

3610079J

Aussi disponible en français

Progress Notes contain interim data and conclusions and are presented as a service to other wildlife biologists and agencies.

No. 60, March 1976

The co-operative Breeding Bird Survey in Canada, 1975

by Anthony J. Erskine<sup>1</sup>

Introduction

The Breeding Bird Survey (BBS) was started in Canada in 1966, as an experimental study. We now use it to follow year-to-year changes in numbers of birds (especially non-game birds) in most settled areas of Canada. This report considers those changes between 1974 and 1975, and is thus comparable in format and coverage to recent reports in this series (Erskine 1974, 1975).

This is a co-operative project, involving the Canadian Wildlife Service, the United States Fish and Wildlife Service, and volunteers in both countries. Methods of data collection are the same throughout, but there are some important differences in the procedures used in Canada and the U.S.A. for editing the data received and in the actual analyses.

Results

Coverage

Figure 1 shows the distribution of degree-blocks in which surveys were made in 1975, and Table 1 compares the numbers of routes surveyed in each of the last five years with the total number of routes surveyed since the survey began in 1966.

Grouping of routes for analysis

The groupings used in 1974 were continued with minor adjustments, chiefly along the northern limits of the two most westerly regions. The species most frequently reported in each region are shown in Tables 2 to 9.

Changes observed

As in 1974, we have analysed data for six major regions: Maritimes, central Ontario and Quebec, southern Ontario and Quebec, southern Prairie Provinces, central Prairie Provinces (including northeastern British Columbia), and British Columbia (west of the Rockies). Data from Newfoundland and Yukon Territory are too few for useful analysis. Summaries of comparisons between 1974 and 1975 are presented in Tables 10 to 15. Annual index numbers will appear in a proposed 10-year report, and are not given here.

Discussion

Coverage

The pattern of coverage was similar to previous years, with a few new routes added along the northern periphery of most sampled areas. The total number of surveys was similar to those of 1973 and 1974, and only in Newfoundland and Ontario did numbers of completed surveys increase. In Nova Scotia and New Brunswick we surveyed the fewest routes of

any year except 1966, the very first year of the project, and recruitment of new observers in Quebec did little more than balance the loss of former co-operators. Although coverage in Quebec, Manitoba, Saskatchewan, and British Columbia reached a peak in years when the national co-ordinator worked in those provinces, coverage in all except Manitoba would have peaked in the same years even without his efforts. Actually, coverage in British Columbia decreased in 1975 even though the national co-ordinator surveyed more routes there than in 1974. It thus seems that coverage has reached a plateau beyond which only greatly increased efforts by regional co-ordinators, in recruiting new co-operators, can effect an increase or even maintain present coverage. This year only 31 of 193 observers covered more than one route, although some of these also assisted other people with their surveys. Seven regional co-ordinators collectively covered 30 routes, a good example of the dedication these surveys arouse in some of our keener observers. But we are equally happy to note that 66% of all surveys were done by observers who surveyed only one route each, compared to 63% in 1974. Spreading the load is the surest way of ensuring the continued enthusiasm of our volunteer co-operators.

Grouping of routes for analysis

No significant changes were made this year, despite the marginally adequate samples available from the central Prairie Provinces. The examination of methodology anticipated in a proposed 10-year report on the BBS may indicate whether it is worth our recalculating past data using groupings different from or smaller than those now in force. In general, we can anticipate that further subdivision will tend to increase the confidence intervals of the estimated changes, owing to the smaller samples, unless the subsamples are markedly more homogeneous than the groupings used at present.

Changes observed

Statistically significant changes from 1974 to 1975 are marked in Tables 10 to 15. 1974 was apparently a poor year, as changes from 1973 were generally downward in most regions; changes from 1974 to 1975, however, showed no general upward or downward pattern. There is no evidence of region-wide changes in three regions, and only a slight suggestion of this in a fourth. The central Ontario and Quebec region showed markedly more increases than decreases, and all significant decreases—in Herring Gull, Bank Swallow, and Common Crow—were based on large changes on a very few routes, very possibly as results of chance observations of flocked birds in 1974. As the central Ontario and Quebec region showed far more decreases than increases last year, this year's increases could reflect either a real recovery from reduced numbers in 1974, or else that birds were back to normal after having adopted less conspicuous behaviour in response to

S.C.F. - C.W.S.

MAR 17 1976

SERVICE CANADIEN DE LA FAUNE

SK 471 C3371 NO. 60

<sup>1</sup>CWS, Ottawa, Ontario K1A 0H3.

