

The Distribution of the American Crow in Ontario in Early Winter

by
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Data obtained from Christmas Bird Counts (CBCs) are an excellent source of information on the distribution of birds in Ontario in early winter. However, in Ontario, with some exceptions (Goodwin *et al.* 1977, Middleton 1977, Angehrn *et al.* 1979, Freedman and Riley 1980), birdwatchers appear to make little systematic use of these data, though they are easy to obtain and analyze. One of the purposes of the present study is to illustrate the type of data which are available from CBCs and a practical means of making use of them. Hopefully this analysis will stimulate others to study CBC data for a species or locale of their choice and *Ontario Birds* may become a regular outlet for such studies.

A second purpose of this article is to determine the distribution of the American Crow (*Corvus brachyrhynchos*) in Ontario in early winter and identify areas which harbour large crow populations. Recently, there has been a definite interest shown in crow roosts in Ontario (Lamoureux and Lamoureux 1980, Weseloh 1983, Knapton and Maturi 1984,) and I reasoned that

if the crow's winter distribution was better known, it might stimulate further work on documenting crow roosts in other parts of the province. For, as this study will show, areas with large crow populations (as determined by CBCs) also appear to have large crow roosts. This is not to suggest that small wintering populations or small roosts are of less importance (they are just more difficult to locate), for it is only by comparing the behaviour of variously sized roosting populations that the roosting behaviour of the species as a whole will be better understood.

Methods

Christmas Bird Count data for Ontario for the nine-year period, 1975-1983, were examined as published in the journal *American Birds*. When comparing CBC data from one count to another or from one year to another, one must be careful to allow for the different levels of effort (numbers of participants, party-hours, etc.) in each count (Arbib 1967, Bystrak 1971, Raynor 1975), i.e., the data must be normalized. This is not a difficult procedure and usually

involves dividing the number of individuals of each species recorded by one of several possible factors which reflect effort (see Raynor 1975 for a complete discussion). One of the most often used effort factors is the number of party-hours, hence I calculated the number of crows recorded per party-hour for each Ontario CBC location during each of the years for the nine-year period. To arrive at a single (average) value for the number of crows recorded per party-hour for each count location, I divided the total number of crows recorded by the total number of party-hours recorded during the count years. I included data from years when no crows were seen but did not include any data from years when no count was reported.

Results

There was a total of 495 Christmas Bird Counts conducted at 77 different locations during the nine year period. The locations are plotted by number in Figure 1 and identified in Table 1. The average (mean) number of crows recorded per party-hour for each location's count period are listed by rank in Table 1. An Appendix, which lists the number of crows per party-hour for each location for each year is available upon request from the author. Of the 77 different CBCs, 33 (43%) had counts in each of the nine years of the study period. CBCs from a total of 64 locations (83%) were conducted for three or more years. Hence, the number of locations where the winter crow population was sampled a minimum of three times is fairly high.

Of the 77 locations at which CBCs were conducted, 53 (69%) recorded crows every year in which they reported a count, while 24 locations (31%) did not record crows in at least one year. Of the latter group, eight (10% of the total) never recorded crows. With the exception of an area extending from the counts at Manitoulin Island, Cypress Lake Provincial Park and Wiarton, east to Algonquin Provincial Park and south to Prince Edward Point, all Ontario counts south of 47°N latitude recorded crows every year they had a CBC (Figure 1). Of the 25 CBCs within the above described area or north of 47°N, only the count at Thunder Bay reported crows every year of its count. Eight (32%) never reported crows and 16 (64%) recorded crows only intermittently. Most of this last group failed to record crows in 50% or more of their years.

The average number of crows per party for the 77 counts ranged from 0 at several locations to 19.80 at St. Catharines (Table 1 and Figure 2). The average number of crows per party hour for all counts was 2.23.

