totals of House Finch bandings (solid line) and March-June combined bandings of five other fringillid species (dashed line) at my Schenectady feeder for the period 1964-1994.

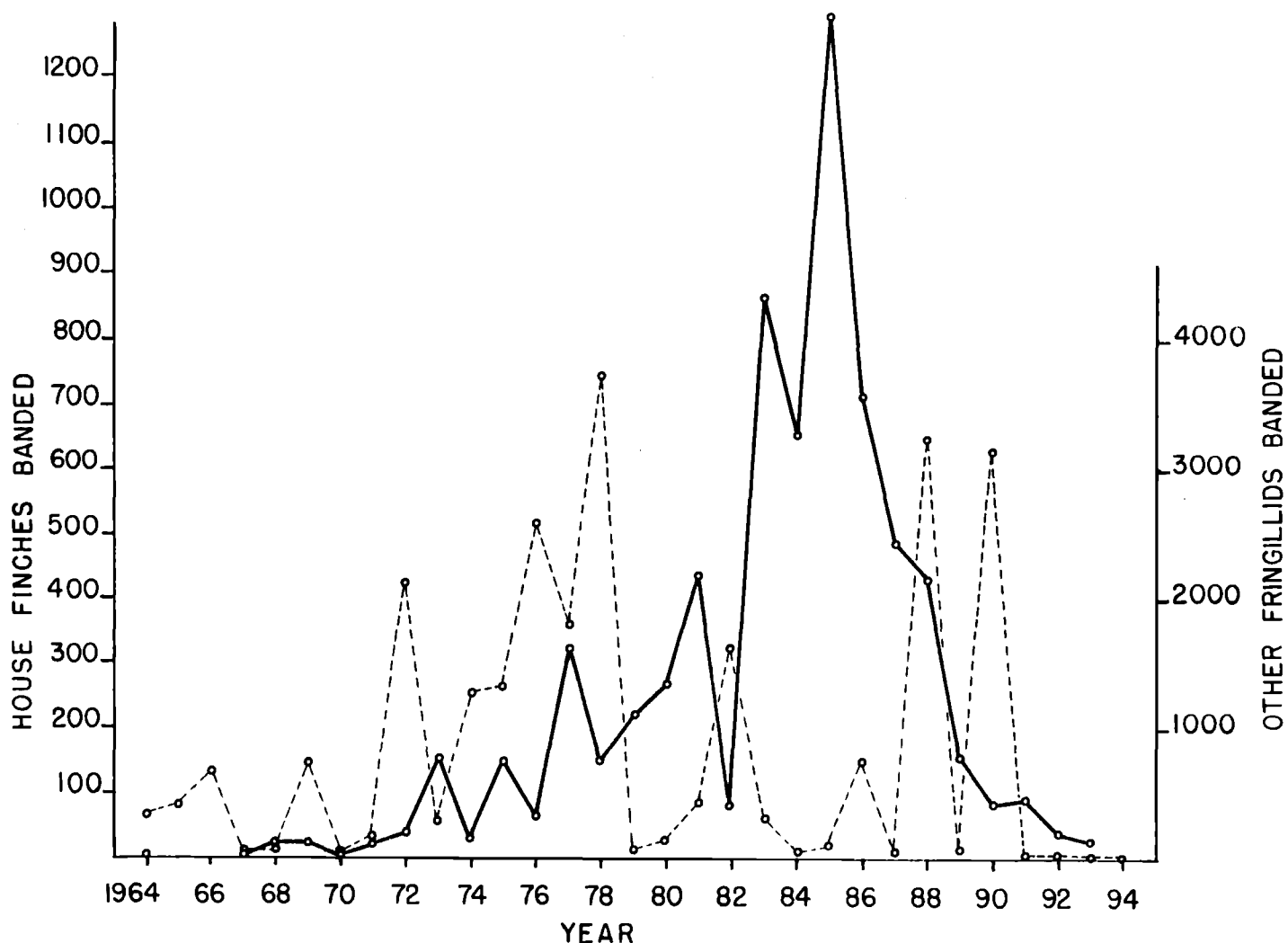


Figure 2 is a comparison of my annual House Finch banding totals with those published by Middleton (1979) for three Pennsylvania stations during 1960-1978. Those stations were Raymond Middleton's at Norristown (40°10'N latitude) near Philadelphia, William Pepper's at Philadelphia (40°04'N latitude), and Merrill Wood's at State College in central Pennsylvania (40°47'N latitude). Philadelphia is 340 km S of Schenectady, while State College is 385 km SW of Schenectady and 240 km W of Philadelphia. Pepper's data were extended to 1984 using information he supplied (Pepper pers. comm. 1986). In 1984, he terminated banding on 31

October, so I normalized his 640 House Finch bandings to 768 for that year.

Also included in Figure 2 are House Finch sight data for the period 1971-1981 collected by Burt and Burt (1984) in the Syracuse, New York, area (43°03' N latitude) from feeder operators. These data represent annual totals of maximum counts taken at 100 feeders during the first week of each month of the months from November to April. Syracuse is 180 km W of Schenectady. Additional unpublished data for 1982-1993 were obtained from Burt (pers. comm. 1994).

Figure 2. Annual totals of House Finch bandings at the Middleton, Pepper, and Wood banding stations in Pennsylvania using data from Middleton (1979) and Pepper (pers. comm.); compared to annual totals at Schenectady from Figure 1, and Feeder Survey data from Burt and Burt (1984) and Burt (pers. comm.) at Syracuse, New York.