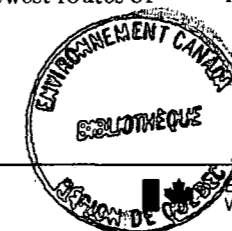
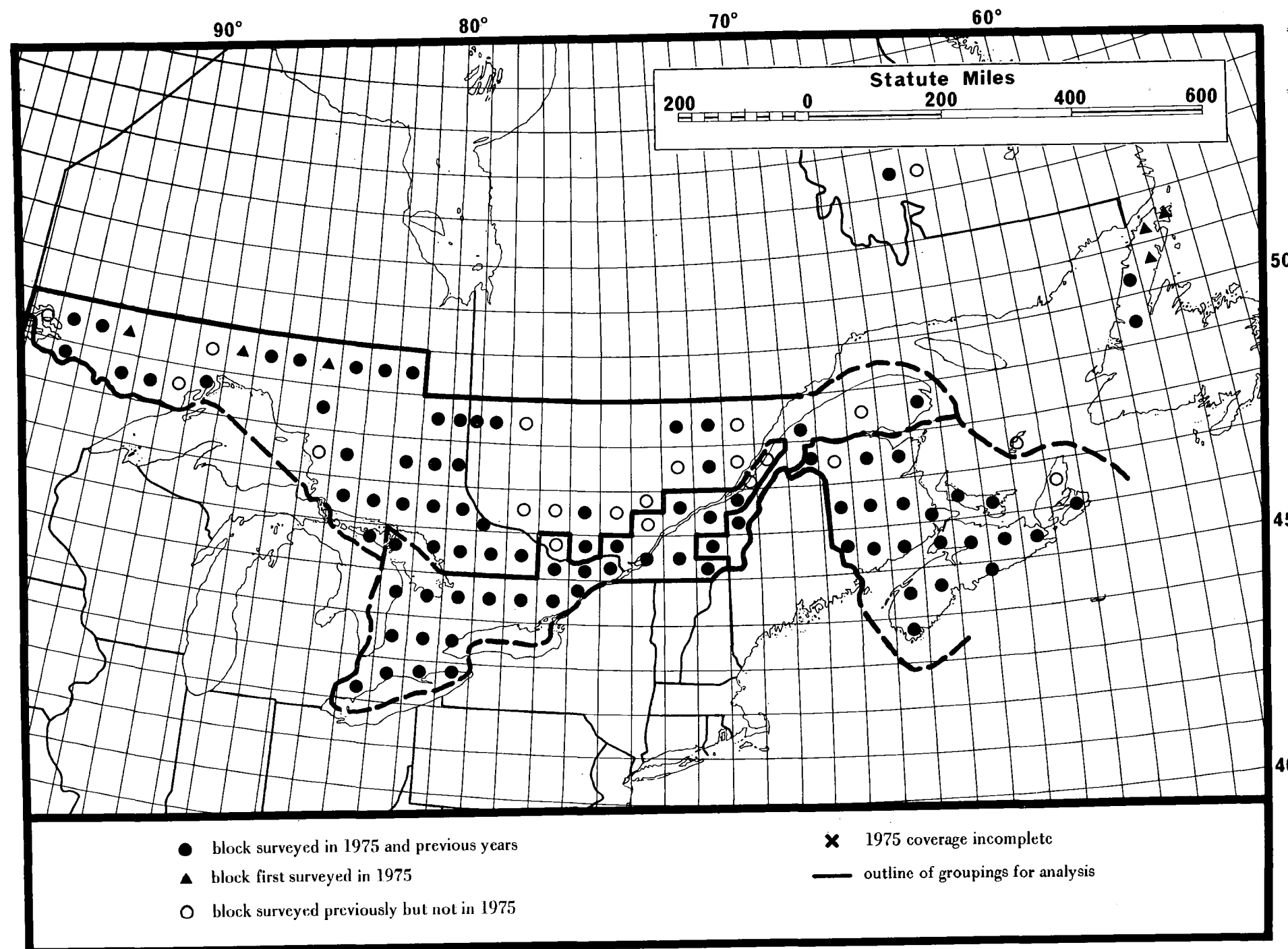
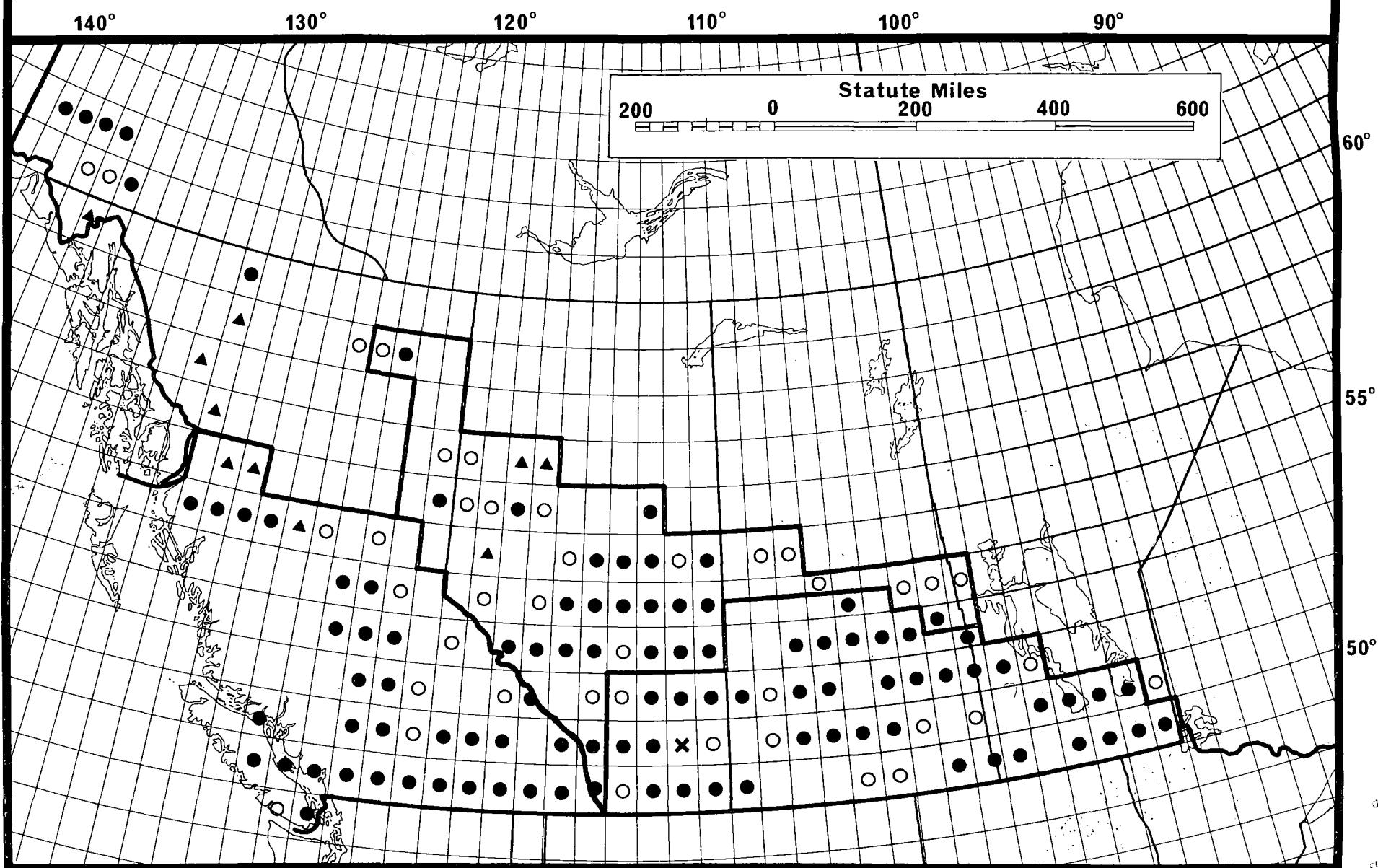


Figure 1  
Extent of coverage in 1975 and additional coverage in  
1966-74 Breeding Bird Survey



- block surveyed in 1975 and previous years
- ▲ block first surveyed in 1975
- block surveyed previously but not in 1975

- × 1975 coverage incomplete
- outline of groupings for analysis

adverse weather in 1974. We cannot clearly distinguish between such alternatives at present, but in either case we see further evidence of the fluctuation around intermediate levels, which is characteristic of most populations.

The situation in the Maritimes was especially interesting, as this area showed evidence of a decline among insectivorous species in 1974 (although not in all species combined), and of a still more striking and general decline in all species in 1975. Inasmuch as we had already learned of evidence suggesting mortality of small birds in areas sprayed against spruce budworm in New Brunswick, it seemed worth examining the Maritimes data more closely. We subdivided the Maritimes sample of routes with comparable coverage into (i) areas sprayed against budworm, (ii) other New Brunswick areas, and (iii) Nova Scotia and Prince Edward Island. None of these subsamples contained as many routes as we had considered the minimum necessary for meaningful analysis, but, most surprisingly, the numbers of species showing statistically significant changes were as great or greater in each subsample as in the total, composite sample (Table 16). Furthermore, the largest number of statistically significant changes, all decreases, was found in the N.S.—P.E.I. subsample, which was obviously not directly affected by budworm spraying. Comparison of the two New Brunswick subsamples indicated that, in almost every case where the per cent change differed appreciably, the sprayed area showed a larger decrease or a smaller increase than the unsprayed area, an obvious correlation with the mortality actually observed by P.A. Pearce and co-workers (pers. commun.). We conclude that some other adverse factor(s) must have acted on bird numbers in Nova Scotia and Prince Edward Island, where only 7 species out of 41 examined showed increases and no less than 18 showed significant decreases. A climatic effect, possibly either from the prolonged cold weather in late spring or from the unusual drought that prevailed throughout the breeding season, may be suspected, but the fact that it acted on all groups of birds, including omnivorous and seed-eating birds as well as insectivores, sets it clearly apart from the Maritime-wide decreases of insectivorous species in 1967 and 1974. We will have to look at data from other regions and years to determine whether subdividing our usual samples is a worthwhile general practice. Clearly, this supports our decision not to combine the existing regions in search for Canada-wide indices to changes, as had been suggested in some quarters, since even a regional change has now been shown to involve at least two different factors.

We will discuss trends at length in the proposed 10-year report. As this may not appear for over a year, it may be worth noting that all species for which continued decreases were suggested earlier in the Maritimes continued to decline in 1975, owing to the overall downward trend there, but all species previously noted to have decreased markedly in the southern Ontario and Quebec and Prairie regions showed appreciable increases in 1975.

