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### THE CHRISTMAS BIRD COUNT IN KANSAS, 1949-1971

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For nearly 20,000 people in the United States and Canada, Christmas is more than an annual religious event about which vacations are planned, relatives are visited, presents are exchanged and people suddenly become more friendly. To them it is the time to embark upon the most popular, cooperative, ornithological event of the year—the annual Christmas Bird Count (CBC). From its birth in 1900 when 27 people made 25 counts recording some 10,000 birds nationwide, the national CBC has grown to where almost 65 million birds of 583 species were counted on 963 CBCs in 1971. The high species count of 36 in 1900 was less than one-sixth of the high (226) reported by Freeport, Texas in 1971.

Christmas Bird Counts were initiated in Kansas in 1904 by Edward W. Graves (Abilene) and Alexander Wetmore (Independence). That year Graves saw 305 individuals of 17 species and Wetmore counted 956 individuals of 34 species. The 4 highest species counts in Kansas were made recently at Manhattan and Wichita where 83 (1971) and 80 (1966) species were recorded at the former and 82 (1971) and 81 (1970) at the latter. Despite the early start, only once prior to 1950 were more than 5 Kansas CBCs published.

The first issue of the *Kansas Ornithological Society Bulletin* (KOS Bulletin) was published in April of 1950. It was completely devoted to a summary of the 14 counts made during the preceding Christmas season. Each spring since that time a summary of the previous December's count has been published in the *KOS Bulletin*. It is our purpose here to provide a summary of the 23 counts published in the *KOS Bulletin* from 1949 through 1971. Hopefully, this summary will serve as a background for comparison with future counts and thereby make them more enjoyable, interesting, accurate and useful.

With two exceptions, bird names and their sequence follow the fifth edition of the American Ornithologists' Union's "Check-list of North American birds" (A.O.U., 1957). The Blue and Snow Goose were recognized as separate species by the A.O.U. *Checklist* in 1957. However, they have not always been listed separately in the Kansas CBCs (and they appear to be conspecific—Cooch, 1961) so we found it necessary to combine their totals. Future workers may find records for this species most useful if both color phases are recorded separately, however. Following a revision by Sibley and Short (1964) in which they recommended that the Bullock's and Baltimore Orioles be recognized as one species, the oriole seen on the Kingman County count in 1965 was considered a Baltimore Oriole. We follow the A.O.U. *Checklist* and Rising (1970) in retaining the name Bullock's Oriole for this bird.

Species records, questionable or not, were accepted at face value (Readers please note, Ed.). We made no judgments in the way of accepting or rejecting as valid or invalid any published record. After much checking and rechecking we have arrived at totals different from those previously published for many of the categories in Table 1, including number of counts, number of species, total individuals seen and species new

TABLE 1  
SUMMARY OF CHRISTMAS BIRD COUNTS IN KANSAS, 1949-1971.

Year	No. of Counts	No. of Observers	Party-Hours	Total Species	Total Individuals	New Species
1971	21	260	695	130	5,324,508	3
1970	21	282	590	121	1,032,744	3
1969	21	230	475	127	2,720,085	7
1968	19	181	442	118	191,321	1
1967	22	199	397	121	158,987	1
1966	20	190	416	113	114,861	3
1965	19	178	376	126	88,488	5
1964	20	139	?	103	207,621	1
1963	25	165	?	111	159,394	3
1962	19	162	?	114	114,615	3
1961	19	153	?	98	86,580	2
1960	18	171	?	106	73,802	3
1959	19	135	?	111	55,894	3
1958	20	145	?	105	112,297	3
1957	18	150	?	111	121,971	4
1956	20	141	?	106	67,030	2
1955	19	181	?	109	88,742	7
1954	15	177	?	104	60,894	2
1953	16	142	?	112	220,761	9
1952	21	137	328	107	107,829	8
1951	9	96	?	97	32,019	10
1950	11	82	?	90	26,153	18
1949	14	?	?	86	18,852	86

to the list. Errors in both arithmetic and typesetting are common problems when dealing with tabular data—the Kansas CBCs have numerous examples, such as the 1970 totals for the Cooper's, Red-tailed and Red-shouldered Hawks which were interchanged. We have made several corrections in the data previously published, but have undoubtedly missed others. Hopefully, we have not introduced new errors.