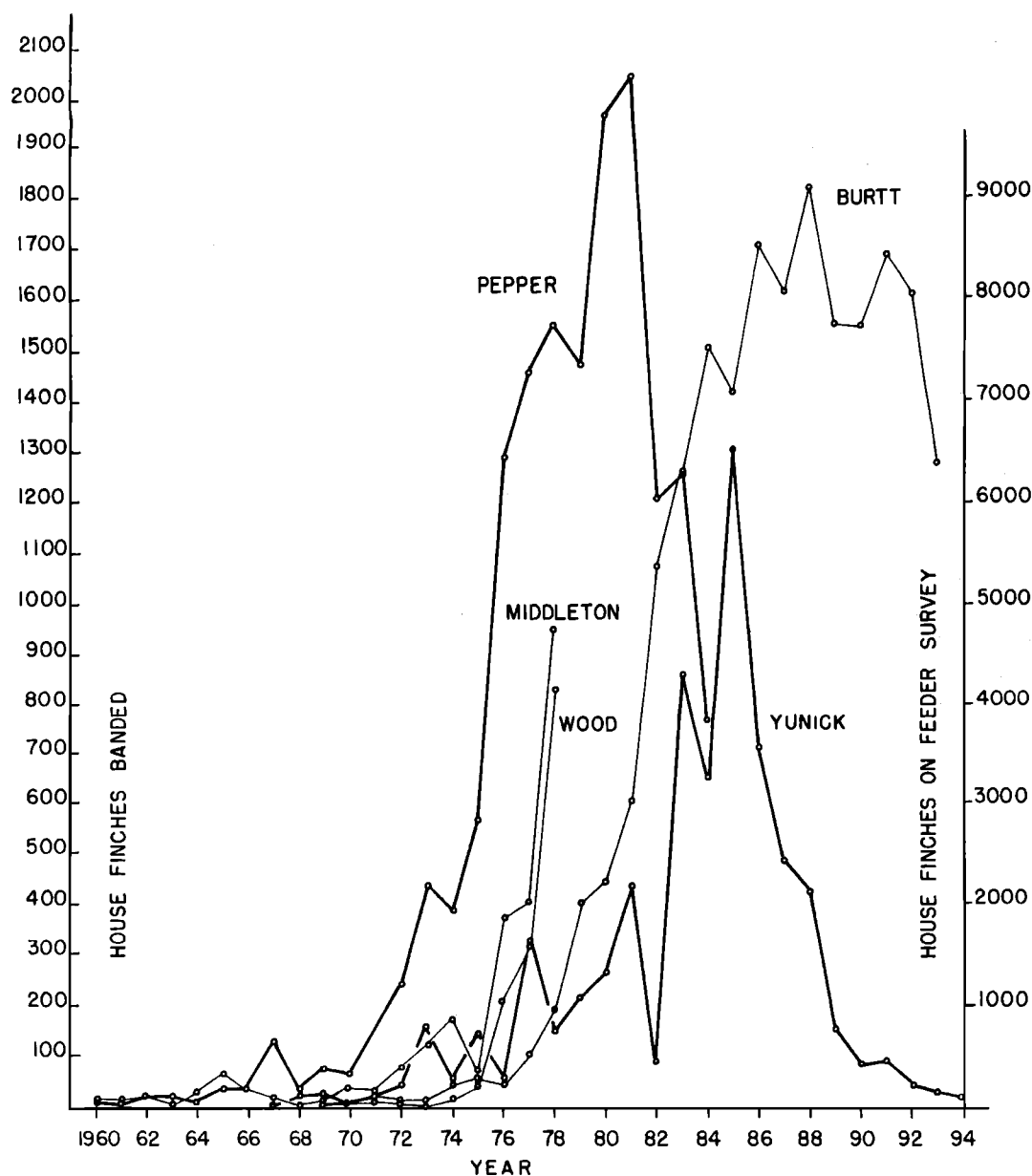


Figure 3 represents House Finch data from the three Schenectady area Christmas Bird Counts; while Figure 4 is a re-creation of Bosakowski's 1959-1981 analysis of four New Jersey CBC's, extended by use of similar data from *American Birds* for the 1982-1993 period.

The four counts are known as Boonton, Great Swamp-WatchungRidges, Hackensack-Ridgewood, and Ramsey, all located in NE New Jersey. Figures 5 and 6 represent re-creations and extensions of Kricher's (1983) CBC data for New Jersey and Massachusetts, respectively, through 1993.