#### Acknowledgements

We wish to thank all observers and their assistants who carried out the surveys reported here, and also our regional co-ordinators, many of whom also carried out surveys and who

ensured the coverage necessary for meaningful analyses. Addresses of the co-ordinators are

Newfoundland: co-ordinated from CWS, Ottawa K1A 0H3

New Brunswick, Nova Scotia, Prince Edward Island: Mr. David S. Christie, The New Brunswick Museum, 277 Douglas Avenue, Saint John, New Brunswick E2K 1E5

Quebec: Club des Ornithologues de Québec, 8191, avenue du Zoo, Orsainville G1G 4G4

Ontario: Dr. J. Murray Speirs, 1815 Altona Road, Pickering L1V 1M6

Manitoba: Mr. H.W.R. Copland, Manitoba Museum of Man and Nature, 190 Rupert Avenue, Winnipeg R3B 0N2

Saskatchewan: Mr. Frank Brazier, 2657 Cameron Street, Regina S4T 2W5

Alberta: Mr. Jack L. Park, 10236—70 Street, Edmonton T6A 2T4

British Columbia: co-ordinated from CWS, Ottawa K1A 0H3

Yukon Territory: Mr. Wayne P. Neily, Haines Junction Y0B 1L0

#### References

- Erskine, A.J. 1974. The co-operative Breeding Bird Survey in Canada, 1973. CWS Progr. Note No. 38. 15 p.  
Erskine, A.J. 1975. The co-operative Breeding Bird Survey in Canada, 1974. CWS Progr. Note No. 45. 19 p.

Table 1

Number of routes completed in the Breeding Bird Survey, Canada, 1971—75, compared to all routes surveyed in 1966 through 1975

| Province | Total routes surveyed in 1966—75 | Number of routes surveyed in* |           |           |           |           |
|----------|----------------------------------|-------------------------------|-----------|-----------|-----------|-----------|
|          |                                  | 1971                          | 1972      | 1973      | 1974      | 1975      |
| Nfld.    | 4                                | 0                             | 0         | 2         | 4         | <u>6</u>  |
| P.E.I.   | 4                                | 2                             | 2         | 4         | 4         | <u>4</u>  |
| N.S.     | 24                               | 21                            | <u>23</u> | 20        | 19        | 17        |
| N.B.     | 27                               | <u>24</u>                     | <u>24</u> | 22        | 21        | 16        |
| Que.     | 44                               | <u>25</u>                     | <u>28</u> | 24        | 21        | 24        |
| Ont.     | 67                               | 53                            | 47        | 55        | 58        | <u>61</u> |
| Man.     | 16                               | 11                            | <u>14</u> | 13        | <u>14</u> | <u>13</u> |
| Sask.    | 29                               | 13                            | <u>20</u> | <u>28</u> | 19        | 19        |
| Alta.    | 45                               | 17                            | 27        | <u>36</u> | 31        | 33        |
| B.C.     | 74                               | 12                            | 9         | 38        | <u>53</u> | 50        |
| Yukon    | 7                                | 0                             | 1         | 5         | <u>7</u>  | 5         |
| Total    | 341                              | 178                           | 194       | 247       | 251       | 248       |

\*The underlined figures represent the greatest number of routes surveyed in one year for each province. P.E.I. also had 4 routes surveyed each year in 1967—69; Quebec had 33 routes surveyed in 1970.

Table 2

The 20 species recorded in greatest numbers in the Breeding Bird Survey, Maritime Provinces, 1975; the mean number of each per route; and the percentage of routes on which they were found. Thirty-seven routes were surveyed, with a mean of 840 birds noted per route.

| Species                | Mean no. per route | % of 37 routes |
|------------------------|--------------------|----------------|
| American Robin         | 65.5               | 100            |
| Starling               | 55.8               | 97             |
| White-throated Sparrow | 53.4               | 100            |
| Song Sparrow           | 39.0               | 100            |
| Common Crow            | 38.4               | 97             |
| Common Grackle         | 28.3               | 95             |
| Red-winged Blackbird   | 27.6               | 95             |
| Common Yellowthroat    | 23.3               | 100            |
| American Redstart      | 20.4               | 95             |
| Herring Gull           | 20.1               | 54             |
| Bobolink               | 19.7               | 89             |
| Swainson's Thrush      | 18.1               | 86             |
| Barn Swallow           | 16.3               | 100            |
| Red-eyed Vireo         | 15.9               | 92             |
| Savannah Sparrow       | 15.8               | 89             |
| Ruby-crowned Kinglet   | 15.5               | 92             |
| House Sparrow          | 15.3               | 89             |
| Dark-eyed Junco        | 14.4               | 100            |
| Alder Flycatcher       | 14.2               | 97             |
| Ovenbird               | 14.0               | 81             |

Table 3

The 20 species recorded in greatest numbers in the Breeding Bird Survey, central Ontario and central Quebec, 1975; the mean number of each per route; and the percentage of routes on which they were found. Forty-nine routes were surveyed, with a mean of 617 birds noted per route

| Species                | Mean no. per route | % of 49 routes |
|------------------------|--------------------|----------------|
| White-throated Sparrow | 51.2               | 100            |
| Starling               | 40.0               | 88             |
| Red-eyed Vireo         | 28.4               | 98             |
| American Robin         | 27.7               | 100            |
| Common Crow            | 19.6               | 100            |
| Song Sparrow           | 18.7               | 96             |
| Red-winged Blackbird   | 18.3               | 96             |
| Ovenbird               | 18.1               | 96             |
| Veery                  | 17.6               | 82             |
| Chestnut-sided Warbler | 16.8               | 92             |
| Common Yellowthroat    | 15.9               | 96             |
| Swainson's Thrush      | 15.1               | 84             |
| Common Grackle         | 13.8               | 88             |
| Savannah Sparrow       | 13.7               | 69             |
| Tree Swallow           | 13.2               | 92             |
| Chipping Sparrow       | 13.1               | 96             |
| Barn Swallow           | 12.0               | 82             |
| Bobolink               | 11.9               | 53             |
| Mourning Warbler       | 10.4               | 84             |
| Hermit Thrush          | 9.6                | 80             |

**Table 4**

The 20 species recorded in greatest numbers in the Breeding Bird Survey, southern Ontario and southern Quebec, 1975; the mean number of each per route; and the percentage of routes on which they were found. Thirty-six routes were surveyed, with a mean of 1201 birds noted per route

| Species              | Mean no. per route | % of 36 routes |
|----------------------|--------------------|----------------|
| Red-winged Blackbird | 197.7              | 100            |
| Starling             | 169.3              | 100            |
| Common Grackle       | 76.5               | 100            |
| House Sparrow        | 72.5               | 100            |
| Savannah Sparrow     | 59.3               | 97             |
| American Robin       | 56.2               | 100            |
| Bobolink             | 46.7               | 100            |
| Common Crow          | 43.2               | 100            |
| Barn Swallow         | 40.2               | 100            |
| Song Sparrow         | 38.6               | 100            |
| Bank Swallow         | 28.7               | 78             |
| Brown-headed Cowbird | 27.1               | 100            |
| Eastern Meadowlark   | 26.3               | 100            |
| American Goldfinch   | 23.8               | 100            |
| Killdeer             | 21.3               | 100            |
| Rock Dove            | 18.2               | 94             |
| Mourning Dove        | 14.9               | 94             |
| Chipping Sparrow     | 14.3               | 94             |
| Tree Swallow         | 12.4               | 89             |
| Common Yellowthroat  | 11.3               | 83             |

**Table 5**

The 20 species recorded in greatest numbers in the Breeding Bird Survey, southern Prairie Provinces, 1975; the mean number of each per route; and the percentage of routes on which they were found. Forty routes were surveyed, with a mean of 920 birds noted per route

| Species                    | Mean no. per route | % of 40 routes |
|----------------------------|--------------------|----------------|
| Red-winged Blackbird       | 104.3              | 100            |
| House Sparrow              | 76.7               | 100            |
| Horned Lark                | 69.8               | 95             |
| Western Meadowlark         | 48.4               | 100            |
| Common Crow                | 41.5               | 100            |
| Mallard                    | 35.8               | 95             |
| Brewer's Blackbird         | 27.2               | 100            |
| Clay-coloured Sparrow      | 26.9               | 92             |
| Brown-headed Cowbird       | 26.7               | 98             |
| Yellow-headed Blackbird    | 24.0               | 72             |
| Savannah Sparrow           | 20.8               | 98             |
| Starling                   | 20.2               | 92             |
| Cliff Swallow              | 19.7               | 45             |
| Pintail                    | 18.6               | 78             |
| Vesper Sparrow             | 17.8               | 92             |
| Barn Swallow               | 17.0               | 100            |
| Franklin's Gull            | 15.2               | 48             |
| Chestnut-collared Longspur | 15.0               | 30             |
| Killdeer                   | 14.7               | 100            |
| American Coot              | 13.9               | 70             |

