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Resident Blue Jays in Southern New Hampshire

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Recently, Smith (1979) published an analysis of the migrational movements of Blue Jays *(Cyanocitta cristata)* west of the 100th meridian, in which he outlined the literature on Blue Jay migration in general. This paper presents a study of a similar-sized sample, but collected by a different technique and from a different area, with a comparison of results.

I have been banding Blue Jays for more than 25 years at my home in Bedford, just south of Manchester, New Hampshire. My house is near the center of approximately 10 ha (25 acres) of forest, including both hardwood and white pine, with approximately 1 ha of partially cleared land, and a landscaped lawn surrounding the house. Bedford was a rural town with many small farms 25 years ago, but since that time it has been heavily developed — fields near highways have become malls and the farms and woodlots have been subdivided for houselots — so that it more of a suburban bedroom town today. Apparently the Blue Jays have adapted to this change; their population in Bedford appears to have increased during this period.

Over the years, I have been particularly interested in the local resident seed-eating birds, capturing almost all of my birds in seed-baited traps. I also feed birds at feeders around the house the entire year, as do many of my neighbors. The resident Blue Jays visit the baited traps, and I believe that I band a majority of this group. However, adult resident Blue Jays are seldom recaptured within the next 90 days, although they frequently return, being retrapped the next season or the following year. In contrast, hatching-year birds frequently are recaptured several times after initial banding. Only on rare occasions do migratory jays enter my traps, so that I do not get the numbers of migrants that would be captured with mist nets along a flyway during migration.

I have banded a total of 1164 Blue Jays, of which I have returns on 230. Table 1 shows a comparison of these totals with those reported in Smith (1979). The proportion of local birds that have returned to my banding station is much higher than that reported by Smith. Since the Bird Banding Laboratory (BBL) does not routinely store local recoveries and Smith's data are derived entirely from the banding records at the BBL, it seem possible that his data set underestimates the total recovered and the number recovered in the same longitude-latitude block. Thus, my data should more accurately reflect actual recovery rates in these areas. The proportion of recoveries in the same region are nearly the same in the two data sets, but Smith reported many more recoveries from distant regions. These latter recoveries are probably time-dependent in that my data cover only 25 years, whereas Smith's data span nearly 60 years (pers. comm.).

Table 1. Data on birds banded

	Total banded	Total recovered	Same lat-long	Same region	Distant region
Smith	1496	168	133	19	16
Kennard	1164	231	214	11	6

Smith (1979) demonstrated a northwest-southeast axis of migration in the western United States, as opposed to a northeast-southwest axis in the eastern United States. My recoveries also confirm this pattern (see also Middleton, 1974). Of six distant returns, one (823-54534) banded 14 May 1966 was found dead at Portage Lake, in northern Maine, 23 July 1966. The other five returns are from the southwest: 503-95727, banded as nestling 8 June 1955, shot in North Carolina October 1957; 1083-00774, banded as adult 28 May 1973, found dead in Pennsylvania in March 1974; 1083-00854, banded as adult 25 May 1974, shot in Connecticut October 1975; 563-22809, banded as adult 26 May 1956, shot in Massachusetts in February 1957; and 823-54670, banded as adult 24 May 1970, shot in North Carolina 7 October 1978. I also have had 40 birds, which were banded as hatching-year and were apparently locally hatched, that have returned subsequently, demonstrating that some Blue Jays do return to their natal area to breed.

From observations around Bedford over the past 25 years, I believe that in the late summer, when the

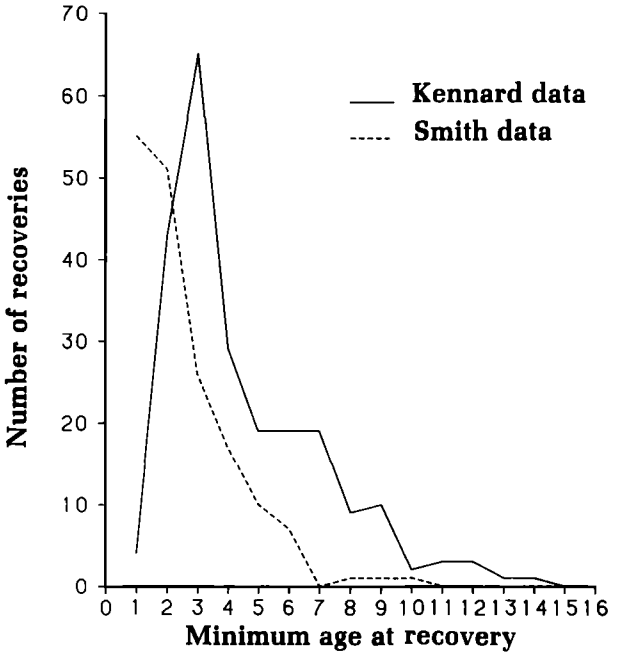

Fig. 1. Recoveries as a function of age (see text.) Dashed line = Smith data. Solid line = Kennard data.

