

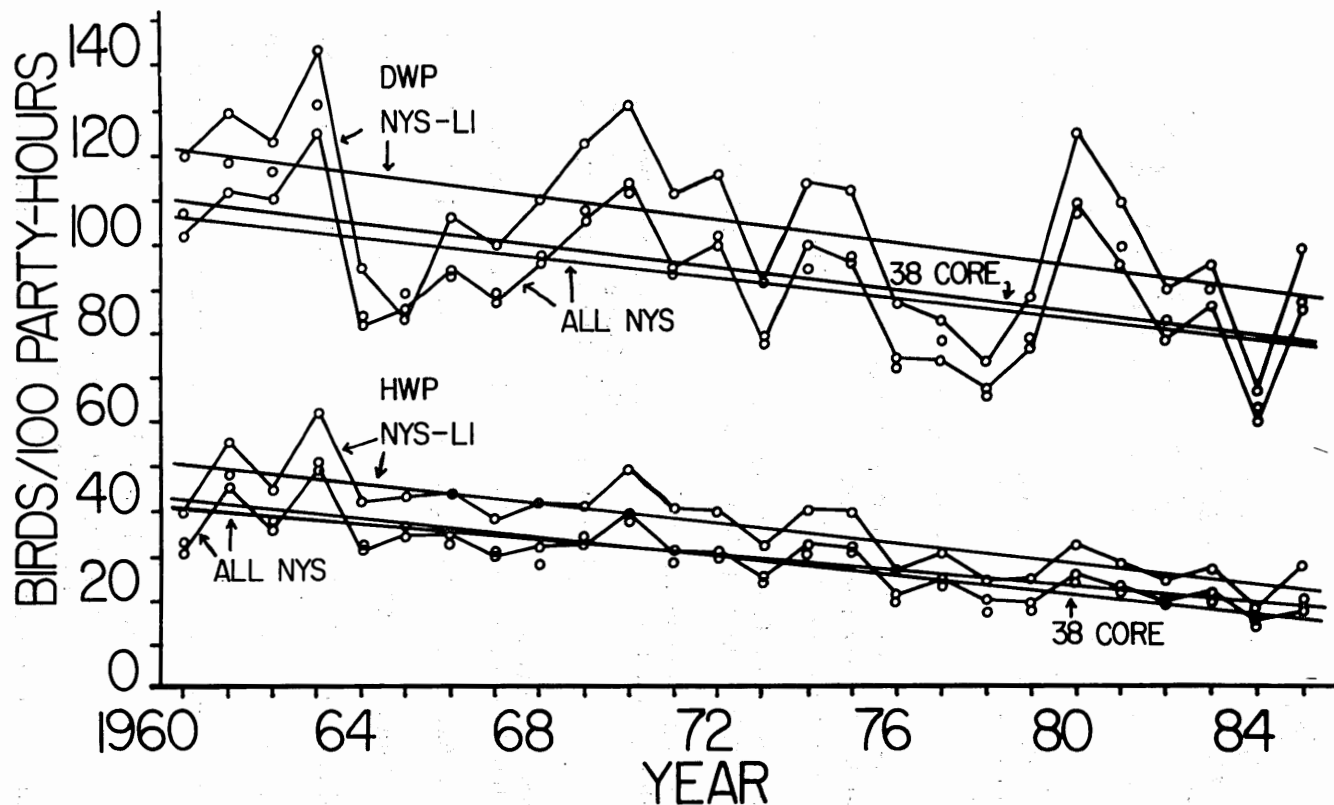


Figure 1. Annual New York state Christmas Bird Count abundances of Downy Woodpecker (DWP) and Hairy Woodpecker (HWP) for the period 1960-1985. Open circles connected by lines represent birds/100 party-hours for all New York State counts and for all New York State counts less Long Island as labelled; unconnected open circles represent the 38 core counts; parameters for regression lines are in Table 1.