#### KANSAS' WINTER BIRDERS AND THEIR BIRDS

The enthusiasm for counting birds during the Christmas holidays is as infectious in Kansas as anywhere. As is evident in Table 1, the number of observers participating and the effort per group has continually increased. For the most part, this increase in effort has had the predictable result of more species and more individual birds being reported. Some birds, notably waterfowl, may have increased in number in Kansas over the past two decades owing to an increase in available habitat. However, the general increase in numbers of birds reported on the CBC appears to be due largely to the increase in people counting them. As might be expected, the smallest number of species (86) and the fewest individuals were reported on the first count taken in December, 1949. With a few exceptions a general increase in both species and total number of individuals has characterized later counts. Recently (1969-1971), however, the discovery of several large blackbird roosts has raised the total number of individuals seen by a factor of ten to numbers in the millions. The total number of individuals sighted in 1971 alone was almost half the total from the previous 22 years combined! The maximum number of species seen in any year was 130 in 1971 (including the Swainson's Hawk and Chipping Sparrow; see below). This is an increase of 44 over the original count in 1949, but is 57 short of the combined 23-year species total of 187.

Both number of species and number of individuals seem certain to increase in the future. The endpoint is not yet in sight and probably will be determined as much by the degree of interest shown by birders as by the presence of birds. As shown in Table 1, on every count taken at least one species was recorded which was new to the list. The number of first records decreased rapidly following the first counts made (Table 1) to only 2 or 3 additions each year. However, aided by the group from Great Bend which reported 4 new species in 1969, the count that year increased the overall total by adding the remarkable sum of 7 new species.

All 187 species recorded on Kansas CBCs between 1949 and 1971 are listed in Table 2. Values for mean annual occurrence are rounded to the nearest whole number; hence, when fewer than 12 individuals have been reported for a given species over the 23-year period, its annual mean is represented by a dash. Minimum and maximum numbers are presented along with the year those counts were made. When the minimum or maximum count was the same for more than one year, the most recent year is given. This procedure was most frequently employed for the less common species when zero was the minimum and one or two the maximum number of individuals seen. For example, the Common Loon was seen on only 4 of the 23 counts with none seen in 1971. No Common Loons were reported on 18 other counts as well. Not unexpectedly, for the 108 commonest birds (those seen 12 or more years) the largest number of minimum values was recorded in the first year of the count. The largest number of minimum values for all species, 58 in 1971, is due as much to the design of the table as to the large number of species which are seen in some years, but not other years.

The information given under the *mean* and *number of years seen* categories in Table 2 is the most useful for assessing the statewide abundance of a given species in late December, and for predicting the likelihood of a particular species being present. Hopefully, these data will increase the available information on rare birds so that all participants in the CBC will recognize which species are indeed rare in Kansas in December and endeavor to document the rarities as thoroughly as possible.

The largest one-year total for a given species has exceeded 10,000 individuals for only 12 of the 187 species seen to date (Table 2). This group of seemingly abundant birds is led by the Redwinged Blackbird (3,281,196), Starling (1,793,322), Mallard (188,516), Brown-headed Cowbird (50,175), Lapland Longspur (45,078), Common Grackle (31,813) and Canada Goose (28,771). However, only the first three of these birds have mean values in excess of 10,000. At the opposite end of the scale, the maximum number seen is less than 6 individuals for 48 species. One individual is the maximum number seen for 21 species. Maximum numbers are of interest in themselves. However, it must be remembered that a single high count is important when considering the usefulness of mean values. For example, no redwings were seen in 1949 and fewer than 10,000 were reported in any year prior to 1969 when the number seen exceeded 2 million. That figure, and the total of over 3 million in 1971, obviously have no small influence on the 23-year mean of 245,462 individuals. The 2 million plus totals for Redwinged Blackbirds in 1969 and 1971 raise the year-to-year fluctuation in numbers seen (standard deviation) to an astronomical figure. Standard deviation values for all 7 species identified at the outset of this paragraph exceed 6,000 individuals.