The above normalized data (crows per party-hour) make it possible to compare, quantitatively, CBCs where there were different amounts of sampling effort, e.g. 30 party-hours vs 100 party-hours. The non-normalized data, i.e. the total number of crows recorded on each count, also provides useful information in this study. The total number of crows recorded on each count may represent a good minimum

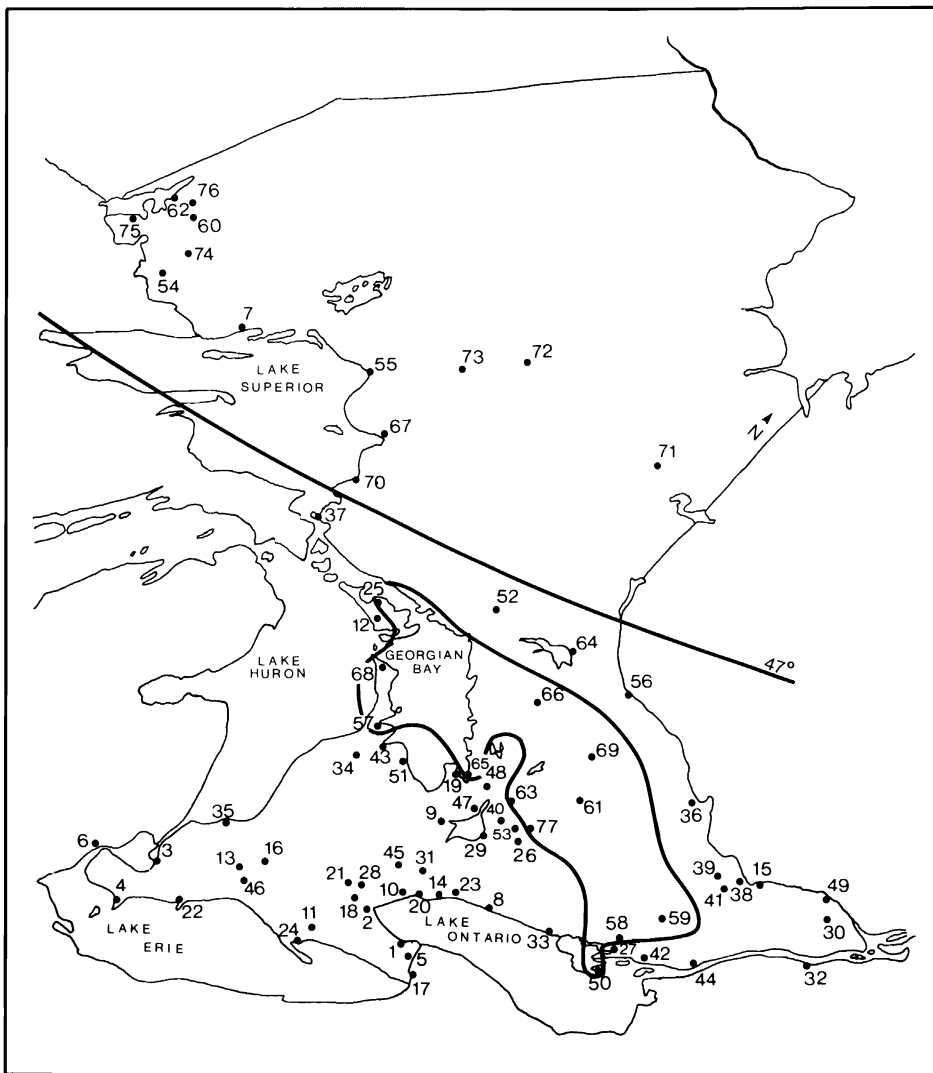


Figure 1. Locations of Ontario Christmas Bird Counts reported in *American Birds*, 1975-1983. Counts with reduced frequency of occurrence of crows are located within enclosed area and north of 47°N latitude. See Table 1 for numerical code.

estimate of the size of the crow population within (or near) the 15 mile (24 km) diameter CBC circle. At the very least it is a number, the significance of which is easy to

comprehend. The average number of crows recorded on each CBC for the nine year period and each location's rank are given in Table 1. During the study period the

Table 1. Results of tabulation of crow numbers and party hours on Ontario Christmas Bird Counts, 1975-1983.

