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MORE BIRDS THAT CAME TO SEE ME

John Breukelman

In 1962 I reported (Kansas Orn. Soc. Bull., 13 (3):20-24) a summary of daily bird observations from our living room, which faces west on the back yard. The checklist at the time of writing (April 1962) totalled 93 species and covered 2,394 days during 104 of the 115 months from September 1952 to March 1962 inclusive. Eleven months were missing because of summer vacations and a sabbatical leave of absence.

After retirement in 1968, I resumed the daily back yard observations; this summary covers the period from November 1968 through March 1977. The record was maintained for 1541 days during 74 of the 101 months that elapsed. Relatively more months are missing than for 1952-1962 because of retirement. We have spent entire summers at our cabin in the Black Hills of South Dakota and all or parts of many winter months in Mexico.

The checklist for this period totals 94 species; to be consistent with 1962 I again included Slate-colored and Oregon Juncos separately. Table 1 shows the species observed (in order of frequency), the months during which each was seen, and, for each species also reported in 1962, its rank at that time. (A bold face number indicates that two or more species were tied for this rank).

Table 2 shows the number of species seen during each of the 74 months. The figures are not directly comparable because the number of observation days per month varied from three (August 1969) to 31 (January 1972, January, March, and May 1976).

Table 3 shows the number of species per day in each "composite" month in each of the two reports. For example, the number of April days was 175; the average number of species for these days was 9.99. The present figures are somewhat larger than those reported in 1962; this no doubt results from the fact that retirement has given me more observation time, and not from any increase in the number of species.

The largest number of species seen in one day was 22 (23 May 1972), in one month 41 (April 1975), and in one year 67 (1970). The largest average for a month was 13.4 (May 1976). The corresponding figures reported in 1962 were 20, 38, 60, and 13.4 respectively. The average number of species per day for the entire period was 7.55, as compared to 6.96 reported in 1962.

For the two periods together, the total checklist compiled during the 178 months is 112. Eighteen species reported in 1962 were not seen this time, and 19 included now were not reported in 1962.

The two lists are quite similar in some respects, for example the relative ranks of most species reported both times, and the months during which each was seen. The 10 most frequently seen species this time include only one missing from the top 10 in 1962; even the top 25 include only five not reported in 1962. The two lists also differ in some respects. The absence this time of such species as herons, hawks and gulls results, I think, from the growth pattern of Emporia. The area between our home and the Neosho River, to the north and west, formerly mostly open space, is now occupied (except for Jones Park) by houses, apartment buildings, churches, playgrounds, a mobile home village, a segment of Interstate 35, and other developments. The additional 19 species reported this time probably reflect

TABLE 1. Checklist of Species, in Order of Frequency, Months in Which Each was Observed, November 1968, to March 1977, Inclusive, and 1962 Rankings.

1977		1962
1. House Sparrow	1541 Every month	1
2. Cardinal	1286 Every month	2
3. Blue Jay	1037 Every month	5
4. Starling	980 Every month	6
5. Robin	962 Every month	3
6. Slate-colored Junco	592 October to April	15
7. Mourning Dove	470 February to November	4
8. Common Grackle	426 March to November	8
9. House Wren	407 April to October	9
10. Chimney Swift	389 April to October	7
11. Black-capped Chickadee	347 Every month	11
12. Catbird	324 April to August, October	10
13. Brown Thrasher	271 March to September	14
14. Rock Dove	179 October to June	41
15. Purple Martin	178 March to August	12
16. Downy Woodpecker	164 September to July	16
17. American Goldfinch	152 September to July	33
18. Northern (Balt.) Oriole	144 April to August	13
19. Common Nighthawk	119 March to July, October	19
20. Oregon Junco	113 Jan. to April, Nov., Dec.	44
21. Brown Creeper	112 November to April	33
22. Harris Sparrow	104 December to April	24
23. Song Sparrow	86 January to May	41
24. Brown-headed Cowbird	77 March to July, October	22
25. Hairy Woodpecker	71 October to June	17
26. Red-bellied Woodpecker	70 October to May	25
27. Common Flicker	65 October to July	20
28. Golden-crowned Kinglet	54 October to April	56
29. Common Crow	53 October to June	37
30. Wood Thrush	51 April to July	20
31. Tufted Titmouse	43 March to June, Nov., Dec.	18
32. Ruby-thr. Hummingbird	42 May to July	32
33. Lincoln's Sparrow	39 March to May, October	40
34. Orchard Oriole	37 April to July	25
35. Warbling Vireo	30 April to July	28
36. Orange-crowned Warbler	28 April, May, October	39
37. Chipping Sparrow	27 March to May	30
38. Tree Sparrow	26 December to March	30
39. Eastern Bluebird	25 October to May	50
40. Yel.-rump. (Myrtle) Warbler	24 May, October, November	44
41. Brewer's Blackbird	20 March to May	36
42. Swainson's Thrush	19 April, May	33
43. Cedar Waxwing	18 Jan. to March, Oct., Nov.	54
44. Purple Finch	17 January to March	
45. Yellow Warbler	16 April to June	29
46. White-throated Sparrow	14 April, October	68
47. Red-headed Woodpecker	13 April, May	59
Common Yellowthroat	13 April to July	49
49. Yellow-bellied Sapsucker	12 November, December	59
Eastern Phoebe	12 May	55
Black-and-white Warbler	12 April, May	68
Evening Grosbeak	12 December, January	
53. Eastern Kingbird	11 May to July, October	27
Carolina Wren	11 January to April	47
Mockingbird	11 April, May	56