**Table 6**

The 20 species recorded in greatest numbers in the Breeding Bird Survey, central Prairie Provinces region, 1975; the mean number of each per route; and the percentage of routes on which they were found. Twenty-six routes were surveyed, with a mean of 609 birds noted per route

| Species                | Mean no. per route | % of 26 routes |
|------------------------|--------------------|----------------|
| Red-winged Blackbird   | 45.8               | 92             |
| Clay-coloured Sparrow  | 32.0               | 77             |
| Common Crow            | 30.2               | 81             |
| Brewer's Blackbird     | 25.3               | 73             |
| Franklin's Gull        | 22.5               | 27             |
| Mallard                | 20.6               | 65             |
| Song Sparrow           | 19.8               | 62             |
| American Robin         | 18.9               | 100            |
| Savannah Sparrow       | 18.8               | 81             |
| Starling               | 14.7               | 85             |
| Yellow Warbler         | 14.6               | 88             |
| White-throated Sparrow | 13.3               | 73             |
| Vesper Sparrow         | 12.9               | 73             |
| House Sparrow          | 12.6               | 65             |
| Cliff Swallow          | 12.5               | 23             |
| Brown-headed Cowbird   | 11.1               | 85             |
| Least Flycatcher       | 10.8               | 85             |
| Alder Flycatcher       | 10.1               | 65             |
| Black-billed Magpie    | 9.7                | 81             |
| Common Snipe           | 9.5                | 73             |

**Table 7**

The 20 species recorded in greatest numbers in the Breeding Bird Survey, British Columbia (west of Rocky Mountains), 1975; the mean numbers of each per route; and the percentage of routes on which they were found. Forty-eight routes were surveyed, with a mean of 605 birds noted per route

| Species                | Mean no. per route | % of 48 routes |
|------------------------|--------------------|----------------|
| Starling               | 65.8               | 83             |
| American Robin         | 54.0               | 98             |
| Pine Siskin            | 31.6               | 94             |
| Swainson's Thrush      | 30.8               | 98             |
| Crows*                 | 29.5               | 83             |
| Barn Swallow           | 18.7               | 81             |
| Chipping Sparrow       | 16.1               | 81             |
| Glaucous-winged Gull   | 13.1               | 19             |
| Dark-eyed Junco        | 12.9               | 94             |
| Brewer's Blackbird     | 12.2               | 61             |
| Red-winged Blackbird   | 10.8               | 73             |
| Song Sparrow           | 10.0               | 85             |
| Brown-headed Cowbird   | 9.2                | 71             |
| Yellow Warbler         | 7.9                | 77             |
| Yellow-rumped Warbler  | 7.8                | 90             |
| MacGillivray's Warbler | 7.8                | 67             |
| House Sparrow          | 7.7                | 25             |
| Tree Swallow           | 7.6                | 81             |
| Black-capped Chickadee | 7.6                | 69             |
| Ruby-crowned Kinglet   | 7.6                | 63             |

\*Common Crow and Northwestern Crow combined.

**Table 8**

The 10 species recorded in greatest numbers in the Breeding Bird Survey, Newfoundland (including Labrador), 1975; the mean number of each per route; and the number of routes on which each was noted. Six routes were surveyed, with a mean of 483 birds noted per route

| Species                   | Mean no. per route | No. of routes |
|---------------------------|--------------------|---------------|
| American Robin            | 56.7               | 6             |
| White-throated Sparrow    | 46.7               | 6             |
| Blackpoll Warbler         | 32.5               | 6             |
| Northern Waterthrush      | 31.9               | 6             |
| Yellow-bellied Flycatcher | 24.0               | 5             |
| Fox Sparrow               | 23.4               | 6             |
| Lincoln's Sparrow         | 21.7               | 5             |
| Herring Gull              | 17.7               | 4             |
| Gray-cheeked Thrush       | 17.3               | 6             |
| Mourning Warbler          | 16.8               | 5             |

**Table 9**

The 10 species recorded in greatest numbers in the Breeding Bird Survey, Yukon Territory, 1975; the mean number of each per route; and the percentage of routes on which they were found. Five routes were surveyed, with a mean of 518 birds noted per route

| Species               | Mean no. per route | % of 5 routes |
|-----------------------|--------------------|---------------|
| Dark-eyed Junco       | 74.5               | 100           |
| Swainson's Thrush     | 59.5               | 100           |
| White-crowned Sparrow | 53.2               | 100           |
| American Robin        | 31.0               | 100           |
| Yellow-rumped Warbler | 28.8               | 100           |
| Canada Jay            | 19.4               | 100           |
| Chipping Sparrow      | 19.2               | 100           |
| Scaup sp.?            | 16.6               | 40            |
| Bank Swallow          | 14.8               | 80            |
| Bohemian Waxwing      | 13.2               | 100           |

**Table 10**

Changes in bird population samples for 28 comparable routes, Breeding Bird Survey, Maritime Provinces, 1974-75

| Species                      | Weighted mean no. of birds per route |       | % change (bold) with 95% confidence limits |            |      |
|------------------------------|--------------------------------------|-------|--|------------|------|
|                              | 1974                                 | 1975  |  |            |      |
| Common Snipe*                | 8.74                                 | 5.33  | -64  | <b>-39</b> | -14  |
| Herring Gull                 | 31.71                                | 28.43 | -108                                       | -10        | +87  |
| Common Flicker               | 3.67                                 | 2.89  | -49  | <b>-21</b> | +6   |
| Yellow-bellied Sapsucker     | 7.51                                 | 8.44  | -31  | <b>+12</b> | +56  |
| Alder Flycatcher*            | 21.73                                | 14.92 | -41  | <b>-31</b> | -22  |
| Least Flycatcher             | 5.10                                 | 4.13  | -46  | -19        | +8   |
| Tree Swallow*                | 17.37                                | 12.27 | -49  | <b>-29</b> | -9   |
| Bank Swallow*                | 20.65                                | 9.03  | -97  | <b>-56</b> | -15  |
| Barn Swallow*                | 22.16                                | 15.85 | -46  | <b>-28</b> | -11  |
| Blue Jay                     | 4.37                                 | 3.71  | -37  | -15        | +6   |
| Common Raven                 | 10.79                                | 8.89  | -42  | -18        | +6   |
| Common Crow                  | 38.22                                | 33.58 | -25  | -12        | 0    |
| Winter Wren*                 | 7.64                                 | 4.70  | -56  | <b>-39</b> | -21  |
| American Robin               | 68.87                                | 65.29 | -14  | -5         | +4   |
| Hermit Thrush                | 9.81                                 | 9.69  | -20  | -1         | +18  |
| Swainson's Thrush            | 21.92                                | 21.49 | -20  | -2         | +16  |
| Veery                        | 8.45                                 | 7.03  | -43  | -17        | +9   |
| Ruby-crowned Kinglet         | 17.79                                | 17.60 | -13  | -1         | +11  |
| Starling                     | 46.79                                | 50.08 | -15  | +7         | +30  |
| Red-eyed Vireo               | 14.95                                | 12.57 | -40  | -16        | +8   |
| Nashville Warbler            | 5.03                                 | 4.58  | -34  | -9         | +16  |
| Yellow Warbler               | 14.40                                | 13.12 | -27  | -9         | +9   |
| Magnolia Warbler             | 12.84                                | 13.23 | -12  | +3         | +18  |
| Black-throated Green Warbler | 7.68                                 | 7.17  | -29  | -7         | +16  |
| Chestnut-sided Warbler       | 5.85                                 | 5.41  | -38  | -8         | +23  |
| Ovenbird*                    | 16.37                                | 12.31 | -44  | <b>-25</b> | -6   |
| Common Yellowthroat          | 27.13                                | 25.03 | -23  | -8         | +8   |
| American Redstart            | 20.37                                | 19.57 | -24  | -4         | +17  |
| House Sparrow*               | 15.93                                | 12.58 | -36  | <b>-21</b> | -7   |
| Bobolink*                    | 19.21                                | 16.08 | -29  | -16        | -4   |
| Red-winged Blackbird         | 28.29                                | 27.94 | -23  | -1         | +20  |
| Common Grackle               | 29.60                                | 26.74 | -38  | -10        | +19  |
| Brown-headed Cowbird         | 8.46                                 | 7.49  | -48  | -11        | +25  |
| Evening Grosbeak*            | 10.04                                | 15.66 | +11  | <b>+56</b> | +101 |
| Purple Finch                 | 8.68                                 | 9.01  | -20  | +4         | +27  |
| American Goldfinch           | 12.26                                | 11.92 | -45  | -3         | +39  |
| Savannah Sparrow             | 11.93                                | 12.23 | -16  | +2         | +21  |
| Dark-eyed Junco              | 13.79                                | 13.64 | -22  | -1         | +20  |
| Chipping Sparrow             | 7.66                                 | 7.71  | -26  | +1         | +28  |
| White-throated Sparrow       | 59.86                                | 56.37 | -13  | -6         | +2   |
| Song Sparrow                 | 37.51                                | 36.19 | -13  | -4         | +6   |