Count No. Name	Ave. No. Crows per Party-hr	Ave. No. Crows	Rank (Ave. No. Crows)	Years
1. St. Catharines	19.80	1366.0	2	1983
2. Hamilton	18.16	3260.6	1	1975 - 1983
3. St. Clair	15.54	803.0	4	1981 - 1983
4. Point Pelee	13.27	910.1	3	1975 - 1983
5. Niagara Falls	11.22	387.2	6	1975 - 1983
6. Detroit River, Mich.-Ont.	8.31	338.5	8	1978 - 1983
7. Thunder Bay	6.83	330.1	9	1975 - 1983
8. Port Hope-Cobourg	4.87	350.3	7	1975 - 1983
9. Barrie	3.70	254.1	12	1975 - 1983
10. Peel-Halton Counties	3.00	289.8	11	1975 - 1983
11. Woodhouse Twp.	2.01	122.5	16	1975 - 1983 ^a
12. Mindemoya	2.00	70.2	25	1975 - 1983
13. London	1.83	305.7	10	1975 - 1983
14. Pickering	1.57	160.2	14	1975 - 1983
15. Hull-Ottawa, Que.-Ont.	1.42	541.8	5	1976 - 1983
16. Ingersoll	1.22	56.0	28	1983
17. Buffalo, N.Y.-Ont.	1.19	176.5	13	1978 - 1983
18. Cambridge	1.14	130.5	15	1978 - 1983
19. Wye Marsh	1.13	45.0	32	1981 - 1983
20. Toronto	1.08	107.5	19	1975 - 1983
21. Kitchener	1.07	114.3	18	1975 - 1983 ^b
22. Blenheim	0.98	94.6	21	1975 - 1983
23. Oshawa	0.97	88.6	22	1975 - 1983
24. Long Point	0.89	117.0	17	1975 - 1983
25. Manitoulin Island	0.88	25.4	25	1975 - 1983
26. Peterborough	0.83	82.1	23	1975 - 1983
27. Napanee	0.79	37.8	38	1975 - 1983
28. Guelph	0.78	71.6	24	1975 - 1983
29. Beaverton	0.77	41.3	33	1976 - 1983
30. Van Kleek Hill	0.72	29.3	40	1978 - 1983
31. Richmond Hill	0.71	51.0	29	1976 & 1977 1982 & 1983
32. Massena, N.Y.-Ont.	0.66	27.3	42	1977 - 1983 ^c
33. Presqu'île Prov. Park	0.66	46.1	31	1975 - 1983
34. Hanover-Walkerton	0.63	38.9	34	1977 - 1983
35. Kettle Point	0.60	56.4	27	1975 - 1983
36. Pembroke	0.59	38.4	36	1979 - 1983
37. Sault Ste. Marie	0.53	21.9	45	1979 - 1983
38. Dunrobin- Breckenridge	0.53	95.5	20	1982 & 1983
39. Pakenham-Arnprior	0.50	38.2	37	1975 - 1983

Table 1 (cont.)

40. Coboconk	0.45	15.3	47	1978 - 1980
41. Carleton Place	0.44	38.4	36	1975 - 1983
42. Kingston	0.44	59.0	26	1975 - 1983
43. Owen Sound	0.43	25.2	44	1975 - 1983
44. Thousand Islands	0.41	27.2	41	1975 - 1983 ^d
45. Kleinburg	0.39	35.5	39	1982 & 1983
46. St. Thomas	0.36	49.8	30	1975 - 1983
47. Orillia	0.36	17.0	46	1982 & 1983
48. Gravenhurst- Bracebridge	0.25	11.0	52	1982 & 1983
49. Grenville- Hawkesbury, Que.-Ont.	0.22	10.3	53	1975 - 1977
50. Prince Edward Point	0.21	11.7	49	1978 - 1983
51. Meaford	0.21	12.3	48	1975 - 1980
52. Sudbury	0.16	11.3	50	1980 - 1983
53. Buckhorn	0.15	11.2	51	1979 - 1983
54. Atikokan	0.14	1.2	60	1975 - 1983
55. Marathon	0.14	2.5	57	1975 - 1980
56. Deep River	0.13	6.1	55	1975 - 1983
57. Wiarton	0.12	6.6	54	1976 - 1983
58. Moscow	0.07	2.4	58	1975 - 1983
59. Westport	0.06	2.8	56	1975 - 1983
60. Dryden	0.05	2.0	59	1975 - 1983
61. Bancroft	0.04	0.3	67	1975 - 1977
62. Kenora	0.03	0.3	67	1981 - 1983
63. Minden	0.03	1.0	61	1975 - 1983
64. North Bay	0.03	1.0	61	1983
65. Georgian Bay Islands	0.03	1.0	61	1977 - 1983
66. Burk's Falls	0.02	0.7	64	1978 - 1983
67. Wawa	0.02	0.2	69	1978 - 1983
68. Cyprus Lake Prov. Park	0.01	0.4	65	1975 - 1983
69. Algonquin Prov. Park	0	0.4	65	1975 - 1983
70. Agawa Bay	0	0	70	1978 & 1979
71. Cochrane	0	0	70	1983
72. Hearst	0	0	70	1982 & 1983
73. Hornpayne	0	0	70	1975
74. Ignace	0	0	70	1980 - 1983
75. Morson	0	0	70	1983
76. Vermilion Bay	0	0	70	1977 - 1982 ^d
77. Woodview	0	0	70	1975 & 1976
Average (N = 425)	2.23	165.4		