An Assessment of the Downy Woodpecker and Hairy Woodpecker on Recent New York State Christmas Counts

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The Downy Woodpecker (*Picoides pubescens*) and Hairy Woodpecker (*P. villosus*) are two of the commoner woodpeckers found throughout New York State. Both occur as permanent residents and breeding birds and are variably migratory (Eaton 1912; Bull 1964 and 1974; Beardslee and Mitchell 1965, and AOU 1983). Generally the Downy Woodpecker outnumbered the Hairy Woodpecker, except in the Adirondack Mountains (Eaton 1912), and is more widespread, as the Hairy prefers deeper forest (Beardslee and Mitchell 1965, Bent 1964, Bull 1964, Eaton 1912). Using Christmas Bird Count data, I have assessed changes in their annual reported abundance, their abundance relative to each other, geographic differences in abundance, and the trend in reports for both species from 1960 to 1985.

Methods

Christmas Bird Count data published in *Audubon Field Notes* and its successor, *American Birds*, for the period 1960 through 1985 were collected and analyzed as described previously (Yunick 1988) on all counts bearing a location name solely in New York State. Abundance data was normalized and expressed as birds/100 party-hours of observer effort. Three subsets of data were derived from these data. For continuity of coverage, a subset of 38 core counts, each reported in at least 24 of the 26 years, was analyzed separately. These core counts were reported on 99.0 percent of the theoretically possible dates. Data from a geographically separate group of ten Long Island counts reported in at least 22 of the 26 years formed a second subset. These Long Island counts were reported on 97.4 percent of the theoretically possible dates. Finally, a subset denoted as "the rest of the state" was obtained by subtracting the Long Island results from those for all of New York State. Regression analyses were conducted on each of these four data groups for each species to measure changes in abundance over time.

For selected locations, average abundances at each location over the 1960-1985 period were derived by totalling all reported abundances at the site and dividing by the sum of the total party-hours at the site. The two groups of locations so treated were 1) the 38 core counts; and 2) a group of 18 counts which were reported in at least 10 to 22 of the 26 years. These abundances were mapped to show their geographic distribution.

Results and Discussion

The annual reported abundances of both species are represented in Figs. 1 and 2. The regression parameters which describe population trends are summarized in Table 1. The distribution maps appear in Figs. 3 and 4.

Downy Woodpecker: This species showed erratic variation in reported abundance from year to year and an overall decline in numbers reported (Fig. 1). Regression analysis estimates the decline in abundance over the 26 year period as 27.5 percent for all counts in the state, 29.1 percent on the 38 core counts, and 27.2 percent for counts other than on Long Island. On Long Island (Fig. 2) the decline was 25.9 percent. The pattern of annual variation on Long Island differed from that of the rest of the state. There was less amplitude to annual variations on Long Island and changes in abundance were not always synchronous with changes observed elsewhere in New York. This was most notable in 1965 when most of the state experienced a reporting minimum whereas Long Island had a record high occurrence of this species.

Hairy Woodpecker: Comparison of Figs. 1 and 2 shows some similarity in the pattern of annual variation with those of the Downy Woodpecker, although year-to-year variation was at lesser amplitude for both reporting areas, especially on Long Island. Statewide decline of Hairy Woodpecker reports over the 26 year period was 54.5 percent, while on the 38 core counts it was 60.8 percent, and 55.8 percent on all but the Long Island counts. These declines are approximately double those of Downy Woodpecker in the respective same areas. On Long Island, the decline was 28.8 percent, approximately the same as that of the Downy Woodpecker. For both species the greatest decline occurred on the 38 core counts, and the least decline occurred on Long Island.

The declines occurred during a time when the number of Christmas Bird Counts reported increased 60 percent, and the number of total party-hours per count increased by 73-89 percent (Yunick 1988). A similar analysis of Christmas Bird Count abundance of another woodland bird, the White-breasted Nuthatch (*Sitta carolinensis*), revealed reporting declines of 17-34 percent (Yunick 1988), approximating those found here for Downy Woodpecker.