Figure 3. House Finch sightings per party-hour of observer effort on three combined Christmas Bird Counts in the Schenectady area: Schenectady, Troy, and Southern Rensselaer County, 1971-1994.

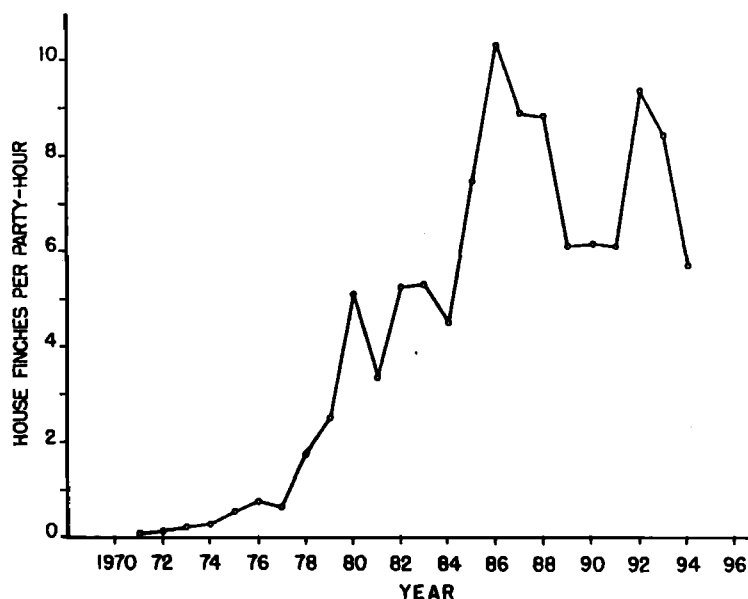


Figure 4. House Finch sightings per party-hour of observer effort on four combined Christmas Bird Counts in northeastern New Jersey: Boonton, Great Swamp-Watchung Ridges, Hackensack-Ridgewood, and Ramsey, 1959-1993. Data for 1959-1982 are adopted from Bosakowski (1986), and data thereafter are from *American Birds*.