56. Rusty Blackbird	10	March, April, December	52
Pine Siskin	10	January, February	74
Rufous-sided Towhee	10	April, May	
59. Yellow-billed Cuckoo	9	May, June	23
White-breasted Nuthatch	9	November to March	64
Bell's Vireo	9	April, May	64
Eastern Meadowlark	9	January to April, June	63
Common Redpoll	9	January, February	
Clay-colored Sparrow	9	April, May	41
65. Killdeer	8	February to May	46
Bewick's Wren	8	March, April, December	47
Hermit Thrush	8	May	
Blackpoll Warbler	8	May	74
American Redstart	8	April, May	74
White-crowned Sparrow	8	October to December	59
71. Eastern Wood Pewee	7	May	74
Ruby-crowned Kinglet	7	February to April, October	30
Red-eyed Vireo	7	April, May	
LeConte's Sparrow	7	April, December	
Lark Sparrow	7	April	
Fox Sparrow	7	May, October, December	
77. Acadian Flycatcher	6	May	
Least Flycatcher	6	May	52
Magnolia Warbler	6	April, May	
Yellow-breasted Chat	6	April	
Red-winged Blackbird	6	March, May to July	50
Rose-breasted Grosbeak	6	April, May	64
Painted Bunting	6	May, June	
84. Tennessee Warbler	5	April, May	
Nashville Warbler	5	May	68
Hooded Warbler	5	May	
Savannah Sparrow	5	April, May	
Swamp Sparrow	5	April	
89. Loggerhead Shrike	4	July 1970, 1976	74
90. American Kestrel	3	July 1970, October 1969	64
Bobwhite	3	December 1970, 1974	
Gray-cheeked Thrush	3	April, May 1972	56
Chestnut-sided Warbler	3	April 1972, May 1975	
94. Canada Goose	2	March 1971, 1975	

TABLE 2. Number of Species of Birds Seen in Each of the 74 Months in Which Observations Were Made.

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
Jan.		18	21	14	—	12	16	9	16	20
Feb.		—	—	17	—	13	20	—	11	22
Mar.		—	23	22	26	27	17	19	20	21
Apr.		—	32	40	36	29	26	41	30	
May		26	33	30	38	22	16	23	42	
June		18	16	18	26	—	13	17	24	
July		—	22	—	23	15	—	—	—	
Aug.		14	—	—	—	—	—	—	—	
Sep.		—	—	—	—	—	13	—	—	
Oct.		26	19	15	18	12	14	6	15	
Nov.	14	16	14	15	14	11	13	15	19	
Dec.	21	19	20	15	15	14	14	20	16	
Year	23	51	67	58	63	52	48	55	64	31

TABLE 3. Average Number of Species Seen per Day in Each "Composite" Month, During 1952-62 and 1968-77.