Annual Variation: Field note reports in *The Kingbird* offer some suggestion as to the reason for some of the observed year-to-year variability in peak abundance, but little suggestion as to the existence of or a reason for declining reports. Some peak abundances appear to correlate with times of above average or irruptive migratory activity. The Downy Woodpecker has been characterized either as an occasional autumn migrant (Bull 1964), becoming more common in some years along the outer beaches (Bull 1974), or as a regular migrant along the Atlantic

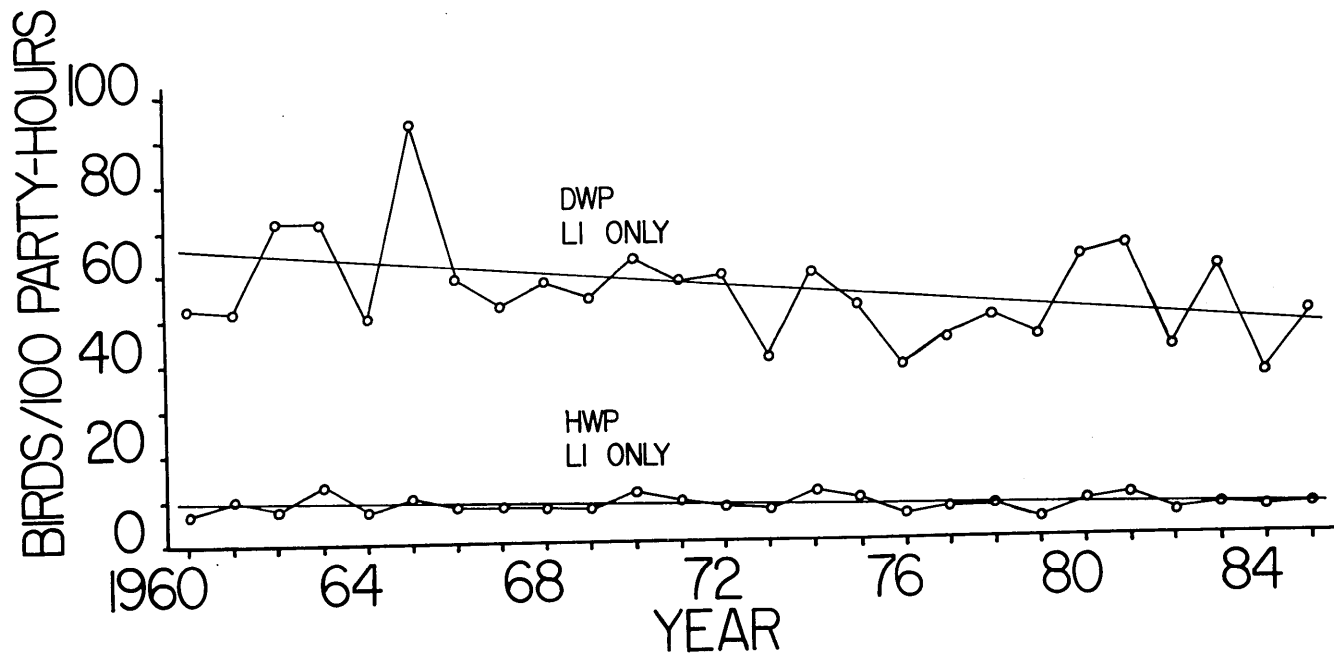


Figure 2. Annual Christmas Bird Count abundances of Downy Woodpecker (DWP) and Hairy Woodpecker (HWP) on Long Island for the period 1960-1985. Open circles connected by lines represent birds/100 party-hours; parameters for regression lines are in Table 1.

Coast (Short 1982). In western New York, migration has not always been detectable because movements were not always widespread (Beardslee and Mitchell 1965). Northern populations are considered mostly migratory, occurring irregularly southward (AOU 1983, Bent 1964). Less is mentioned about migrations of Hairy Woodpecker. Bull (1964, 1974) characterized it as an occasional migrant, becoming more numerous on the rare occasion of an autumn irruption. Northerly populations undergo some movement (AOU 1983, Short 1982), with some suggestion of that there is a general southward autumn movement (Bent 1964).

The small peak in abundance in 1961 shown in Fig. 1 may relate to Rosche's (1961) autumn report in Region 1: "Many observers commented on the large number of Hairy and Downy Woodpeckers moving through some parts of the region at the same time the chickadee movement was in progress. Some were thought to be a larger-sized northern population." That same year Long Island showed no such response (Fig. 2).