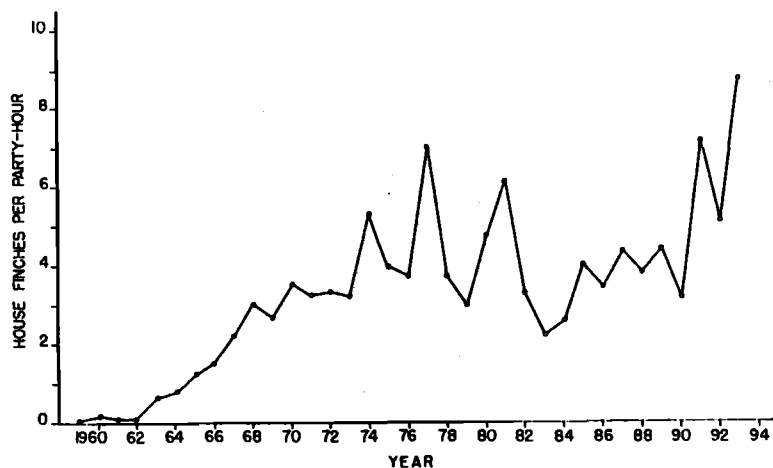


Figure 5. House Finch sightings per party-hour of observer effort on all New Jersey Christmas Bird Counts, 1958-1993. Data for 1958-1979 are adopted from Kricher (1983), and data thereafter are from *American Birds*.

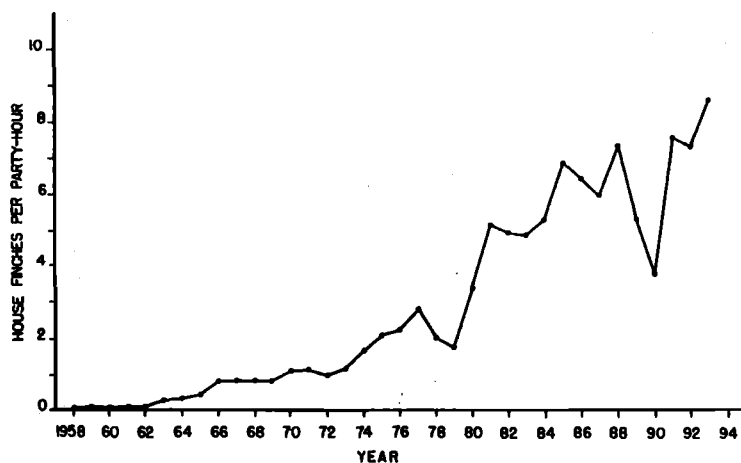
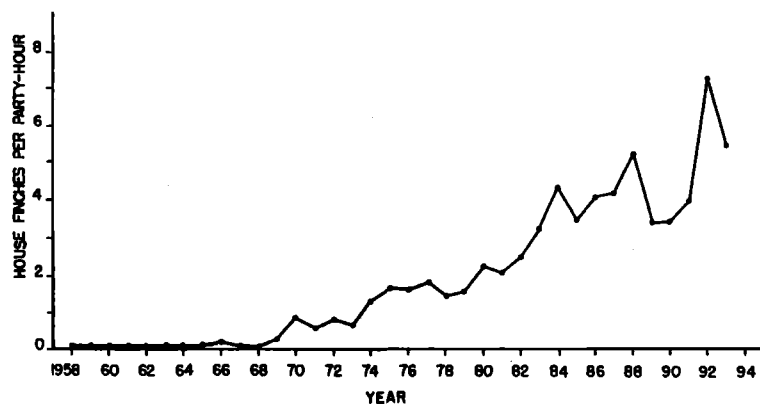


Figure 6. House Finch sightings per party-hour of observer effort on all Massachusetts Christmas Bird Counts, 1958-1993. Data for 1958-1979 are adopted from Kricher (1983), and data thereafter are from *American Birds*.