	1952-62	1968-77		1952-62	1968-77
January	4.44	5.49	July	9.68	11.14
February	4.83	6.11	August	8.40	9.67
March	5.83	7.72	September	8.06	9.27
April	7.84	9.99	October	5.49	6.29
May	11.59	12.08	November	3.84	5.03
June	10.77	10.06	December	4.16	5.00

the additional observation time coming with retirement. A few species changed considerably in rank, for example Rock Dove from 41st to 14th and the Golden-crowned Kinglet from 56th to 28th. The Tufted Titmouse moved from 18th down to 31st and the Yellow Warbler from 29th to 45th.

The 1962 report included 20 species seen only one day each; this time I have no "once-only" species, and only six were recorded fewer than five times, even though the number of observation days was considerably smaller—1541 as compared to 2394 in the first series.

Thirteen other species should be mentioned; I have seen them within three blocks. Had I happened to be looking at just the right times, I might have spotted them through the living room window. They are: Screech Owl, Short-billed Marsh Wren, Veery, Parula Warbler, and Blackburnian Warbler, in Hammond Park, one block east; Great Horned Owl, in trees across the street; Barn Swallow, nesting in a garage across the street; Prothonotary Warbler, Country Club golf course, one block north; Black-throated Green Warbler, Northern Waterthrush, and Ovenbird, Country Club and Hammond Park; Dickcissel, National Guard Armory, three blocks northeast; Vesper Sparrow, Country Club and St. Mary's Hospital, three blocks southeast.

Thus the checklist for the immediate vicinity consists of the 93 reported in 1962, the additional 19 in this report that were not included in 1962, and the 13 "might-have-been" species, minus one since the Slate-colored and Oregon Juncos have been united, or 124 in all.

Thanks are due my wife Ruth for her assistance in checking the data, compiling the tables, and careful reading of the manuscript.

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INFLUENCES OF HABITAT ON COWBIRD HOST SELECTION

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The Brown-headed Cowbird (*Molothrus ater*), formerly a bird of the mid-continental grasslands, has expanded its range eastward in response to settlement and clearing of the eastern North American forests (Mayfield 1965). Cowbirds are famous for their brood parasitic habit—Brown-headed Cowbirds are known to have parasitized 216 species; 139 of these have been recorded to have raised young cowbirds (Friedmann et al 1977). These numbers testify to the variety of environments encountered by female cowbirds when they lay eggs. Although there are other obvious differences between host species—size, appearance and behavior of adults, eggs and nests—our interest is in the habitat choices of these hosts. Do cowbirds show a wide range in habitat tolerance? Or, do parasitized nests tend to be in only a limited portion of the total available habitat as defined by nest locations of all potential hosts? This paper examines the role habitat may play in determining which nests may be, and which may not be, parasitized by Brown-headed Cowbirds in the central United States.

Data were gathered in the summers of 1976 and 1977, mostly from the Nelson Environmental Study Area of the University of Kansas, as part of a course in Ecological Ornithology. Emphasis was on gathering data on forest bird species. Additional observations were made elsewhere in Douglas County and in neighboring Leavenworth and Franklin Counties. Within a 0.04 ha (0.1 acre) circle centered at a nest, 10 measurements of the structure of woody vegetation were

made after the manner of James (1971). The variables are listed in Table 1. A total of 47 nests of open-nesting, altricial species formed the data base of this analysis. These data are part of a more extensive study being made by Johnston (1977).

Principal component (PC) analysis was made on the correlation matrix obtained from the data. The resulting axes provided a linear combination of the original 10 variables, which allows an ordination of the observations in terms of overall features of the woody vegetation. PC scores of individual nests were plotted on these axes to show patterns of parasitized and non-parasitized nests.

Discriminant function techniques were used to separate nests that were parasitized from those known not to be. The computer program used—BMDP7M (Dixon 1975)—enters variables in a stepwise manner based on their importance in discriminating the different groups.

RESULTS

PC loadings found here (Table 1) are very similar to those of Johnston (1977), as expected, as well as very similar to a more extensive PC analysis of Kansas bird habitats (Johnston, unpubl.). Loadings match less well, but still show the same pattern as those of James (1971) on Arkansas woodland birds and of Whitmore (1975, 1977) for passerines in Utah. PC I shows a contrast of ground cover and number of shrub stems with measurements indicative of more mature forests. Grasslands are one extreme while mature forests provide the other. PC II contrasts shrub density with that of mature trees. Shrub thickets or understory give one extreme; both grasslands and forest without understory are at the other extreme.