In autumn 1965, Davis and Heath (1966) labelled the migration a "flight year" for both species on Long Island. They reported the banding of 15 Hairy Woodpeckers (3 Sep-19 Oct) and 133 Downy Woodpeckers (31 Jul-30 Oct) at four banding stations, with numbers peaking 17-30 Oct. Apparently Downy Woodpeckers concentrated on Long Island during or after that flight and were reported in record numbers on that year's Christmas Bird Counts (Fig. 2), while elsewhere in the state their reported numbers continued plunging from a 1963 peak (Fig. 1). In the following year, Davis and Heath (1967) made no mention of Hairy Woodpecker bandings while reporting the banding of 101 Downy Woodpeckers at two Long Island stations (1 Aug-31 Oct). Peak numbers occurred 6-30 Oct; at one station where 32 were banded, only five had occurred up to 9 Oct, and the maximum was eight on 29 October. Late October appears to be a peak coastal migratory period for these species. Bent (1964) cites inland migration from late August into November for Hairy Woodpecker, and not uncommonly in October and November for Downy Woodpecker.

Following that 1966 autumn migration, Rusk and Scheider (1967) reported high winter counts in Region 5 of these and other woodpeckers in swamps and woodlots where elm trees were dying. On that year's Christmas Bird Counts there was a modest increase in reported Downy Woodpeckers following two low years, but no significant response by Hairy Woodpecker.

Also related to dying elms, McMichael and Wilcove (1977) attributed increased reports of both species in the Buffalo area in the winter of 1975-1976 to a concentrating effect of diseased and infested trees which

attracted these bark-feeding birds. Contrary to their statement that there had been no real woodpecker population increase, the Christmas Bird Count results for both species in Fig. 1 show momentary peaks in 1974 and 1975. If Dutch elm disease had been sufficiently widespread at the time, it could have caused concentrations on a grand enough scale over large areas of the state and could have created perceived population increases. Dutch elm disease appeared to play a part in attracting other irruptive woodpeckers into urban areas for viewing in the 1956-1966 irruptive period (Yunick 1985). Black-backed Woodpeckers (*P. arcticus*) and Three-toed Woodpeckers (*P. tridactylus*) were attracted to infested elms in western New York in 1956-1957 and 1960-1961. By 1972, Goodwin (1972) noted that as the elm disease pressed northward, these woodpeckers no longer appeared in large numbers in the lower Great Lakes area as they had when the disease persisted there in 1956-1966.

Comparison of the irruptive pattern of the three-toed woodpeckers (Yunick 1985; Fig. 1) in New York and northeastern United States and southeastern Canada with these data reveals a modest but not complete synchrony of events. High numbers of *P. arcticus* appeared in the United States and Canada in the winters of 1960-1961, 1962-1963, 1963-1964 and 1965-1966, and then in parts of New England and Canada in 1972-1973, especially so in 1974-1975, 1975-1976, and 1978 through 1980-1981. Downy Woodpeckers on Long Island (Fig. 2) fit the pattern for 1962-1963, 1963-1964, and 1965-1966; and both Downy and Hairy Woodpeckers elsewhere in the state fit in 1962-1963 and 1963-1964. The 1970 peak for Downy and Hairy woodpeckers in mainland New York contrasted with the paucity of corresponding three-toed woodpecker reports. The results for 1972-1973, 1974-1975, 1975-1976, and 1978 through 1981 are somewhat similar, except for 1978 and 1979 when Downy and Hairy woodpecker activity did not match that of the three-toed woodpecker irruptions.

The last mention in *The Kingbird* of an autumn flight of Downy Woodpeckers was made by Rusk and Scheider (1969) for autumn 1968: "...definite irruption this fall," with counts of 10-18 per day during 14 Sep-13 Oct, primarily along Lake Ontario. That year's Christmas Bird Count showed modest reporting increases for both species.

These results again point out how two relatively common, resident species can exhibit moderate variability in abundance, yet receive only passing mention in most *Kingbird* Regional reports. With increased interest in describing and measuring forest events, these species deserve more attentive monitoring and reporting effort. Perceived commonness is no justification for ignoring such species.

Relative Abundance and Distribution: Eaton (1912) gives one of the few quantitative assessments of the abundance of these species relative to one another. Downy Woodpeckers outnumbered Hairy Woodpeckers 7:1 in summer and 3:1 in autumn and winter in what Eaton referred to as the then "more thickly settled portions of the state." Rusk and Scheider (1967) reported a 2:1 ratio during the winter of 1966-1967 in central New York in swamps and woodlots with dying elms. McMichael and Wilcove's (1977) repeated observations in a Buffalo infested-elm study area during Jan-Mar 1975 averaged 1.11:1 in favor of the Downy Woodpecker.