Seasonal re-encounter data are summarized in Table 1, and capture data on birds six or more years old are given in Table 2.

Table 1.	Reported seasonal re-encounters of Schenectady House Finches within New York state.	
Month of Banding at Schenectady	Month of Re-encounter Elsewhere in New York state	
	April-Nov	Dec.-Mar.
April-November	14	6
December-March	2	

DISCUSSION

The early years--1964 through 1975 - The first reported occurrence of a House Finch in eastern New York occurred at my feeder on 29 April 1964. On 5 May, I trapped and banded this male. Three years later on 5 May 1967, two males and two females appeared. I caught one male on 5 May, a female on 6 May, and a previously banded female that had been banded on 26 December 1966, presumably on its wintering grounds at Gordonsville, Virginia. At that time, this area of Virginia was about the farthest southern penetration of this species in more than moderate abundance. These birds lingered at my feeder until 9 May 1967.

On 8 May 1967, an unbanded pair appeared at another local feeder five km from mine, and presumably these same birds remained at that feeder becoming the area's first summer record (Wickham 1967a, 1967b). Presumably that same male lingered at that feeder until 2 November (Bundy and Wickham 1967).

On 1 May 1968, a pair appeared at my feeder and I banded the male. Reports were received that spring from five Schenectady locations of one to five House Finches per location, the first on 12 April

Table 2.	Banding and recapture dates at Schenectady of House Finches six or more years old.				
Age Class, Years	Date of Banding and Last Recapture, M/Y	Sex	Age Class, Years	Date of Banding and Last Recapture, M/Y	Sex
11-12	12/73 - 1/85	F	7-8	10/77 - 6-84	M
10-11	11/75 - 9/85	F		11/77 - 6/84	M
9-10	4/81 - 10/89	M		4/79 - 6/85	M
	11/80 - 11/89	F	6-7	4/83 - 6/88	F
8-9	9/80 - 6/87	M		6/79 - 6/84	M
	12/71 - 9/79	F		10/78 - 6/84	M
	3/73 - 3/81	M		11/80 - 1/87	M
	1/75 - 8/83	M		11/80 - 6/86	F
				12/75 - 9/81	F

(Bundy 1968). One of these locations was the 1967 feeder referred to above. A pair appeared there on 28 May and a male was seen feeding an immature on 19 June, while both adults fed two young on 21-23 June, becoming the area's first reported breeding record. These birds disappeared in July.

Based on my experience with April-May arrivals of House Finches in the years 1964 and 1967-1969, it became apparent that their appearance coincided with the arrival of northward migrant Purple Finches. In those early years of occurrence at Schenectady, both species appeared to have a common spring migration schedule; but once the House Finch became a locally reported breeder, that pattern changed. Small numbers of House Finches became year-round residents, while others adopted a March-April arrival and October-November departure, consistent with Belthoff and Gauthreaux's (1991) classification of this species as a partial migrant.

When local breeding was first reported in 1968 (Bundy 1968), I banded House Finches in November for the first time; all previous bandings having occurred only in May. I banded 20 between 9-29 November, 11 of them on 29 November. Fifteen of those 20 were hatching-year birds. The year 1969 was similar in that I banded only two birds in the spring--on 23 and 30 April--then 27 more during 6-28 November. In both 1968 and 1969, these November birds lingered until colder weather in December, then disappeared.

In 1970, I did not band a House Finch until August, and they were scarce. Birds appeared in 1971 in mid-April through May, then again in November, and were banded November 1971 through February 1972, their first significant winter presence. Other area feeders also reported wintering birds (Phillion 1973).

