

RELATIVE ABUNDANCE OF BIRDS DURING THE BREEDING SEASON IN SASKATOON, SASKATCHEWAN

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The surveys of urban areas have revealed that such habitats support a high diversity of breeding birds.^{2,5,6,11,12,13,14,15} It has been suggested that urban areas can provide refuges for the native birds whose habitats have been reduced.⁹ Recently, bird assemblages of urban and nearby unaltered habitats have been compared to determine the extent of permeability of the urban habitats for nearby native birds.^{1,3,4,7,8} Surveys of urban birds, therefore, may be useful in assessing the impact of human settlement on the native bird fauna or as a base line for long-term changes in bird populations. However, relatively little is known about the structure of Ca-

nadian urban bird communities. This paper presents a relative abundance of birds, estimated by point counts made at various localities in Saskatoon (52°07'N, 106°38'W) during a study of predator-prey relationships of nesting Merlins.

Surveys were made almost every day between 11 May and 30 July 1987. A total of 264 was made — 88 each month at stations located 0, 50, 250, and 450 m from each of 11 Merlin nests. Within constraints of availability of alleys and roads, stations were randomly selected with a new selection for each count day. Whenever possible, different stations were used for subsequent counts



White-crowned Sparrow Wayne Lynch



Brewer's Blackbird,
Canmore, Alberta

G.L. Holroyd



Franklin's Gull

Fred Lahrman

near a nest. All birds, seen or heard during seven minutes, were counted within 25 m of each point (or station). No bird was knowingly counted twice. Censuses were made only in fair weather and in the first four hours of daylight. The impact of nesting Merlins on bird abundance and detailed methods are presented elsewhere.¹⁰ I arbitrarily classified birds that formed 6% of the total as common, 1-5% as uncommon, and < 1% as rare.

The locations of the 11 nests are given in Table 1. Two to three were surveyed during each sampling day. Each nest was visited twice during a month. It took me about 50 minutes to survey the area around a nest. The present survey recorded 36 species (Table 2). The four most common species were: House Sparrow, Chipping Sparrow, Rock Dove, and American Robin. These species formed approximately 64% of the to-

tal avifauna. Of the rest, 11 were uncommon and 21 were rare species.

I found a significant correlation between relative abundance and frequency of occurrence of the 20 most common birds ($r_s = 0.998$, $p < 0.05$). This suggests that species that were more common were more widely distributed within the city.

Two common points have emerged from quantitative studies on the urban bird communities from different locales around the world, including the present study. First, the House Sparrow was the most common species in all the surveyed cities, e.g., Tucson (USA),^{1,9} Tornio (Finland),⁴ and Legnica (Poland).¹¹ Secondly, three or four species formed the majority of recorded individuals.

Many studies have noted an increase both in bird abundance and



Killdeer at Condie

Gary W. Seib

diversity with age of neighbourhoods in the surveyed cities.^{4,5,6,7,13} As planted shrubs and trees grow, they attract more birds. Based on year of development of neighbourhoods, Saskatoon can be broadly divided into three age categories, i.e., less than 27 years (before 1960), 27-41 (1960-1946), and more than 41 (42-66 years; before 1946) years. I did not make bird counts in the neighbourhoods that were less than 27 years old, and 24 counts made on

the outer limits of the city could not be assigned to any age category. However, 120 bird counts were made, respectively, in the neighbourhoods that were between 27-41 and more than 41 years of age. I did not find a significant difference in either mean number of species ($t = 0.33$, $df = 238$, $p > 0.05$) or individuals ($t = 0.85$, $df = 238$, $p > 0.05$) recorded in these two neighbourhoods (Table 3). It is possible that both bird abundance and diversity increase up to a

Table 1. LOCATIONS OF 11 MERLIN NESTS IN SASKATOON WHERE POINT COUNTS WERE MADE.

1705 Munroe Avenue	School for the Deaf (Cumberland Avenue and Osler Street)
1406 14th Street East	Buena Vista Park
719 8th Avenue North	Simpkins (north side;
City Parks and Recreation (Avenue P and 31st Street)	NW of Preston Avenue and Circle Drive)
700 Avenue H North	110 112th Street
President's Residence (Elliot Avenue and College Drive)	Central Avenue and 117th Street

Table 2. RELATIVE ABUNDANCE, FREQUENCY OF OCCURRENCE, AND STATUS OF BIRDS REVEALED BY COUNTS MADE AT 44 POINTS IN SASKATOON BETWEEN 11 MAY AND 30 JULY 1987.

Relative abundance is number of birds of a given species detected x 100/Total number of detections of all species; and frequency of occurrence is the number of counts in which a given species was present x 100/total number of counts.

C = common, U = uncommon, and R = rare birds. + = values less than 0.5%.

Species	Relative Abundance*	Frequency of Occurrence	Status
House Sparrow	34.5	80.7	C
Chipping Sparrow	13.7	79.1	C
Rock Dove	8.1	26.5	C
American Robin	7.9	47.3	C
American Crow	4.8	33.7	U
Brewer's Blackbird	4.3	24.2	U
Cedar Waxwing	4.1	21.9	U
Black-billed Magpie	3.4	25.3	U
Ring-billed Gull	3.0	27.6	U
Clay-colored Sparrow	2.9	27.2	U
Yellow Warbler	2.1	19.7	U
European Starling	1.7	4.2	U
Merlin	1.6	15.1	U
Franklin's Gull	1.3	7.6	U
House Wren	1.2	14.8	U
Western Kingbird	0.9	4.9	R
Western Meadowlark	0.9	8.3	R
Black-capped Chickadee	0.6	6.1	R
Common Grackle	0.5	4.9	R
Tree Swallow	0.5	1.5	R
American Goldfinch	+	3.8	R
Red-eyed Vireo	+	2.6	R
American White Pelican	+	1.3	R
American Kestrel	+	1.9	R
Killdeer	+	1.1	R
White-throated Sparrow	+	2.3	R
California Gull	+	0.8	R
Horned Lark	+	+	R
White-crowned Sparrow	+	0.8	R
Red-tailed Hawk	+	+	R
Mourning Dove	+	0.8	R
Yellow-headed Blackbird	+	+	R
Northern Oriole	+	+	R
Blue Jay	+	+	R
Red-winged Blackbird	+	+	R
Great Horned Owl	+	+	R

*Total detections = 3,050

Table 3. EFFECT OF AGE OF NEIGHBOURHOOD ON SPECIES RICHNESS AND BIRD ABUNDANCE.
 \pm = standard deviation.

	Age of neighbourhood (years)	
	27-41	42-66
Mean no. of species	5.0 \pm 1.91	4.9 \pm 2.06
Range	0-11	1-13
Mean no. of individuals	11.2 \pm 5.93	10.6 \pm 5.56
Range	0-34	1-25
Sample size	120	120

certain vegetation age. In the present case it may be within 27 years, after which these factor numbers level off.

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