

down on such points as the apparent tendency of the species to be in the immediate area without repeating frequently in traps. Trying to get around these problems by using a larger sample normally means lumping the data from several stations, without always knowing what fluctuations represent lapses in banding effort, or whether some stations are attractive to the species at one season but not another.

Any indications from my jays are thus a matter of opinion more than of statistical analysis. One striking parallel to the flight of May, 1962, does appear in my data: 54 birds banded here in May, 1954, almost all in the first half of the month (compare the next highest monthly total during these years, 20 jays). Of these 54 jays, only 5 returned to the station 3 months or more after banding. Of 77 jays (including these) banded in May, from 1954 through 1958, only 12 returned; this means that 9 out of the 23 banded in years other than 1954 returned. By comparison, of 14 birds banded in March, 1958, no less than 10 returned, mostly in later years. Out of 31 jays banded in March in the years 1956 through 1959, 16 returned; this means that 6 out of 17 banded in years other than 1958 returned. Looking at these figures as a whole, the greater number of returns for March birds compared to May is based on a comparison of March, 1958, with May, 1954, as if we take out these two years, jays banded in May actually show a slightly higher return ratio (on a small sample). If in Connecticut we experience any obvious flight of jays in spring, it comes in early May; birds banded during the peak of such a flight appear to be mostly migrants. The comparable southward flight is in September, at a time when I am rarely trapping. I believe that the jays banded in March, 1958 were mostly local residents, rather than arriving summer residents — the peak in that month is caused by a gap in banding previously, with no jays banded in December, 1957, or January and February, 1958, because of illness. I rather doubt that many jays which return to my station in a following year are migrants going through. The odds on such returns, under circumstances which don't force birds to concentrate in a few spots because of specialized habitat preferences, are extremely low (Blake, "On the Problem of the Return of Migratory Birds," *Bird-Banding*, 22: 114-117, July 1951).—E. Alexander Bergstrom, 37 Old Brook Road, West Hartford, Conn.

**Band Loss by Blue Jays.**—For all but the shortest-lived passerines, it has long been apparent that band loss distorts survival data. Though a handful of cases may be known or suspected from plumage peculiarities if the loss occurs within a few days or weeks, any real attempt to check band losses requires the use of two numbered bands (on different legs, to avoid injury to the bird by "flanging" as the result of two bands rubbing together). Systematic rebanding has taken place on seabirds (such as the Common Terns banded by the Austins on Cape Cod), but to a very limited extent on passerines. It would appear of little value on the average small bird with an average expected life of only a year or two from the time of leaving the nest. I have rebanded most of my Blue Jays and Common Grackles three to four years after original banding, or whenever the bird was first retaken thereafter. These species average a somewhat longer life than the smaller passerines, and are not subject to extreme band wear.

My data are unfortunately quite fragmentary, despite the rebanding of many hundreds of birds. It would be far preferable to have enough data for statistical treatment. However, the size of the sample from my station will not increase radically, and the recent change in number 3 bands (greater hardness) will affect the rate of band loss appreciably, presumably for the better. The great lack of published data on passerines makes even limited information of some interest.

The time for rebanding was set rather arbitrarily, based on the retaking of many birds after about four years, with bands obviously far thinner than originally. Most of those rebanded had obviously thin bands, but rebanding took place even for those where wear was less extreme. No objective measurement was applied. The most exact measure of band wear would be the weight of the band on a delicate laboratory scale, but this cannot be determined without taking the band off. It would be impractical, and probably harmful to the bird, to try to put such a band back on the leg. The band is then thin enough to make smooth reforming most difficult, and even if this could be done, the band has been weakened by opening and reclosing (in general, removed bands should not be reused, even if the band is new — see Blake, "Reapplying Bands", *Bird-Banding*, 24: 107, July 1953). Use of a feeler gauge for thickness might add accuracy, provided it can be assumed that the wear is quite even (as it normally is for the Blue Jay).

TABLE 1. BLUE JAYS WHICH LOST BANDS

Original Number	Date First Banded	Date Rebanded	Retaken "with"	Retaken "without"	Minimum Elapsed Time	Maximum Elapsed Time
49-300823	11/5/50	10/25/57	10/11/59	11/25/60*	8 yrs. 11 mos.	10 yrs.
48-216590	11/9/52	5/31/58	—	5/ 5/62	5 yrs. 6 mos.	9 yrs. 6 mos.
553-30979	11/7/54	10/20/57	5/31/58	11/20/60	3 yrs. 6 mos.	6 yrs.

\*last taken 9/29/61

Only three jays were recorded as definitely losing bands (Table 1). The exact time of loss could not be pinned down closely, but ranged from a possible minimum of 3 years and 6 months to a possible maximum of 10 years. For another 11 jays, I have records of retaking the bird with both bands still present, after an interval of 9 months to 4 years. One striking case is 49-300831, which appeared close to band loss on 11/7/54 (almost 4 years after banding), but which was retaken with the original band as late as 3/19/61. On the other hand, 8 of the jays from table 2 retained their original band longer than the *maximum* time to band loss for 553-30979 (from table 1). The shortest time recorded for any of the 11 (4 years and 9 months) was appreciably longer than the *minimum* time to band loss possible for 553-30979. One moral seems to be that band loss can't be presumed from poor condition of the band; only a recapture minus the older band proves anything.