\*Change at least 95% significant.

**Table 11**  
Changes in bird population samples for 28 comparable routes,  
Breeding Bird Survey, central Ontario and Central Quebec,  
1974-75

| Species                  | Weighted mean no.<br>of birds per route |       | % change (bold)<br>with 95% confidence<br>limits |            |             |
|--------------------------|---|-------|--|------------|-------------|
|                          | 1974                                    | 1975  |  |            |             |
| Killdeer                 | 2.95                                    | 3.80  | -26  | <b>+29</b> | <b>+84</b>  |
| Herring Gull*            | 9.13                                    | 4.36  | -90  | <b>-52</b> | <b>-15</b>  |
| Common Flicker           | 3.50                                    | 3.74  | -45  | <b>+7</b>  | <b>+59</b>  |
| Yellow-bellied Sapsucker | 2.34                                    | 2.97  | -43  | <b>+27</b> | <b>+97</b>  |
| Alder Flycatcher         | 9.62                                    | 8.73  | -32  | <b>-9</b>  | <b>+14</b>  |
| Least Flycatcher         | 8.19                                    | 8.55  | -22  | <b>+4</b>  | <b>+30</b>  |
| Tree Swallow*            | 8.33                                    | 12.80 | +15  | <b>+54</b> | <b>+93</b>  |
| Bank Swallow*            | 3.79                                    | 1.81  | -72  | <b>-52</b> | <b>-33</b>  |
| Barn Swallow*            | 8.28                                    | 11.00 | +1   | <b>+33</b> | <b>+65</b>  |
| Blue Jay                 | 2.40                                    | 2.56  | -53  | <b>+7</b>  | <b>+67</b>  |
| Common Raven             | 5.35                                    | 5.49  | -22  | <b>+3</b>  | <b>+28</b>  |
| Common Crow*             | 21.51                                   | 16.01 | -52  | <b>-26</b> | <b>0</b>    |
| Winter Wren*             | 7.54                                    | 10.34 | +1   | <b>+37</b> | <b>+73</b>  |
| American Robin           | 28.34                                   | 27.52 | -16  | <b>-3</b>  | <b>+11</b>  |
| Hermit Thrush            | 9.12                                    | 13.83 | -3   | <b>+52</b> | <b>+107</b> |
| Swainson's Thrush*       | 15.28                                   | 20.47 | +11  | <b>+34</b> | <b>+57</b>  |
| Veery                    | 15.27                                   | 17.96 | -6   | <b>+18</b> | <b>+41</b>  |
| Ruby-crowned Kinglet     | 11.59                                   | 11.37 | -30  | <b>-2</b>  | <b>+26</b>  |
| Cedar Waxwing            | 4.31                                    | 4.74  | -41  | <b>+10</b> | <b>+60</b>  |
| Starling                 | 28.54                                   | 37.05 | -12  | <b>+30</b> | <b>+71</b>  |
| Red-eyed Vireo*          | 24.09                                   | 29.17 | +4   | <b>+21</b> | <b>+38</b>  |
| Nashville Warbler        | 11.76                                   | 9.39  | -42  | <b>-20</b> | <b>+2</b>   |
| Yellow Warbler           | 2.74                                    | 3.92  | -29  | <b>+43</b> | <b>+115</b> |
| Magnolia Warbler         | 6.02                                    | 6.89  | -24  | <b>+15</b> | <b>+53</b>  |
| Yellow-rumped Warbler    | 5.55                                    | 7.94  | -27  | <b>+43</b> | <b>+113</b> |
| Chestnut-sided Warbler   | 15.00                                   | 16.58 | -16  | <b>+11</b> | <b>+38</b>  |
| Ovenbird                 | 20.22                                   | 19.31 | -16  | <b>-4</b>  | <b>+7</b>   |
| Mourning Warbler*        | 10.08                                   | 13.49 | +5   | <b>+34</b> | <b>+63</b>  |
| Common Yellowthroat      | 15.84                                   | 18.09 | -14  | <b>+14</b> | <b>+42</b>  |
| American Redstart        | 6.80                                    | 7.45  | -30  | <b>+10</b> | <b>+49</b>  |
| House Sparrow            | 0.98                                    | 1.78  | -72  | <b>+82</b> | <b>+237</b> |
| Bobolink                 | 9.59                                    | 10.96 | -3   | <b>+14</b> | <b>+32</b>  |
| Red-winged Blackbird     | 15.03                                   | 15.87 | -20  | <b>+6</b>  | <b>+32</b>  |
| Common Grackle           | 6.19                                    | 7.23  | -32  | <b>+17</b> | <b>+65</b>  |
| Brown-headed Cowbird     | 4.17                                    | 4.53  | -35  | <b>+9</b>  | <b>+53</b>  |
| Rose-breasted Grosbeak   | 5.32                                    | 6.18  | -30  | <b>+16</b> | <b>+62</b>  |
| Evening Grosbeak         | 6.00                                    | 6.78  | -45  | <b>+13</b> | <b>+71</b>  |
| American Goldfinch       | 4.86                                    | 5.49  | -5   | <b>+13</b> | <b>+31</b>  |
| Savannah Sparrow         | 9.28                                    | 11.54 | -17  | <b>+24</b> | <b>+66</b>  |
| Dark-eyed Junco          | 5.14                                    | 6.42  | -17  | <b>+25</b> | <b>+67</b>  |
| Chipping Sparrow         | 10.78                                   | 10.47 | -25  | <b>-3</b>  | <b>+19</b>  |
| White-throated Sparrow   | 60.00                                   | 60.65 | -10  | <b>+1</b>  | <b>+12</b>  |
| Song Sparrow             | 14.42                                   | 15.82 | -13  | <b>+10</b> | <b>+32</b>  |

\*Change at least 95% significant.