There was considerable geographic and temporal variation in the species ratios on these Christmas Bird Counts. The statewide annual ratios averaged 3.25:1, and ranged from 2.46:1 (1961 and 1965) to 4.19:1 (1980) in favor of the Downy Woodpecker during the 26-year period. A comparison of regression values in Fig. 1 indicates Downy Woodpeckers predominated by 2.37:1 in 1960, increasing to 3.91:1 by 1985, for all New York except Long Island; and by 6.79:1 to 7.07:1, respectively, on Long Island (Fig. 2). The increase in relative abundance of Downy Woodpeckers from 1960 to 1985 appears caused by a greater relative decline in reports of Hairy Woodpecker. The greater relative abundance of Downy Woodpeckers on Long Island also appears related to the lesser numbers of Hairy Woodpeckers due to the lack of its preferred deeper-forest habitat in a heavily residential area.

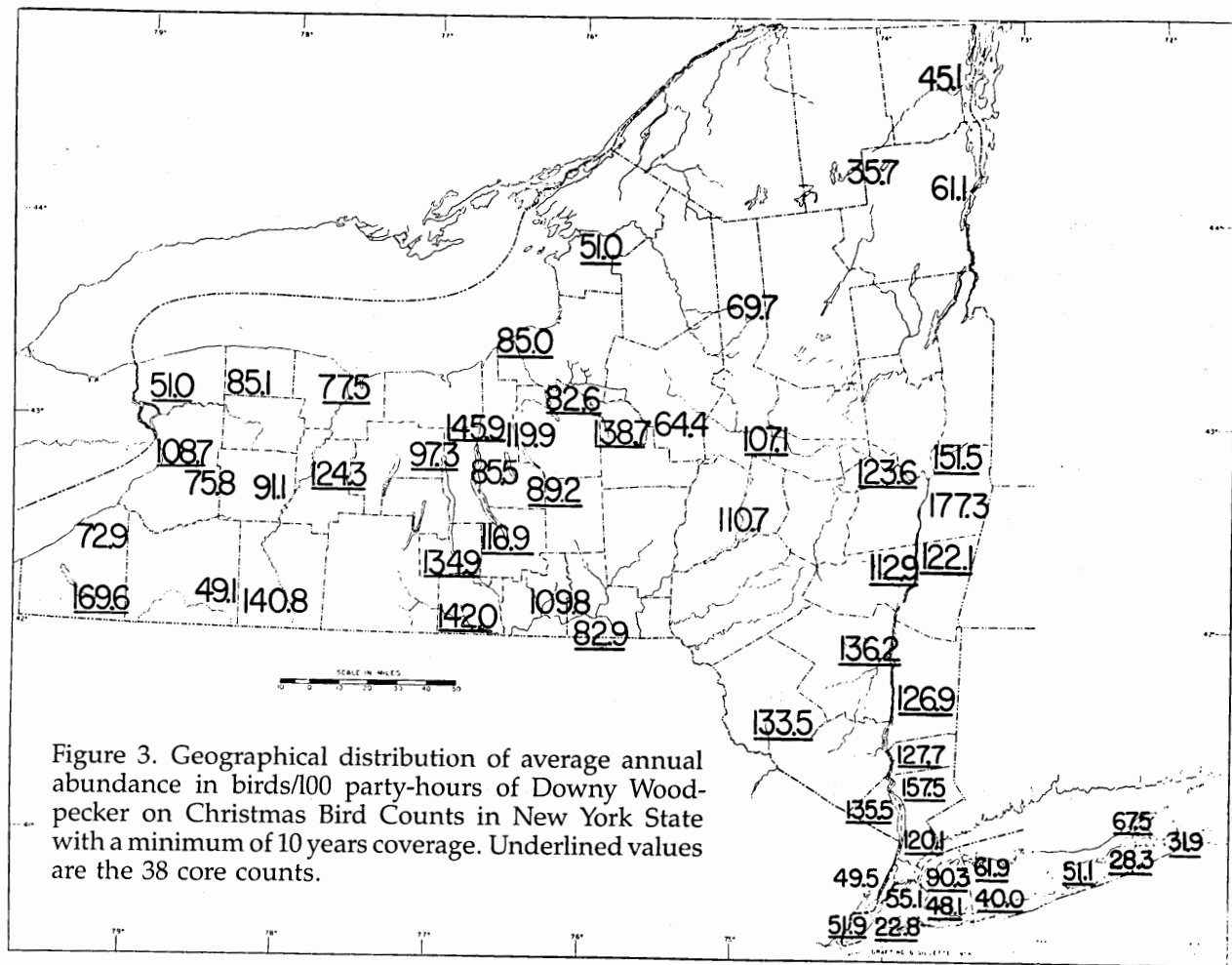
During this 26-year period, 1360 Christmas Bird Counts were reported, and Downy Woodpecker was reported on 1359 (99.93 percent) of them, failing to appear on only a 1962 count called "Ocean off Long Island." In contrast, Hairy Woodpecker appeared on 1335 counts (98.16 percent). On only 24 of these counts, involving 17 widely scattered count locations, did Hairy Woodpecker numbers equal or exceed Downy Woodpecker numbers. This happened most frequently on the Old Forge (five years) and Ft. Plain (four years) counts, and most commonly among all the counts in the 1962 (four counts) and 1978 (three counts) seasons.