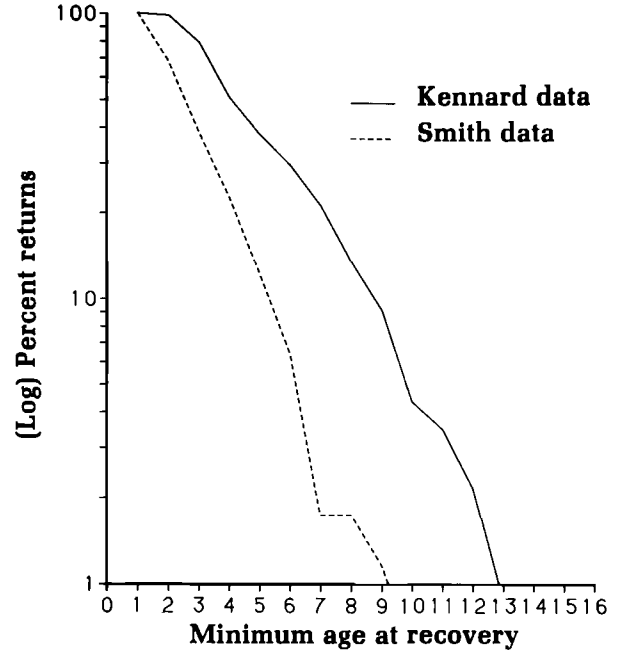

Fig 2. Logarithmic graph showing total number of birds of a known age or older.

fledglings are big enough to fend for themselves, they are driven off by their parents, form small flocks and probably migrate. This is supported by my observation that most of the fall migrating Blue Jays captured at Manomet Bird Observatory, Manomet, Massachusetts, are hatching-year birds. However, not all hatching-year Blue Jays migrate, as one (763-49763) banded as a juvenile on 25 July 1964 was still present on my property on 24 December of the same year. Of the young birds that do migrate, many return to their natal area after 1 to 3 years. After establishing a territory, and provided adequate food is available, many cease to migrate and become permanent residents. I therefore conclude, as have others (see Smith 1978, 1979), that two populations of Blue Jays exist, one which migrates and one which does not.

It appears, however, that even the permanent resident Blue Jays will leave an area if environmental conditions are not favorable for survival. From 1953 through 1978, I had Blue Jays at my feeders every month of the year, but 1978-79 did not follow this pattern. During the last week of November, the Blue Jays disappeared from around my feeders, and I did not have any Blue Jays at the feeders until after mid-April 1979. The Blue Jays that appeared in late April were all unbanded, had faint bars on the wing coverts with none on the alula, and some had pink mouths — leading me to believe that this group was composed almost entirely of second-year birds. In mid-May, my regulars returned, rapidly set up housekeeping, and apparently had an unusually successful year, for during July and August I banded 37 hatching-year birds.

Smith (1979) also presented data on the age and longevity of the returns he analyzed. In Figure 1, I present my data on longevity and also reproduce the graph from Smith (1979, Figure 1). Unfortunately, we have used different systems. Smith graphs his recoveries as a function of the number of years after banding; whereas my data have been arranged as a function of the number of years since hatching. Thus, in my presentation, a bird banded as a hatching-year bird one summer and returning the next, would be one year old, while a breeding adult that must be at least one year old, banded in the summer and returning the next, would be considered two years old. I believe this gives a better picture of the life span of the species. Discounting these differences in technique (which might move Smith's data curve one year to the right), my data show a significantly greater life span (Wilcoxon Signed Rank Test, $p<0.05$, 1-tailed test). Another way of illustrating the differences is to graph the total number of in-

dividuals known to be alive at a given age (Figure 2). A plot of the log of the data produces a line whose slope is an indication of the mortality rate at that age. Again, it is obvious that my data show a much longer life span than did that of Smith (1979). He reported only 10 birds known to be more than 5 years old and only 3 birds more than 6 years old, while my data show 49 Blue Jays more than 7 years old and 31 over the age of 8.

My oldest bird (823-54633) was banded as a breeding adult 6 August 1965, has returned 11 times, and was last recorded 24 September 1978 — not as old as Middleton's oldest (14½ years). I hope that it may return again and hold a record for longevity in this species.

Fretwell (1973) has observed that an increase in the population of Blue Jays often is accompanied by a decrease in nesting small passerine birds. He concludes "every Blue Jay costs a woodland seven pairs of small open nesting birds, but appears to add two pairs of hole nesters." During my study period and in my study area, while Blue Jays have increased in number, there has been an apparent decrease in the number of nesting wood warblers, small sparrows, and Red-eyed Vireos, but probably some increase in chickadees, nuthatches, and Downy Woodpeckers.

My data support the theory that some Blue Jays migrate. Apparently most young birds fly south, some from New Hampshire going as far as North Carolina. Many of these young return to their natal area later for breeding. Some of these cease migration and become permanent residents of their breeding area. Occasionally, probably because of a low food supply, a more massive movement occurs which may include these older birds.

Acknowledgement

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