**Table 12**  
Changes in bird population samples for 23 comparable routes,  
Breeding Bird Survey, southern Ontario and southern  
Quebec, 1974-75

| Species                  | Weighted mean no.<br>of birds per route |        | % change (bold)<br>with 95% confidence<br>limits |            |            |
|--------------------------|---|--------|--|------------|------------|
|                          | 1974                                    | 1975   |  |            |            |
| Killdeer                 | 18.39                                   | 22.08  | -4   | <b>+20</b> | <b>+44</b> |
| Rock Dove                | 17.43                                   | 19.41  | -32  | <b>+11</b> | <b>+55</b> |
| Mourning Dove            | 16.46                                   | 16.39  | -32  | <b>0</b>   | <b>+31</b> |
| Common Flicker           | 5.08                                    | 4.94   | -35  | <b>-3</b>  | <b>+29</b> |
| Eastern Kingbird         | 9.06                                    | 7.41   | -42  | <b>-18</b> | <b>+6</b>  |
| Great Crested Flycatcher | 4.15                                    | 3.80   | -46  | <b>-8</b>  | <b>+29</b> |
| Eastern Wood Pewee*      | 3.67                                    | 2.57   | -53  | <b>-30</b> | <b>-7</b>  |
| Horned Lark*             | 4.64                                    | 7.17   | +20  | <b>+55</b> | <b>+89</b> |
| Tree Swallow             | 11.76                                   | 10.25  | -49  | <b>-13</b> | <b>+24</b> |
| Bank Swallow             | 22.15                                   | 21.98  | -57  | <b>-1</b>  | <b>+56</b> |
| Barn Swallow             | 33.16                                   | 36.18  | -13  | <b>+9</b>  | <b>+31</b> |
| Purple Martin            | 5.00                                    | 4.92   | -83  | <b>-2</b>  | <b>+79</b> |
| Blue Jay                 | 4.46                                    | 4.58   | -46  | <b>+3</b>  | <b>+51</b> |
| Common Crow              | 45.82                                   | 41.46  | -26  | <b>-10</b> | <b>+7</b>  |
| House Wren               | 5.03                                    | 6.14   | -11  | <b>+22</b> | <b>+54</b> |
| Gray Catbird             | 3.63                                    | 3.58   | -36  | <b>-1</b>  | <b>+34</b> |
| Brown Thrasher           | 4.99                                    | 4.02   | -53  | <b>-19</b> | <b>+15</b> |
| American Robin           | 49.45                                   | 49.76  | -14  | <b>+1</b>  | <b>+15</b> |
| Veery                    | 4.03                                    | 5.26   | -5   | <b>+30</b> | <b>+66</b> |
| Cedar Waxwing            | 4.38                                    | 3.78   | -77  | <b>-14</b> | <b>+50</b> |
| Starling                 | 175.32                                  | 170.82 | -30  | <b>-3</b>  | <b>+25</b> |
| Red-eyed Vireo*          | 4.59                                    | 6.15   | +9   | <b>+34</b> | <b>+59</b> |
| Warbling Vireo           | 3.27                                    | 3.53   | -27  | <b>+8</b>  | <b>+43</b> |
| Yellow Warbler           | 7.77                                    | 6.33   | -44  | <b>-18</b> | <b>+7</b>  |
| Common Yellowthroat      | 8.98                                    | 9.93   | -7   | <b>+11</b> | <b>+29</b> |
| House Sparrow            | 77.64                                   | 70.04  | -27  | <b>-10</b> | <b>+8</b>  |
| Bobolink                 | 49.40                                   | 47.35  | -20  | <b>-4</b>  | <b>+11</b> |
| Eastern Meadowlark*      | 29.11                                   | 24.06  | -29  | <b>-17</b> | <b>-6</b>  |
| Red-winged Blackbird*    | 142.06                                  | 183.85 | +4   | <b>+29</b> | <b>+55</b> |
| Northern Oriole          | 9.19                                    | 8.52   | -31  | <b>-7</b>  | <b>+16</b> |
| Common Grackle           | 72.77                                   | 84.61  | -36  | <b>+16</b> | <b>+68</b> |
| Brown-headed Cowbird     | 25.85                                   | 21.16  | -47  | <b>-18</b> | <b>+10</b> |
| Rose-breasted Grosbeak   | 4.24                                    | 5.72   | -2   | <b>+35</b> | <b>+72</b> |
| American Goldfinch       | 16.52                                   | 19.84  | -19  | <b>+20</b> | <b>+59</b> |
| Savannah Sparrow         | 48.97                                   | 57.68  | -6   | <b>+18</b> | <b>+41</b> |
| Vesper Sparrow           | 6.67                                    | 6.61   | -31  | <b>-1</b>  | <b>+29</b> |
| Chipping Sparrow         | 10.84                                   | 11.78  | -10  | <b>+9</b>  | <b>+28</b> |
| White-throated Sparrow   | 4.95                                    | 6.91   | -15  | <b>+40</b> | <b>+94</b> |
| Song Sparrow*            | 38.97                                   | 34.38  | -22  | <b>-12</b> | <b>-1</b>  |

\*Change at least 95% significant.

**Table 13**  
Changes in bird population samples for 32 comparable routes,  
Breeding Bird Survey, southern Prairie Provinces, 1974-75

| Species                    | Weighted mean no.<br>of birds per route |        | % change (bold)<br>with 95% confidence<br>limits |            |      |
|----------------------------|---|--------|--|------------|------|
|                            | 1974                                    | 1975   |  |            |      |
| Mallard                    | 36.16                                   | 39.52  | -29  | <b>+9</b>  | +47  |
| Pintail                    | 17.03                                   | 22.21  | -30  | <b>+30</b> | +91  |
| Blue-winged Teal           | 11.62                                   | 12.32  | -18  | <b>+6</b>  | +30  |
| Northern Shoveler          | 6.27                                    | 8.45   | -17  | <b>+35</b> | +86  |
| American Wigeon            | 4.81                                    | 5.95   | -28  | <b>+24</b> | +75  |
| Lesser Scaup               | 10.68                                   | 9.13   | -67  | <b>-15</b> | +38  |
| Sora*                      | 3.90                                    | 6.29   | +13  | <b>+61</b> | +109 |
| American Coot              | 11.56                                   | 14.60  | -23  | <b>+26</b> | +75  |
| Killdeer                   | 13.37                                   | 14.07  | -18  | <b>+5</b>  | +28  |
| Ring-billed Gull           | 12.44                                   | 13.76  | -32  | <b>+11</b> | +53  |
| Franklin's Gull            | 22.33                                   | 13.17  | -109   | <b>-41</b> | +27  |
| Black Tern                 | 10.37                                   | 12.11  | -33  | <b>+17</b> | +66  |
| Rock Dove                  | 4.00                                    | 5.11   | -34  | <b>+28</b> | +89  |
| Mourning Dove              | 9.62                                    | 11.33  | -18  | <b>+18</b> | +53  |
| Common Flicker             | 1.94                                    | 2.79   | -5   | <b>+44</b> | +94  |
| Eastern Kingbird           | 7.21                                    | 6.55   | -30  | <b>-9</b>  | +11  |
| Least Flycatcher           | 2.53                                    | 3.77   | -2   | <b>+49</b> | +100 |
| Horned Lark                | 70.64                                   | 74.40  | -10  | <b>+5</b>  | +21  |
| Tree Swallow               | 2.46                                    | 2.49   | -56  | <b>+1</b>  | +58  |
| Barn Swallow               | 15.89                                   | 17.39  | -8   | <b>+9</b>  | +27  |
| Cliff Swallow              | 20.74                                   | 24.72  | -38  | <b>+19</b> | +77  |
| Black-billed Magpie        | 8.95                                    | 8.75   | -34  | <b>-2</b>  | +30  |
| Common Crow                | 37.34                                   | 33.98  | -21  | <b>-9</b>  | +3   |
| House Wren                 | 10.47                                   | 11.13  | -14  | <b>+6</b>  | +27  |
| American Robin             | 6.31                                    | 7.30   | -11  | <b>+16</b> | +42  |
| Starling                   | 17.12                                   | 21.57  | -17  | <b>+26</b> | +69  |
| Warbling Vireo             | 3.38                                    | 2.79   | -49  | <b>-17</b> | +14  |
| Yellow Warbler             | 6.28                                    | 4.65   | -58  | <b>-26</b> | +6   |
| House Sparrow*             | 56.29                                   | 75.70  | +3   | <b>+34</b> | +66  |
| Bobolink                   | 3.09                                    | 3.52   | -26  | <b>+14</b> | +54  |
| Western Meadowlark         | 47.50                                   | 42.94  | -27  | <b>-10</b> | +8   |
| Yellow-headed Blackbird    | 22.75                                   | 27.26  | -17  | <b>+20</b> | +57  |
| Red-winged Blackbird*      | 95.22                                   | 107.82 | 0  | <b>+13</b> | +26  |
| Brewer's Blackbird         | 27.22                                   | 26.42  | -28  | <b>-3</b>  | +22  |
| Common Grackle             | 3.97                                    | 6.15   | -25  | <b>+55</b> | +135 |
| Brown-headed Cowbird       | 28.10                                   | 27.30  | -21  | <b>-3</b>  | +15  |
| American Goldfinch         | 4.43                                    | 3.99   | -41  | <b>-10</b> | +22  |
| Lark Bunting*              | 14.67                                   | 4.56   | -91  | <b>-69</b> | -47  |
| Savannah Sparrow           | 20.32                                   | 18.37  | -26  | <b>-10</b> | +6   |
| Vesper Sparrow             | 16.38                                   | 14.74  | -36  | <b>-10</b> | +16  |
| Clay-coloured Sparrow      | 28.89                                   | 26.75  | -22  | <b>-7</b>  | +7   |
| Song Sparrow               | 13.68                                   | 13.36  | -37  | <b>-2</b>  | +32  |
| Chestnut-collared Longspur | 15.88                                   | 18.25  | -17  | <b>+15</b> | +47  |