Figure 1 locates nests in a two-axis PC space. Number of cowbird eggs per nest is indicated. Most of the parasitized nests are restricted to only a part of the total nest space. Discriminant function analysis, however, showed no difference between nests known to be parasitized and those known not to be parasitized. Many nests were excluded from the discriminant analysis because they were too high for the contents to be checked. PC nest space of the commoner hosts (Figure 1B) is almost completely spanned by cowbird activity. Most of the nests parasitized more than once were located outside the forest. (The boundary of closed forest in Figure 1B is approximately defined by the vertical PC II axis.)

TABLE 1. Factor loadings by vegetational variables onto the first two principal components of variation.

Variable	PC I	PC II
Per Cent Ground Cover	-0.539	-0.484
Stem Density	-0.191	0.833
Number of Tree Species	0.952	-0.063
Per Cent Canopy Cover	0.850	0.322
Canopy Height	0.938	0.082
Number of Trees, 7.6-15.2 cm diameter	0.675	-0.062
Number of Trees, 15.2-22.9 cm diameter	0.799	-0.201
Number of Trees, 22.9-30.4 cm diameter	0.744	0.070
Number of Trees, 30.4-38.1 cm diameter	0.759	-0.233
Number of Trees, 38.1+ cm diameter	0.686	-0.094
Per Cent of Total Variance	55.3 %	11.6 %

In Table 2, standard deviations of 5 of the vegetational variables associated with nest sites are listed for the cowbird and 6 other species. Cowbirds show wide habitat lability as indicated by having highest standard deviations for two variables—Number of Tree Species and Per Cent Canopy Cover—and second highest for two others—Per Cent Ground Cover and Canopy Height.

DISCUSSION

Open nests in all types of Kansas habitats seem susceptible to cowbird parasitism, although birds of forest habitat are less frequently victimized. Within our range of habitats, cowbirds are most active in open areas: grassland-forest edge and shrub thickets. The Wood Thrush nests that were parasitized would have

required female cowbirds to pass through perhaps 300 m of forest habitat. Forested areas were not extensive enough to hinder cowbird activity.

Brown-headed Cowbirds in the woods were noticed only in tree-tops or as they flew over. Most cowbirds were seen as members of displaying groups on exposed perches along forest edge. However, female cowbird activity within the forest is evidenced by parasitized nests. The high standard deviations of variables (Table 2) indicates a wide habitat tolerance as well as much overlap with other species in habitat usage.