The birds in Table 2 are of course not a random sample of the jays banded at my station, as each was over 3 years of age before rebanding. It does not seem that double banding of each bird when first banded would have proven much, as in this species loss of bands appears to result from gradual wear and not from damage by the bird's bill. Almost none of our old jays with thin bands show either band lapping or damage from the bill, in sharp contrast to our old Common Grackles — in which lapping is relatively common, though without injury to the bird.

TABLE 2. REBANDIED BLUEJAYS NOT KNOWN TO HAVE LOST BANDS

Original Number	Date First Banded	Date Rebanded	Last Date Taken	Elapsed Time
49-300831	12/24/50	2/ 1/59	3/19/61	10 yrs. 3 mos.*
48-216593	12/ 7/52	2/15/59	9/29/61	8 yrs. 9 mos.
543-73277	5/26/54	10/25/59	5/ 5/62	8 yrs.
553-30972	9/ 4/54	3/16/58	11/25/60	6 yrs. 2 mos.
553-30971	9/ 5/54	11/23/57	11/25/61	7 yrs. 2 mos.
553-30975	10/23/54	3/15/58	1/ 2/60	5 yrs. 2 mos.
563-27756	12/16/54	11/25/60	12/23/62	8 yrs.
553-30880	5/ 8/55	3/16/58	3/31/61	5 yrs. 10 mos.
563-27724	10/12/55	11/25/61	5/13/62	6 yrs. 7 mos.
563-27738	3/30/56	4/22/61	5/13/62	6 yrs. 2 mos.
563-27758	12/30/56	1/ 2/61	9/29/61	4 yrs. 9 mos.

\*original band noted as paper thin, and open 1 mm. on 11/7/54 (gap closed then); open only about .5mm on 3/19/61.

Table 2 resembles the sort of collection of raw data which many of the larger and older banding stations can amass—not unprecedented in detail, and too small for statistical analysis. One difficulty with such data is that the gaps are not known. If, however, we put Tables 1 and 2 together, and consider what would have been known in the absence of rebanding, one of the two ten-year birds would have dropped out, and the single record between nine and ten years would also

have dropped out. While band loss reduces the apparent number of birds in each of the older age groups, it has its most striking effect on the oldest birds. The number of jays which reach nine years of age is presumably under 1 percent of those which reach their adult stage, but the number may yet be far higher (double?) what would appear in the absence of rebanding. These figures are not necessarily typical of the whole population: they are based not only on banding at one spot over a period of years and a stable environment there, but also on particularly good cover for birds and food made available more-or-less the year round.

I had hoped for similar data from rebanding Common Grackles, especially as the total number banded here has been greater than for jays. They are taken in a shorter season (largely March through July). Because the season is shorter overall, and because it comes at a time of year when I am more likely to be away or busy with gardening, banding effort on the grackles has been even more erratic than for the jays. I suspect a higher rate of band loss for my grackles, from the greater damage to bands caused by the bird's bill (appreciable lapping is not too likely to lead to loss, but damage to the band in this way suggests that the birds may also open some bands and thus lose them). As yet I have no grackle record showing actual loss, and only one retaken after re-banding. The lapping makes it necessary to remove more of the original bands at the time of rebanding. This removal doesn't eliminate all continuity with the original banding, but it does make the record useless for determination of date of band loss under natural conditions.—E. Alexander Bergstrom, 37 Old Brook Road, West Hartford, Conn.

## RECENT LITERATURE

### MIGRATION

(See also 7, 21, 28)

**1. Lipid Levels in Birds Preparing to Cross the Sahara.** P. Ward. 1963. *Ibis*, **105**(1): 109-111. The amount of body fat in birds collected in northeastern Nigeria, mostly from late February through early April, 1962, amounted to between 30 and 40 percent of body weight, for the Wheatear and Yellow Wagtail. These migrants must cross about a thousand kilometers (or about 625 miles) of desert in which opportunities for feeding are exceedingly limited. The fat reserves appear comparable to those for crossing the Gulf of Mexico, suggesting that this percentage may be the maximum a bird can accumulate, or the heaviest that can be carried in flight.—E. Alexander Bergstrom.

**2. Migration Across the Southern North Sea Studied by Radar. Part 4. Autumn.** David Lack. 1963. *Ibis*, **105**(1): 1-54. The movements of migrants in Norfolk in September and October as studied by radar proved to be even more complex than other evidence had shown. The main departure for passerines proved to be S.S.E., despite a preponderance of banding recoveries to the S.S.W., indicating a change in heading later. A small departure eastward was not previously known. The previously known diurnal departure S.E. was believed to be primarily a broad-front movement inland with a following wind. "The 'falls' of Scandinavian passerine night-migrants were attributed . . . to westward drift by easterly winds of a migration that normally keeps over the land, or along the coast, on the opposite side of the North Sea. In fact, there is a regular passage from Norway S.S.W. towards Iberia passing over the North Sea and East Anglia."

"Scandinavian thrushes have evidently evolved an innate response such that, if they are over the sea at dawn out of sight of land, and if in addition they have been drifted westward, they change their heading from S.S.W. to S.S.E. Such a response would seem of no adaptive value in the North Sea, but it would be of great value for birds drifted into the Atlantic . . ."

"All 9 nocturnal and 4 diurnal movements analysed were far commoner and denser with following than opposed winds. They occurred with cross and opposed winds mainly when the wind was light. They tended to be commoner in clear than cloudy weather, and in anticyclonic than disturbed weather. After allowing for wind-direction, they were equally common in warm and cold weather."—E. Alexander Bergstrom.