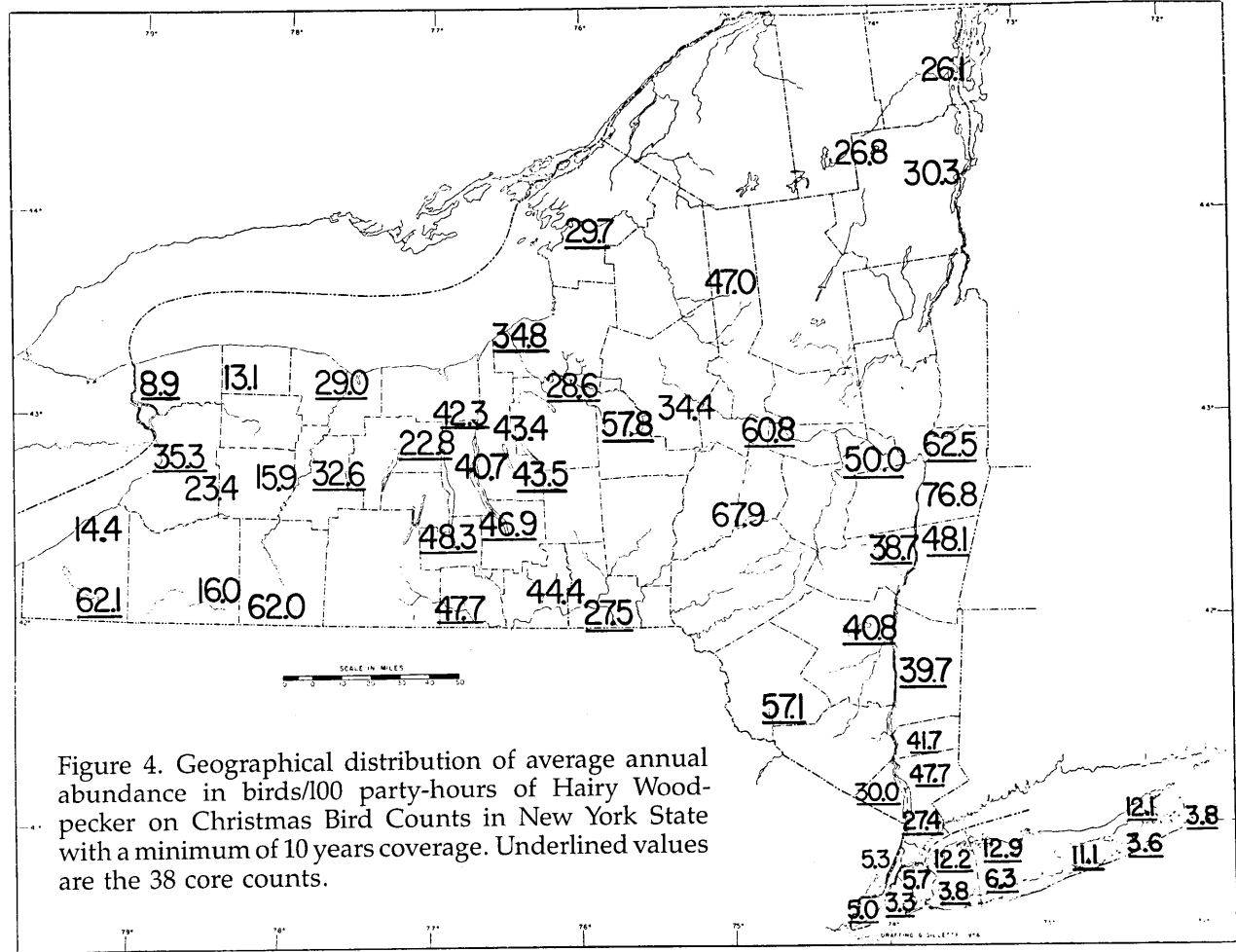
Eaton (1912) indicated that the Hairy Woodpecker may outnumber the Downy Woodpecker in wooded areas, and that the Downy Woodpecker outnumbered the Hairy Woodpecker everywhere except the Adirondacks. Annual species ratios from the three Adirondack counts (Saranac Lake, Old Forge, and Elizabethtown) averaged 1.52:1 in favor of the Downy Woodpecker (range 0.469:1 to 4.50:1), or a little less than one-half the statewide average. These counts were run a total of 48 times in the 26 years, and accounted for seven of the 17 occasions when the species ratio was unity or favored the Hairy Woodpecker. The greatest preponderance of the Hairy occurred at Saranac Lake in 1977 with a count of 15:32. Saranac Lake also had the lowest overall ratio of 1.22:1