\*Change at least 95% significant.

**Table 14**  
Changes in bird population samples for 16 comparable routes,  
Breeding Bird Survey, central Prairie Provinces, 1974-75

| Species                | Weighted mean no.<br>of birds per route |       | % change (bold)<br>with 95% confidence<br>limits |            |      |
|------------------------|---|-------|--|------------|------|
|                        | 1974                                    | 1975  |  |            |      |
| Mallard                | 20.92                                   | 19.86 | -52  | <b>-5</b>  | +42  |
| Pintail                | 8.98                                    | 6.20  | -69  | <b>-31</b> | +7   |
| Blue-winged Teal       | 10.63                                   | 8.94  | -48  | <b>-16</b> | +16  |
| Northern Shoveler      | 6.06                                    | 4.10  | -65  | <b>-32</b> | +1   |
| Lesser Scaup*          | 9.84                                    | 7.55  | -46  | <b>-23</b> | -1   |
| American Coot          | 5.55                                    | 5.29  | -53  | <b>-5</b>  | +44  |
| Killdeer               | 5.06                                    | 4.78  | -24  | <b>-6</b>  | +13  |
| Common Snipe           | 10.49                                   | 11.58 | -17  | <b>+10</b> | +38  |
| Franklin's Gull        | 39.57                                   | 22.04 | -111   | <b>-44</b> | +23  |
| Black Tern             | 6.79                                    | 7.39  | -16  | <b>+9</b>  | +34  |
| Common Flicker         | 2.59                                    | 3.55  | -28  | <b>+37</b> | +103 |
| Alder Flycatcher       | 8.93                                    | 12.66 | -9   | <b>+42</b> | +92  |
| Least Flycatcher       | 12.85                                   | 12.63 | -23  | <b>-2</b>  | +19  |
| Western Wood Pewee     | 2.20                                    | 2.98  | -60  | <b>+35</b> | +131 |
| Tree Swallow           | 4.76                                    | 6.03  | -30  | <b>+27</b> | +83  |
| Barn Swallow           | 7.97                                    | 7.41  | -39  | <b>-7</b>  | +24  |
| Black-billed Magpie    | 12.22                                   | 10.89 | -39  | <b>-11</b> | +17  |
| Common Crow            | 25.92                                   | 28.72 | -8   | <b>+11</b> | +30  |
| House Wren             | 8.57                                    | 8.34  | -23  | <b>-3</b>  | +18  |
| American Robin         | 24.21                                   | 23.00 | -24  | <b>-5</b>  | +14  |
| Starling               | 25.43                                   | 19.28 | -56  | <b>-24</b> | +8   |
| Red-eyed Vireo         | 5.10                                    | 7.52  | -9   | <b>+47</b> | +104 |
| Warbling Vireo         | 3.59                                    | 2.56  | -69  | <b>-29</b> | +12  |
| Yellow Warbler         | 13.12                                   | 14.05 | -6   | <b>+7</b>  | +20  |
| Common Yellowthroat    | 4.73                                    | 4.67  | -51  | <b>-1</b>  | +48  |
| House Sparrow          | 11.23                                   | 13.72 | -5   | <b>+22</b> | +49  |
| Western Meadowlark     | 7.80                                    | 8.13  | -33  | <b>+4</b>  | +41  |
| Red-winged Blackbird   | 39.76                                   | 43.36 | -3   | <b>+9</b>  | +21  |
| Northern Oriole        | 6.36                                    | 5.63  | -36  | <b>-11</b> | +13  |
| Brewer's Blackbird     | 23.89                                   | 22.89 | -45  | <b>-4</b>  | +37  |
| Brown-headed Cowbird   | 14.78                                   | 12.43 | -47  | <b>-16</b> | +15  |
| Pine Siskin*           | 14.50                                   | 3.78  | -82  | <b>-74</b> | -66  |
| American Goldfinch     | 2.16                                    | 1.90  | -98  | <b>-12</b> | +74  |
| Savannah Sparrow       | 18.68                                   | 17.90 | -27  | <b>-4</b>  | +18  |
| Vesper Sparrow         | 8.56                                    | 13.28 | -17  | <b>+55</b> | +128 |
| Dark-eyed Junco        | 7.10                                    | 8.88  | -22  | <b>+25</b> | +72  |
| Chipping Sparrow*      | 14.28                                   | 9.43  | -59  | <b>-34</b> | -9   |
| Clay-coloured Sparrow  | 28.24                                   | 31.64 | -6   | <b>+12</b> | +30  |
| White-throated Sparrow | 13.52                                   | 12.92 | -31  | <b>-4</b>  | +22  |
| Song Sparrow           | 23.47                                   | 20.75 | -35  | <b>-12</b> | +12  |

\*Change at least 95% significant.

**Table 15**  
Changes in bird population samples for 26 comparable routes, Breeding Bird Survey, British Columbia (west of Rocky Mountains), 1974-75