Migrants appeared again in late April 1972 and reappeared in increased numbers for the first time in October. I banded House Finches in every month from October 1972 through May 1973, their first such continuous winter appearance. Based on field reports he received in the August-November 1972 period, Phillion (1973) commented that the House Finch was "no longer considered a rarity in our region." It took eight years--from 1974 to 1982--for

this to occur. The 155 I banded in 1973 represented a new record number (Figure 1) with 125 of those occurring in November-December. By 1974, the species was common locally and drew less attention in field note reports in *Feathers*.

The peak growth years--1977 through 1985.

Figure 1 shows that this species became more abundant in 1977. Not only did spring bandings increase, but so did the November-December record total of 171; but this pattern was about to change. In retrospect, the 1964-1968 period was characterized as a time when a few spring migrants appeared at my feeder, stayed a few days, and moved on; while the 1969-1980 period involved similar spring arrivals but much greater numbers in the November-December period. In 1981, the spring bandings (April-June) surged well ahead in number of those in the fall and remained so through 1988, whereupon September-November bandings then again exceeded those in spring.

The 1983-1985 surge in numbers banded was clearly the result of great local breeding success that brought large numbers of adults in May and juveniles in June. In those two months, I banded 600 in 1983, 516 in 1984, and 661 in 1985. 1985 was a peak year, not only due to large numbers in May-June but also due to a record 103 banded in January and 163 in November. House Finches were constant and abundant at my feeder.

The decline--1985 through 1994. Following the peak year of 1985, the numbers banded declined sharply. It had taken 21 years from their first appearance in 1964 to reach 1985's record peak, but only five years --to 1990--to decline to the lower numbers of the early 1970's. It is difficult to account for this decline based on a change of habitat. There has been no apparent significant change in my yard or in the immediate suburban area in which it is located. All through the 30-year period it was a developed area with no new construction in the immediate area and essentially the same mature tree and shrub growth.

However, by the early 1990's, it was clearly apparent from the sightings and bandings at the feeder that the abundance of House Finches had drastically declined in all seasons of the year. There was evidence in 1994 that a conjunctivitis-type

disease was spreading among House Finches in the Schenectady area and causing their demise. A Schenectady newspaper article (Bryce 1994a) of 20 October about the disease brought 70 telephone calls to the state wildlife pathologist in nearby Albany about sick or dead House Finches at local feeders (Bryce 1994b). Nationally, reports of the affliction had been noted from North Carolina to Massachusetts and was of growing concern.

I encountered these apparent symptoms on 17 September 1994 in two of the ten House Finches I caught. Each of the two had one swollen area of the eye. Within a few days, the few House Finches using the feeder disappeared. On 5 November, a lone bird appeared which I captured to find both eye areas severely swollen. That bird was given to the state wildlife pathologist for culturing. He confirmed the bacterium *Mycoplasma gallisepticum* which afflicts domestic poultry and is known as turkey sinusitis (W.B. Stone pers. comm.1995). Cornell University's Project Feeder Watch surveyed 1468 feeder cooperators in November 1994 in the eastern United States and Canada, and obtained reports of diseased birds at 10% of these feeders (Dhondt 1995). The highest reported levels were about 20% of the feeders in Maryland, Delaware, and Pennsylvania. By late December, diseased birds on this survey appeared in Illinois, Maine, and Michigan.

Comparison with Pennsylvania banding data.

Middleton (1979) reported that the first sighting of a House Finch at Norristown occurred 1 December 1955, but not until February 1960 did one appear at his feeder as well as at Pepper's feeder 25 km away in Philadelphia. The first at Wood's State College feeder in central Pennsylvania did not occur until 26 November 1969. Middleton's re-presented data in Figure 2 show banding totals at all three stations at low levels in the 1960's, then rising sharply in the 1970's, first at Pepper's feeder. A possible explanation for the difference between the geographically close Middleton and Pepper banding stations is that Pepper banded at a suburban location that was perhaps more the habitat of preference of this species (closer to human habitation) than was Middleton's more rural setting.

