

Patterns of Feeder Use by Wisconsin Birds: A Survey of WSO Members

A survey of 624 WSO members revealed several patterns in the use of winter bird feeders by Wisconsin birds. There were significant differences for some species between northern and southern Wisconsin and for others between urban, suburban, and rural areas.

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In 1983 we mailed questionnaires to members of WSO, asking about the birds they observed at their winter bird feeders. Part of the survey dealt with patterns of disease and mortality at feeders, and the results of that portion of the study have already been published (Brittingham and Temple 1986, 1988). In this paper we describe the frequencies at which various birds are observed at feeders and contrast the patterns of use in northern and southern Wisconsin and in rural, suburban, and urban habitats.

METHODS

In October 1983, we mailed questionnaires to 1,145 members of WSO, who were distributed throughout the state and are among Wisconsin's most serious amateur ornithologists. We asked them to identify the species of birds that used their feeder and to estimate approximately the largest num-

ber of individuals of each species that used their feeder during a day. We also

Table 1. Frequency of observation of 21 species at winter bird feeders in Wisconsin

Species	Percent of respondents observing species
Mourning Dove	68%
Red-bellied Woodpecker	34%
Hairy Woodpecker	63%
Downy Woodpecker	79%
Blue Jay	94%
Black-capped Chickadee	95%
Tufted Titmouse	13%
White-breasted Nuthatch	82%
Red-breasted Nuthatch	42%
European Starling	64%
House Sparrow	80%
Common Grackle	55%
Northern Cardinal	81%
Evening Grosbeak	47%
Purple Finch	65%
Common Redpoll	46%
Pine Siskin	52%
American Goldfinch	87%
Crossbills	9%
Dark-eyed Junco	89%
American Tree Sparrow	55%

Table 2. Frequency of observations of 21 species at feeder sites in northern and southern Wisconsin

Species	Region of Wisconsin		Significance of difference		Region of greatest abundance
	Southern	Northern	χ^2	P^1	
Mourning Dove	73%	52%	17.4	<0.001	Southern
Red-bellied Woodpecker	36%	17%	13.8	<0.001	Southern
Hairy Woodpecker	54%	78%	19.8	<0.001	Northern
Downy Woodpecker	74%	86%	6.4	<0.05	Northern
Blue Jay	93%	96%	1.2	NS	
Black-capped Chickadee	95%	95%	0.04	NS	
Tufted Titmouse	16%	6%	7.6	<0.01	Southern
White-breasted Nuthatch	76%	90%	10.3	=0.001	Northern
Red-breasted Nuthatch	34%	63%	28.1	<0.001	Northern
European Starling	68%	48%	14.5	<0.001	Southern
House Sparrow	86%	60%	34.7	<0.001	Southern
Common Grackle	54%	49%	0.7	NS	
Evening Grosbeak	32%	75%	63.3	<0.001	Northern
Purple Finch	59%	81%	17.6	<0.001	Northern
Common Redpoll	41%	57%	8.8	<0.001	Northern
Pine Siskin	46%	60%	6.2	<0.05	Northern
American Goldfinch	86%	88%	0.3	NS	
Crossbills	7%	13%	4.5	<0.05	Northern
Dark-eyed Junco	90%	82%	6.2	<0.05	Southern
American Tree Sparrow	55%	48%	1.4	NS	
Northern Cardinal	89%	52%	72.6	<0.001	Southern

¹NS indicates that the differences were not significant.

asked about the location of the feeder site within Wisconsin and whether the habitat around the feeder was primarily rural, suburban, or urban. We used Chi-square tests to determine the statistical significance of differences in frequencies of observations.

RESULTS

A total of 624 WSO members responded to our questionnaire, a 54% response rate. Cary (1985) found that 34% of households in Wisconsin feed birds during the winter. Our results suggest that at least 54% of WSO members fed birds; we suspect that many of the 46% of members who failed to respond did not feed birds. Table 1 describes the proportion of respondents who reported each of 21 species at their feeders. Of these 21 species, Black-capped

Chickadees were the most frequently observed (by 95% of all respondents) whereas crossbills (Red Crossbills and White-winged Crossbills) were seen least frequently (by 9% of respondents).

We divided Wisconsin into northern and southern regions on the basis of the "tension zone" dividing the state into northern and southern ecosystems. We used the map in Temple and Cary (1987) to identify the northern and southern counties. We had 313 feeder sites in southern Wisconsin and 114 in northern Wisconsin; the remaining 197 were within the zone of transition.