| Species                   | Weighted mean no. of birds per route |       | % change (bold) with 95% confidence limits |            |             |
|---------------------------|--------------------------------------|-------|--|------------|-------------|
|                           | 1974                                 | 1975  |  |            |             |
| Killdeer*                 | 2.50                                 | 3.92  | +6   | <b>+56</b> | <b>+106</b> |
| Rufous Hummingbird        | 3.06                                 | 2.62  | -65  | <b>-14</b> | <b>+37</b>  |
| Common Flicker            | 4.86                                 | 6.13  | -5   | <b>+26</b> | <b>+57</b>  |
| Yellow-bellied Sapsucker  | 2.63                                 | 2.21  | -41  | <b>-16</b> | <b>+9</b>   |
| Willow Flycatcher         | 5.22                                 | 5.55  | -28  | <b>+6</b>  | <b>+40</b>  |
| Western Wood Pewee*       | 6.76                                 | 3.97  | -58  | <b>-41</b> | <b>-25</b>  |
| Violet-green Swallow      | 9.02                                 | 5.44  | -82  | <b>-40</b> | <b>+2</b>   |
| Tree Swallow              | 8.66                                 | 7.02  | -65  | <b>-19</b> | <b>+27</b>  |
| Rough-winged Swallow*     | 7.38                                 | 3.49  | -77  | <b>-53</b> | <b>-29</b>  |
| Barn Swallow              | 14.15                                | 19.80 | -1   | <b>+40</b> | <b>+80</b>  |
| Cliff Swallow             | 8.96                                 | 7.52  | -123                                       | <b>-16</b> | <b>+91</b>  |
| Common Raven              | 4.35                                 | 6.31  | -4   | <b>+45</b> | <b>+94</b>  |
| Crows†                    | 28.14                                | 32.74 | -9   | <b>+16</b> | <b>+42</b>  |
| Black-capped Chickadee    | 7.79                                 | 9.16  | -25  | <b>+18</b> | <b>+60</b>  |
| Chestnut-backed Chickadee | 4.32                                 | 3.61  | -85  | <b>-16</b> | <b>+52</b>  |
| Winter Wren               | 3.59                                 | 2.64  | -66  | <b>-27</b> | <b>+13</b>  |
| American Robin            | 60.55                                | 58.63 | -17  | <b>-3</b>  | <b>+11</b>  |
| Varied Thrush             | 2.33                                 | 3.45  | -17  | <b>+48</b> | <b>+113</b> |
| Swainson's Thrush         | 31.26                                | 29.37 | -21  | <b>-6</b>  | <b>+8</b>   |
| Golden-crowned Kinglet    | 4.22                                 | 3.58  | -54  | <b>-15</b> | <b>+24</b>  |
| Ruby-crowned Kinglet      | 3.54                                 | 5.29  | -25  | <b>+49</b> | <b>+123</b> |
| Cedar Waxwing             | 4.29                                 | 3.76  | -78  | <b>-12</b> | <b>+53</b>  |
| Starling                  | 55.37                                | 70.13 | -43  | <b>+27</b> | <b>+96</b>  |
| Red-eyed Vireo            | 11.50                                | 10.27 | -33  | <b>-11</b> | <b>+11</b>  |
| Warbling Vireo            | 6.43                                 | 5.65  | -55  | <b>-12</b> | <b>+31</b>  |
| Orange-crowned Warbler    | 7.06                                 | 5.99  | -46  | <b>-15</b> | <b>+16</b>  |
| Yellow Warbler*           | 13.34                                | 10.56 | -32  | <b>-21</b> | <b>-9</b>   |
| Yellow-rumped Warbler     | 8.51                                 | 8.88  | -38  | <b>+4</b>  | <b>+46</b>  |
| MacGillivray's Warbler    | 7.47                                 | 6.48  | -51  | <b>-13</b> | <b>+25</b>  |
| Wilson's Warbler*         | 3.54                                 | 1.64  | -92  | <b>-54</b> | <b>-16</b>  |
| House Sparrow             | 4.88                                 | 5.01  | -29  | <b>+3</b>  | <b>+34</b>  |
| Western Meadowlark*       | 8.46                                 | 12.51 | +24  | <b>+48</b> | <b>+71</b>  |
| Red-winged Blackbird      | 10.04                                | 16.78 | -89  | <b>+67</b> | <b>+223</b> |
| Brewer's Blackbird        | 18.63                                | 15.50 | -41  | <b>-17</b> | <b>+8</b>   |
| Brown-headed Cowbird      | 9.00                                 | 9.63  | -22  | <b>+7</b>  | <b>+36</b>  |
| Western Tanager           | 7.20                                 | 7.66  | -17  | <b>+6</b>  | <b>+30</b>  |
| Pine Siskin               | 24.90                                | 38.89 | -15  | <b>+56</b> | <b>+128</b> |
| American Goldfinch        | 6.64                                 | 5.47  | -46  | <b>-18</b> | <b>+11</b>  |
| Rufous-sided Towhee       | 5.35                                 | 4.30  | -40  | <b>-20</b> | <b>+1</b>   |
| Savannah Sparrow          | 4.91                                 | 5.25  | -29  | <b>+7</b>  | <b>+43</b>  |
| Dark-eyed Junco           | 11.86                                | 11.23 | -32  | <b>-5</b>  | <b>+22</b>  |
| Chipping Sparrow*         | 17.27                                | 23.31 | +8   | <b>+35</b> | <b>+62</b>  |
| Song Sparrow              | 12.72                                | 11.99 | -29  | <b>-6</b>  | <b>+17</b>  |

\*Change at least 95% significant.

†Common and Northwestern Crows combined.

**Table 16**  
Changes in bird population samples for comparable routes in areas sprayed against spruce budworm in 1975 and other parts of the Maritime Provinces, Breeding Bird Survey, 1974-75

| Species                      | % change with 95% confidence limits for |                         |                                     |
|------------------------------|---|-------------------------|-------------------------------------|
|                              | N.B. sprayed (7 rtes)                   | N.B. unsprayed (8 rtes) | N.S. and P.E.I. unsprayed (13 rtes) |
| Common Snipe                 | -55±33 *                                | -50±41 *                | -15±28                              |
| Herring Gull                 | (-100)                                  | -31±31 *                | -3±132                              |
| Common Flicker               | -27±45                                  | +33±89                  | -35±32 *                            |
| Yellow-bellied Sapsucker     | +48±63                                  | +37±113                 | -56±42 *                            |
| Alder Flycatcher             | -37±18 *                                | -31±18 *                | -30±13 *                            |
| Least Flycatcher             | -31±30 *                                | +18±44                  | -29±44                              |
| Tree Swallow                 | -13±67                                  | -17±48                  | -39±23 *                            |
| Bank Swallow                 | -38±25 *                                | -40±23 *                | -70±61 *                            |
| Barn Swallow                 | -27±17 *                                | -37±34 *                | -22±31                              |
| Blue Jay                     | +11±56                                  | +48±88                  | -52±15 *                            |
| Common Raven                 | -37±46                                  | +28±66                  | -28±20 *                            |
| Common Crow                  | -11±21                                  | -8±39                   | -14±14 *                            |
| Winter Wren                  | -38±18 *                                | -3±23                   | -69±23 *                            |
| American Robin               | 0±6                                     | -6±9                    | -8±17                               |
| Hermit Thrush                | -23±16 *                                | +41±109                 | +4±38                               |
| Swainson's Thrush            | -4±32                                   | +26±42                  | -18±24                              |
| Veery                        | -22±37                                  | -1±41                   | -26±51                              |
| Ruby-crowned Kinglet         | -17±10 *                                | +17±28                  | +5±17                               |
| Starling                     | +29±32                                  | -8±29                   | +11±40                              |
| Red-eyed Vireo               | -36±14 *                                | +18±52                  | -30±26 *                            |
| Nashville Warbler            | -40±18 *                                | -15±46                  | +32±74                              |
| Yellow Warbler               | +10±53                                  | +36±18 *                | -25±20 *                            |
| Magnolia Warbler             | +13±38                                  | +32±34                  | -13±12 *                            |
| Black-throated Green Warbler | +69±208                                 | +12±54                  | -23±13 *                            |
| Chestnut-sided Warbler       | -48±39 *                                | +32±39                  | -1±31                               |
| Ovenbird                     | -34±27 *                                | -20±19 *                | +10±55                              |
| Common Yellowthroat          | 0±31                                    | +18±54                  | -19±13 *                            |
| American Redstart            | -4±14                                   | -4±43                   | -6±28                               |
| House Sparrow                | -34±59                                  | -22±16 *                | -18±12 *                            |
| Bobolink                     | -17±6 *                                 | -5±24                   | -37±22 *                            |
| Red-winged Blackbird         | -16±9 *                                 | +13±49                  | -6±23                               |
| Common Grackle               | -9±35                                   | +18±101                 | -20±31                              |
| Brown-headed Cowbird         | +5±52                                   | -55±20 *                | +29±106                             |
| Evening Grosbeak             | +45±42 *                                | +290±720                | (none)                              |
| Purple Finch                 | +12±8 *                                 | -11±48                  | -13±49                              |
| American Goldfinch           | -54±41 *                                | +8±47                   | +19±59                              |
| Savannah Sparrow             | -16±68                                  | +50±28 *                | -12±12 *                            |
| Dark-eyed Junco              | -9±11                                   | +10±77                  | -2±28                               |
| Chipping Sparrow             | +13±59                                  | +12±46                  | -36±18 *                            |
| White-throated Sparrow       | -2±6                                    | -2±16                   | -11±13                              |
| Song Sparrow                 | +10±16                                  | -9±17                   | -5±13                               |

\*Change at least 95% significant.