**Table 1. Regression Parameters for Downy Woodpecker (DWP)
and Hairy Woodpecker (HWP) in Figure 1.**

Regression Equation Birds/100 party-hours = $a + b(\text{year})$						
Species	Case	a	b	r^2	F-ratio	p
DWP	All NY State Counts	176.18	-1.166	0.3196	11.274	0.0026
DWP	38 Core Counts	186.08	-1.275	0.3492	12.880	0.0015
DWP	NYS less Long Island	200.34	-1.320	0.2827	9.459	0.0052
DWP	Long Island only	103.72	-0.661	0.1784	5.212	0.0316
HWP	All NY State Counts	92.69	-0.876	0.6698	48.676	0.00001
HWP	38 Core Counts	100.96	-0.998	0.7032	56.873	0.00001
HWP	NYS less Long Island	119.34	-1.139	0.7044	57.195	0.00001
HWP	Long Island only	15.94	-0.109	0.1890	5.590	0.0256

1. Year is the last two digits of the calendar year; i.e., 1960=60, 1961=61, etc.





among the northern counts. Two counts on the Adirondack periphery at Watertown and Plattsburgh also showed species ratios well below the state average, at 1.72:1 and 1.85:1, respectively. Thus, while these northern counts tended toward a 1:1 distribution of these species, the actual occasions when Hairy Woodpecker equaled or outnumbered Downy Woodpecker on these Christmas Bird Counts was very rare (1.25 percent of all counts).

The greatest disparity in relative abundance between these species occurred in metropolitan downstate areas and on Long Island where the least favorable Hairy Woodpecker habitat exists. Extreme ratios, listed as count location, year, and actual counts of Downy Woodpecker: Hairy Woodpecker, include: Staten Island 1969, 52:1; Brooklyn 1972, 32:1; Queens 1980, 60:0, and 1981, 77:2; Lower Hudson 1981, 120:3; Southern Nassau County 1982, 97:1; Queens 1982, 52:1; Staten Island 1982, 52:0; Brooklyn 1983, 42:1; Montauk 1983, 79:1; and Brooklyn 1985, 32:1. My banding data from four different locations also show widely differing results in species ratio. At my home banding station (a suburban yard feeding station in Schenectady), it was 36:12 or 3.0:1 over the period 1963-1987. Nearby at Vischer Ferry, Saratoga County, where I banded in a mixed deciduous-brush woodland in the floodplain of the Mohawk River, it was 96:18 or 5.33:1 during 1964-1987. At a year-round feeding station at an Adirondack summer cottage at Jenny Lake, near Corinth, it was 45:53 or 0.849:1 during 1970-1987. At Island Beach State Park, New Jersey, a barrier beach not unlike those of Long Island, but farther south, it was 112:3 or 37.3:1 during 1965-1987. These geographic and habitat trends are consistent with these Christmas Bird Count results.