a. Except 1977

b. Except 1976 and 1981

c. Except 1979

d. Except 1981

average number of crows recorded per count ranged up to 3260 recorded at Hamilton. The average number of crows for all counts was 165.

Discussion

The areas of Ontario with the largest number of crows per party hour during 1975-1983 were extreme southwestern Ontario, the northern half of the Niagara Peninsula, Port Hope-Cobourg and Thunder Bay (Figure 2). The same areas, plus Ottawa, also recorded large numbers of crows on their CBCs (Table 1). In general, crow populations were large in southern Ontario and decreased northward. The large number of crows and crows per party hour record at Thunder Bay were anomalous when compared to the rest of Ontario and reason(s) for this would be worthy of further investigation.

The causes for this pattern of declining crow numbers, south to north, are not known but they may be related to winter temperature, snow cover, the availability of food at sites such as garbage dumps or grain fields or some other factor(s). In Essex County during the winter months, I have observed crows feeding at garbage dumps (landfill sites) and in snow-free fields on numerous occasions (pers. obs.).

In a study of the midwinter distribution of crows in New York and California, Emlen (1938, 1940) could find no ecological factors which fully explained the crows' distribution, which in many cases had remained stable for 50 years or more. He suggested social factors, e.g. an innate affinity to (an) established territory, indepen-

dent of environmental factors, may play a role.

The CBCs with the greatest winter crow populations correspond well to the known locations of large crow roosts. Hamilton and St. Catharines have the two largest winter crow populations in Ontario according to the CBC data. Both cities are known to have large crow roosts (Lamoureux and Lamoureux 1980, Knapton and Maturi 1984). The CBCs in extreme southwestern Ontario (Pt. Pelee, Detroit River and St. Clair) also report large winter crow populations. What appears to be the largest crow roost in Ontario is located at Essex near the Point Pelee and Detroit River counts (Weseloh 1983) and there is a large roost of undetermined size at Chatham near the St. Clair count (pers. obs. and Tom Reaume, *in litt.*). The Port Hope-Cobourg CBC which ranks 7th and 8th in number of crows and crows per party-hour, respectively, also has a substantial crow roost of undetermined size (Roy John, pers. comm.).

From the data presented in this report it would appear that the American Crow reaches the northern limit of its early winter distribution in central Ontario. There are a few scattered populations associated with some northern towns and cities; the population at Thunder Bay is substantial. This conclusion is in agreement with that shown by the one year, continent-wide survey of crow data from CBCs in 1972 (Rosahn 1974). That study showed that the northern limit of crow distribution in eastern North America followed a line west along