Data at all three of these Pennsylvania stations show trends similar to the findings at my feeder, though displaced temporally, likely due to the difference in latitude. The appearance and the increase of this species occurred earlier at these more southerly locations. Belthoff and Gauthreaux (1991) assessed eastern House Finch banding totals using U.S. Fish and Wildlife Service data for the Regions 100-299 for the years from 1955 through 1987. Their Figure 3 represents the data by one-degree intervals from 33 to 43 degrees N latitude. The greatest banding total occurred at 40 degrees, followed by that at 39 degrees N latitude. These Pennsylvania stations were in the 40-degree cohort. The 42-degree cohort in which my station lies ranked fifth out of the 11 latitudes.

In the latter 1970's, Pepper's, Middleton's, and Wood's annual banding increases were on similar steeply increasing slopes, as were mine in the early 1980's. Pepper's banding total peaked in 1981, 21 years after the first banding of the species at his feeder; while mine peaked in 1985, also 21 years after first banding. While Pepper's data extend only three years past that peak, by the third year his banding total had declined 62% from that peak; while in three years past my 1985 peak, my annual total had declined a similar 67%.

Comparison with Feeder Survey and Christmas Bird Count data. The Syracuse Feeder Survey (Burt and Burt 1984, and Burt pers. comm.1994) and the CBC data represent winter assessments of the species' abundance. The Feeder Survey covered the period November through April, while CBC's occurred in the period from mid-December through the first week of January.

The first House Finches on the Feeder Survey were recorded in April 1971, most likely as newly arrived spring migrants; but thereafter the species became a wintering bird increasing substantially in the latter 1970's and most steeply in the early 1980's (Figure 2). While more years of data are needed, Figure 2 suggests that the Syracuse population peaked in the winter of 1988-1989, 18 years after its first appearance in April 1971, and has now begun to decline, reaching a 30% decline by 1993-1994.

The CBC data for Schenectady area counts in Figure 3 show a peaking in 1986, 15 years after its

first appearance in 1971, and a variable decline thereafter, amounting to 41% by 1994.

Bosakowski's original analysis (1986) for four NE New Jersey CBC's through 1982 showed a peaking of that population in 1977, 18 years after first appearance. My extension of that analysis in Figure 4 shows a variable decline thereafter to 1983 of nearly 67% below the 1977 peak, then ascending 10 years later to an even greater peak abundance in 1993. Kricher's original analysis (1983) for all New Jersey CBC's through 1979 showed a peak in 1977, 19 years after its first appearance; while in Massachusetts through 1978, the species peaked in 1977, also 19 years after its first appearance.

However, my extension of Kricher's New Jersey analysis over 36 years to 1993 in Figure 5 shows that that 1977 peak and decline thereafter was but a momentary artifact in a longer-range continual increase through the entire period. Along the way, the New Jersey population declined 35% in 1979 from its 1977 peak, and 48% in 1990 from its 1988 peak. My extension in Figure 6 of his Massachusetts analysis over 36 years to 1993 shows a similarly, continually increasing trend line.

These longer-term New Jersey and Massachusetts results are inconsistent with the peak-and-decline pattern observed at Pepper's Philadelphia feeder and my Schenectady feeder and with the similarly suggested decline at Syracuse feeders and the Schenectady area CBC's. A possible explanation, but likely not the only one, for this difference may relate to habitat size and diversity of the sampled areas. Pepper's and my banding stations are isolated microhabitats of feeder activity. The areas of New Jersey and Massachusetts represent much larger, more diverse habitats. The Syracuse Feeder Survey area and Schenectady area CBC's represent habitats that are intermediate in size. If an introduced population momentarily expands to beyond a limited area's carrying capacity, or the population's ability to contend with competitive factors, the population will decline through emigration and/or death. In the much larger and more diverse area of a state, a locally increasing population has the option to expand to nearby previously unoccupied habitats within the state, and thus continue showing an increasing population trend for the state as a whole, as on these CBC's.

The explanation of occupied area by House Finches in eastern United States is illustrated by Mundinger and Hope (1982) using CBC data through 1979. However, their results do not include quantified abundances. Their data show upstate New York as the approximate inland northern limit of early winter distribution, with most of the population expansion going south and west.