The Island Beach results also were consistent with the observed annual variability in numbers of Downy Woodpecker on Christmas Bird Counts. Fifty-eight percent of the bandings occurred in a small number of peak years representing only 25 percent of the years when I banded. A maximum of 16 was banded in 1980. Other peaks occurred in 1965, 1968, 1972, 1974, and 1979, all based on a one-week banding experience each October.

A comparison of regression analyses by species between Long Island and the rest of the state showed two different time-related trends. The ratio of Hairy Woodpecker reports between mainland New York and Long Island was 5.41:1 in 1960 and decreased to 3.36:1 by 1985. This appears attributable to a much greater decline in reports of this species in mainland New York (55.8 percent decline vs. 28.8 percent decline on Long Island). Despite the less favored Hairy Woodpecker habitat on Long Island, the reported abundances of the species have undergone less collective change in this habitat than elsewhere in New York.

The Downy Woodpecker situation is quite different. The geographic ratio of reports of this species for mainland New York and Long Island was 1.89:1 in 1960 and 1.86:1 in 1985. This suggests that whatever has caused the reporting decline for this species is occurring with approximately equal impact in both areas. Figs. 3 and 4 further explore some of the geographical variation in the reported Christmas Bird Count abundance of these two species. The highest Downy Woodpecker concentrations (Fig. 3) generally occur from Schenectady and Troy southward in counties bordering the Hudson River. Parts of the Southern Tier and Finger Lakes Region also have above average abundances. The Southern Rensselaer County Count has the highest average of 177.3 Downy Woodpeckers/100 party-hours, followed by Jamestown at 169.6. Southern Rensselaer has been reported in 19 of the 20 years of its existence between 1966 and 1985.

Southern Rensselaer County also heads the list of Hairy Woodpecker average abundances in Fig. 4 at 76.8 birds/100 party-hours, also followed by Jamestown at 62.1, and Scio at 62.0. Contrary to what might be expected from Eaton's assessment, the Adirondack counts do not stand out from the others in the state as sites for higher abundance of Hairy Woodpecker. The top nine counts with abundances at or above 50 birds/100 party-hours occur primarily (six of the nine) in a band south of the Mohawk River from Oneida to Troy. Twelve of the 13 counts with abundances between 40 and 49 birds/100 party-hours occur in the Finger Lakes Region-Southern Tier (eight) or border the Hudson Valley (four).

Even Long Island, which is a relatively small geographical entity, appears to show an abundance gradient for both species between the more wooded north shore and more urbanized south shore. This gradient appears more clearly defined for the Hairy Woodpecker, in keeping with the Hairy's shy, retiring, forest-dwelling character, as opposed to the relatively more cosmopolitan and less selective habitat preferences of the Downy Woodpecker.

Summary

An analysis of New York State Christmas Bird Count data for 1960-1985 on Downy Woodpecker and Hairy Woodpecker showed reporting declines of 26-29 percent for the former; and 29 percent for the latter on Long Island, and 55-61 percent elsewhere in the state. Both species showed variations in annual abundance that in some cases appear attributable to irruptive migratory behavior. These variations were greatest for the Downy Woodpecker.

Overall, Downy Woodpeckers outnumbered Hairy Woodpeckers 3.35:1, but due to differing rates of decline over the study period, these ratios showed a time-related increase primarily on mainland New York.

They showed also considerable geographic variability with ratios as high as 50-100:1 in metropolitan habitat unfavorable to the Hairy Woodpecker. Only rarely did Hairy Woodpecker exceed Downy Woodpecker, and it did so at widely scattered locations most often in the Adirondack Mountains. Saranac Lake had the lowest count average ratio of 1.22:1, and lowest ratio on an individual count of 0.469:1. Areas adjoining the Mohawk and Hudson valleys, as well as parts of the Finger Lakes Region and Southern Tier had the highest average reported abundances for both species.

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