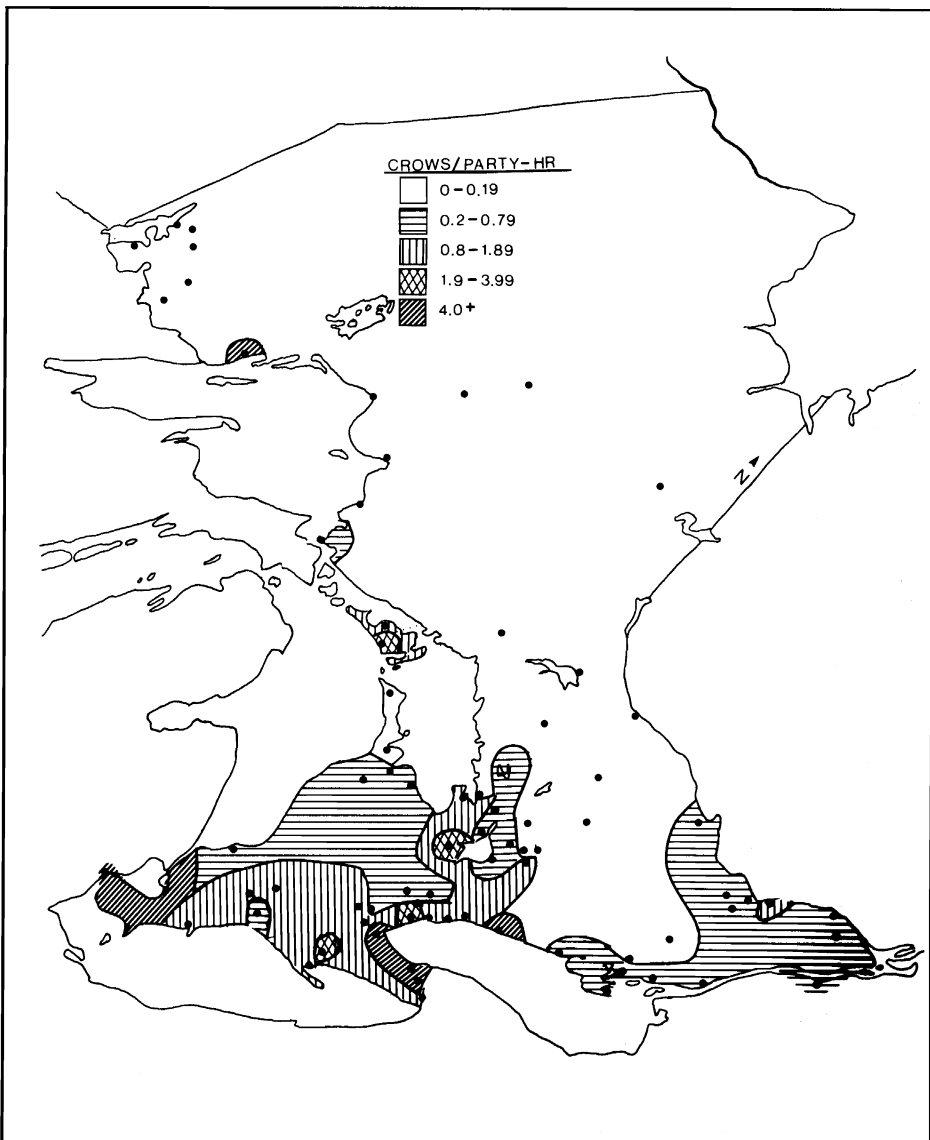


Figure 2. Areas of relative crow abundance (crows per party-hour) as recorded on Christmas Bird Counts, 1975-1983.

the St. Lawrence River to eastern Ontario, west through central Ontario, northern lower peninsula Michigan, northern Wisconsin and central Minnesota. The centre of

the early winter distribution occurred in the area of the Appalachian Mountains from southeastern Pennsylvania to North Carolina. The number of

crows recorded on CBCs from this area was much greater than on those in Ontario. For example, during the period 1977-1980, counts of crows in Pennsylvania ranged from 35,000 to 50,000 or over 300 crows per party-hour (Schweinsberg 1977, 1980; Faust 1979)!

In conclusion, 77 different Christmas Bird Count locations in Ontario reported on the number of crows recorded during December/January for one or more years during the period 1975-1983. Both the number of crows per party hour and the total number of crows were greatest on CBCs in southern Ontario and with two notable exceptions, Thunder Bay and Ottawa, generally decreased northward. Several CBC locations that have large winter crow populations are known to have large winter crow roosts. However for most CBC locations, very little is known of the size or site of winter crow roosts. I would encourage anyone who knows of or is interested in crow roosts to report their results in note or article form to *Ontario Birds*.

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Request for information: Further interest in crow roosts seems to be developing. Mr. Tom Reaume, a Guelph artist working on a book on crows, asks OFO members who know of roosts of 1000 or more crows to contact him at 72 Waterloo Ave., Guelph, Ontario N1H 3H5.



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