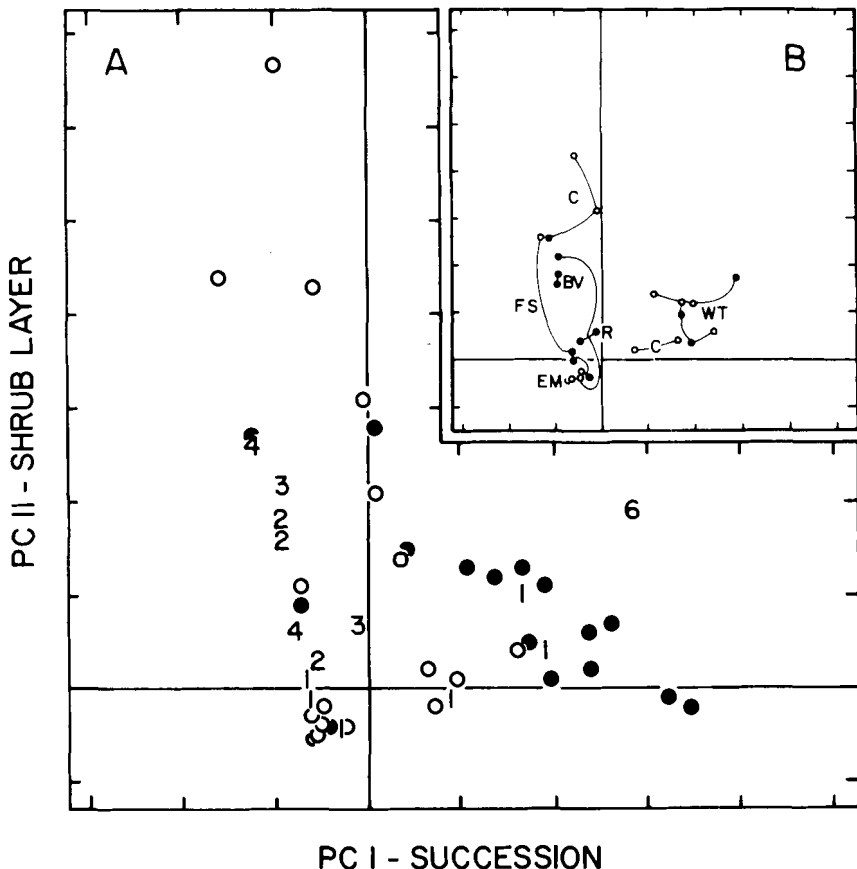


FIGURE 1. (A) Ordination of nests on 2-axis PC space. Numbers indicate number of cowbird eggs per nest. Open circles are unparasitized nests. Closed circles are nests whose contents were unknown. (B) Positions of nests of six commoner hosts in the same ordination depicted in A: WT—Wood Thrush, BV—Bell's Vireo, EM—Eastern Meadowlark, R—Red-winged Blackbird, C—Cardinal, FS—Field Sparrow. Closed circles are parasitized nests; open circles are unparasitized nests or nests with unknown contents.

Brown-headed Cowbirds occupy an intermediate position in PC ordinations—in both Arkansas (James 1971:226) and Utah habitats (Whitmore 1977:258). Kansas cowbirds likewise provide a mean value for ordination intermediate between species typical of open grassland and those of mature forests (Johnston 1977:16). Because cowbirds parasitize birds of the prairie as well as forests, such an intermediate ordination is to be expected. Yet cowbirds are usually regarded as

birds of open country, and archetypically of the Great Plains—where presently they are, and were in the past, most abundant (Van Velzen 1972). We suspect their inclusion of forest species as common hosts to be a result of the patchiness of forests today. Forested areas have been cut in the eastern United States and Canada, and trees have been planted in the former prairie of the Great Plains. However, these forested areas have been maintained as relatively small “islands”

TABLE 2. Standard deviations for 5 variables measured for nests parasitized by Brown-headed Cowbirds and nests of 6 host species.

Species	n	Per Cent	Stem	Number	Per Cent	Canopy
		Ground	Density	of Tree	Canopy	Height
		Cover		Species	Cover	
Brown-headed Cowbird	14	2.25	11.8	2.68	4.06	1.5
Wood Thrush	7	2.47	6.6	0.95	0.86	0.8
Bell's Vireo	2	0.35	1.4	0.00	0.00	0.0
Eastern Meadowlark	2	0.00	0.0	0.00	0.00	0.0
Red-winged Blackbird	4	1.08	13.1	0.50	1.00	0.2
Cardinal	5	1.02	21.4	2.24	3.80	1.5
Field Sparrow	5	0.00	15.5	0.89	0.22	2.7

by agricultural activity. Vast expanses of forest would almost certainly be avoided by cowbirds, but the present patchwork of meadow, pasture, cropland, and woodlots provides an optimum habitat for an edge species like the cowbird. As a consequence cowbirds also have acquired a much more varied host community because of lack of specialization for host species.

Breeding bird censuses from eastern Kansas provide information on the cowbird-host community structure for different habitats (Cink 1974, Cink and Paul 1975, Zimmerman 1977). With increasing complexity in the structure of woody vegetation there is an increase in bird density and variety: 10 species at 1.8 pairs/ha in an extensive prairie census, to 19 species at 12.8 pairs/ha in prairie-shrub succession, and 24 species at 5.5 pairs/ha in oak-hickory forest. Cowbird density is greatest in the shrub habitat, as also is host density. Comparing forest, shrub, and prairie habitats, host density changes from 1.8 host pairs/ha (33% of birds can be considered as hosts), or 5.7 hosts/cowbird in forests; 9.5 hosts/ha (74% hosts), or 15.8 hosts/cowbird in shrub habitats; and 0.8 hosts/ha (44% hosts), or 10.0 hosts/cowbird in prairie. The habitat with the most varied structure—the prairie-shrub succession—provides better conditions for cowbirds in comparison with forests or extensive grasslands or prairie. This shows the Brown-headed Cowbird to be an edge species seemingly with preference for more open habitats. The cowbird's current success in terms of its range expansion to the east and abundance in numbers is due, in part, to a habitat preference greatly compatible with landscaping and land use by humans.

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