It remains to be determined what factors have caused these observed declines, and what the future trend will be. Momentarily, this species is drastically reduced from its peak mid-1980's numbers at my banding station. It remains to be seen whether the similar suggested decline at Syracuse feeders and on the Schenectady area CBC's will continue or reverse. The Schenectady and Syracuse experience with this species is so far only 24 years in duration as opposed to the 36 years' worth of data in New Jersey and Massachusetts.

Recaptures, Re-encounters and Retraps. Twenty-five of the 6,842 House Finches that I banded were reported encountered by other individuals. Fifteen of these were found dead, five killed by cat, two trapped and released, two struck by car or object, and one caught in a building and released. Fifteen of these re-encounters occurred at Schenectady, three in the Schenectady area up to 10 km away, four elsewhere in New York state, two in Pennsylvania, and one in Virginia. Table 1 shows the seasonal distribution of the 22 re-encounters within New York state. Three years later, one of the April bandings was caught and released in January on Long Island where, presumably, it was wintering. The out-of-state re-encounters were birds banded at Schenectady in May or June as breeding birds and presumably wintering in Pennsylvania and Virginia when re-encountered the next December and January. One of these birds banded at Schenectady and recaptured in Pennsylvania returned to my station the following spring (Yunick 1987).

I retrapped at Schenectady four House Finches banded elsewhere. One was the previously mentioned December banding in Virginia, re-trapped the following May. Others were a March Virginia banding retrapped in May of the same year, a February New Jersey bird recaptured in May a

year later, and a March Pennsylvania banding recaptured at Schenectady a year later in July. The distributional and migrational status of banded eastern House Finches has been examined in detail by several authors (Belthoff and Gauthreaux 1991, Hamilton and Novis 1994, Hilton 1994, and Stewart 1990).

Among my own retrap records of House Finches I banded at Schenectady were 17 birds (eight female, nine male) that were over six to over 11 years of age at the time of last recapture. Their capture and recapture dates are organized by age in Table 1. The oldest of these tied a North American age record set in California for a male on the species' ancestral range (Yunick 1989). It is interesting that this female was banded in winter, last recaptured in winter; also recaptured in between in May 1982 as a breeding bird in her ninth year and was apparently a resident of the area. Ten of these 17 oldest individuals were November-March bandings, and four of them were re-encountered in the same period years later. This limited sample of these oldest individuals appears to fit the partial migrant status assigned to the species by Belthoff and Gauthreaux (1991).

An additional 656 birds returned between one and six years of age, making the total number of returns 673 or 9.8% of the birds banded. Middleton had 9.6% returns from 1517 bandings, while Pepper had 10.4% from among 4914 bandings, at their respective stations (Middleton 1979).

SUMMARY

Banding data at my Schenectady, New York, station document the first appearance of the House Finch in eastern upstate New York in 1964, followed by moderate increases in abundance through the 1970's, then sharp increases in abundance to a peak in 1985, 21 years after its first appearance. An even sharper decline ensued in the next five years to reduce numbers banded in the 1990's to previous 1960's-1970's levels.

Banding data from Philadelphia show a similar pattern of increase over a 21-year period, followed by decline. Christmas Bird Count data in the Schenectady area peaked in 1986, 15 years after first appearance, and Feeder Survey data from the

Syracuse, New York, area suggest a similar pattern peaking in 1988-1989, 18 years after first being recorded.

Christmas Bird Count data from northeastern New Jersey showed a peaking of the population in 1977, 18 years after first occurrence, followed by six years of decline, only to then ascend to an even greater peak abundance ten years later in 1993. CBC data from larger geographical areas such as all of New Jersey and Massachusetts show an ever increasing trend in abundance over the 36-year period from first appearance in 1958 to 1993.

ACKNOWLEDGMENT

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House Finch sketch by
Dorothy Bordner