Table 2 compares the frequency with which species were observed at feeders in these regions. No species was restricted to only one region of the state. Nine species were observed more frequently at northern Wisconsin feeders: Hairy Woodpecker, Downy Wood-

Table 3. Frequency of observation of 21 species at feeder-sites in three habitat types in Wisconsin

Species	Habitat surrounding feeder			Significance of differences	
	Urban	Suburban	Rural	χ^2	P^1
Mourning Dove	85%	80%	51%	64.9	<0.01
Red-bellied Woodpecker	15%	23%	50%	63.5	<0.01
Hairy Woodpecker	38%	55%	80%	69.8	<0.01
Downy Woodpecker	61%	70%	93%	71.7	<0.01
Blue Jay	89%	91%	98%	14.3	<0.01
Black-capped Chickadee	82%	96%	98%	40.3	<0.01
Tufted Titmouse	10%	11%	17%	4.7	NS
White-breasted Nuthatch	63%	78%	93%	47.7	<0.01
Red-breasted Nuthatch	37%	44%	43%	1.5	NS
European Starling	79%	70%	52%	32.3	<0.01
House Sparrow	95%	90%	66%	61.1	<0.01
Common Grackle	70%	66%	40%	47.0	<0.01
Northern Cardinal	84%	87%	75%	12.8	0.002
Evening Grosbeak	31%	40%	58%	29.6	<0.01
Purple Finch	50%	62%	79%	20.6	<0.01
Common Redpoll	41%	47%	48%	1.5	NS
Pine Siskin	50%	58%	46%	5.5	0.07
American Goldfinch	78%	89%	90%	11.3	0.003
Crossbills	9%	10%	9%	0.3	NS
Dark-eyed Junco	81%	92%	88%	8.1	<0.05
American Tree Sparrow	35%	53%	65%	28.1	<0.01

¹NS indicates that the differences were not significant.

pecker, White-breasted Nuthatch, Red-breasted Nuthatch, Evening Grosbeak, Purple Finch, Common Redpoll, Pine Siskin, and crossbills. Seven species were observed more frequently at southern Wisconsin feeders: Mourning Dove, Red-bellied Woodpecker, Tufted Titmouse, European Starling, House Sparrow, Northern Cardinal, and Dark-eyed Junco.

There were 107 feeder sites in urban areas, 230 in suburban areas, and 270 in rural areas. We found that no species was restricted to either urban, suburban or rural habitats. Most were, however, observed more frequently at feeders in one habitat (Table 3). Ten species were observed most frequently at rural feeders: Red-bellied Woodpecker, Hairy Woodpecker, Downy Woodpecker, Blue Jay, Black-capped Chickadee, White-breasted Nuthatch, Evening Grosbeak,

Purple Finch, American Goldfinch, and American Tree Sparrow. Two species were most frequently observed at suburban feeders: Northern Cardinal and Dark-eyed Junco. Four species were most frequently observed at urban feeders: Mourning Dove, European Starling, House Sparrow, and Common Grackle. It appears that the availability of a feeder in urban or suburban areas will not attract many rural species because of their need for more undisturbed natural habitats.

ACKNOWLEDGMENTS

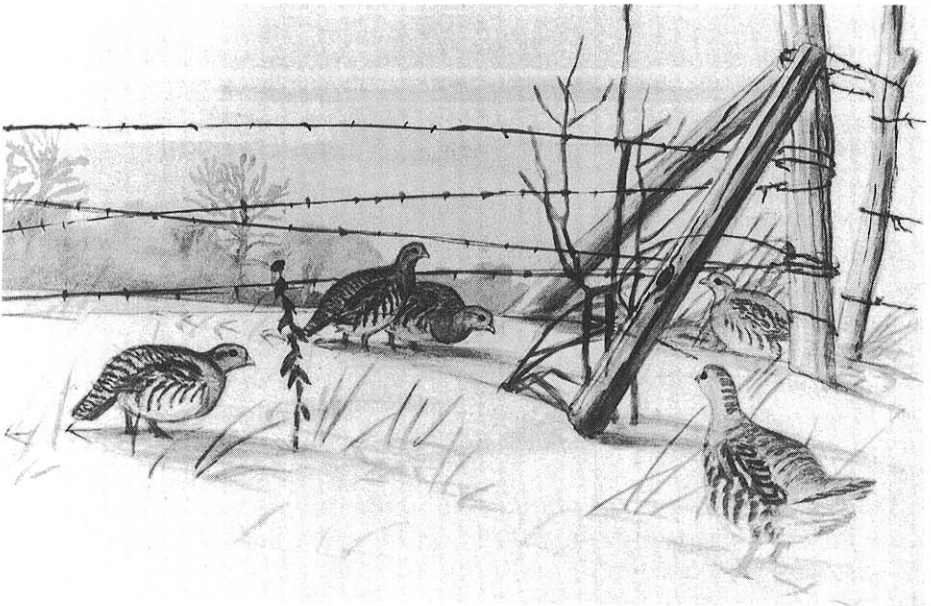
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