For those species that do not have a statewide distribution or whose densities change measurably from one part of the state to another, the statewide minimum, mean or maximum number has little relevance at particular localities. Space limitations prohibit a locality-by-locality analysis here. However, such a presentation is currently in progress on the national level (Arbib, 1972). Beginning with the April, 1972 issue of *American Birds* the National Audubon Society (NAS) is publishing range maps of most species recorded on the national CBC. Relative densities are presented on maps on the basis of individual birds per party-hour. As this endeavor is expensive, it may take many issues to complete the survey.

The commonest species vary from locality to locality across Kansas. For example, 3,252,660 Redwinged Blackbirds were seen at Great Bend in 1971, but none were reported from Camp Naish. In contrast, that latter count recorded 26 Tufted Titmice while none were seen at Great Bend. Several species are found throughout Kansas in winter, and on this basis they might be considered the "commonest" winter birds in the Sunflower State. The appropriately named Common Crow and the Slate-colored Junco were reported on all 104 counts published in the *KOS Bulletin* in the five year period from 1967 to 1971. Two introduced species, the House Sparrow and Starling were also seen on all 104 counts. The same may be true of the equally ubiquitous and notorious immigrant, the Rock Dove. Following the questionable practice of the NAS whereby only "feral" Rock Doves are counted, some counting stations in Kansas consider this species a "nonbird"; hence, its numbers and range are not well documented. The Downy Woodpecker was missed by only 1 group over the 5-year period and the Yellow-shafted Flicker, Cardinal, American Goldfinch and Tree Sparrow were missed on only 2 counts. On the same basis, the Mallard is the most widespread species of waterfowl, the redtail the most widespread hawk and the Great Horned Owl is the most widespread owl.

#### POSSIBLE ADDITIONS AND DELETIONS

Some editors of the *KOS Bulletin* have included the records for both the Chipping Sparrow and Swainson's Hawk as valid, but others have not. We include them among the 187 species recorded to date (Table 2). The mean and maximum values and number of years seen for these two birds include data from counts published by the NAS in *American Birds* and *Audubon Field Notes*. Owing to the dearth of specimens, the acceptance of these two species creates a controversy each winter. One Chipping Sparrow specimen collected at Lawrence, on 20 December 1907, is in the collection in the University of Kansas Museum of Natural History (# 47998).

The available information from CBCs on the winter range of Chipping Sparrows is considerable, but poorly appreciated. In Figure 1 we have included all reports of chippys on CBCs published by the NAS for 1969, 1970 and 1971. The number for each state is the average for these 3 years and is presented irrespective of the number of counts, observers, party-hours, etc. On the national CBC, birds rare to a particular area are underlined by the local compiler prior to submittal. Chipping Sparrows are certainly extremely rare birds in South Dakota where 300 were reported in 1971, and in Manitoba where 15 were reported in 1969. The failure of local compilers to underline these records and thereby indicate they were unique led us to omit them from Figure 1. Prior to 1971 detailed notes on rare species were recorded at each locality on the national count. This practice has been largely discontinued to save space. On the 1969 and 1970 counts 482 chippys were reported in 15 states and one province lying wholly north of the line indicating the northernmost winter distribution established by the fifth edition of the A.O.U. *Checklist* (Figure 1). Of this number, 138 (29 per cent) were noted as having been "seen at feeders, well seen by several observers, close study," etc. Four Chipping Sparrows included on CBCs in 1971 in Connecticut and Ohio were captured and banded. The A.O.U. *Checklist* did note that the Chipping Sparrow was "rarely found farther north from Michigan, southern Ontario, Connecticut, Massachusetts and Nova Scotia." One is tempted to conclude that chippys have long been irregular winter residents in many northern states, but that their spotty occurrence has been largely unappreciated prior to the increase in observers in recent years. Also, an increase in food resources at feeding stations may have enabled some chippys to remain in the northern latitudes longer, if not all winter.

The Swainson's Hawk, like the above species, has been recorded on 14 of the 23 counts in Kansas. But, the records for this species seem more dubious and will remain so until a more definitive documentation is made. The first CBC report of the Swainson's Hawk in Kansas was at Abilene in 1905. The repeated sightings of this highly unlikely bird are not unique to Kansans—24 individuals were reported from Florida to Washington in 1971 on the national count.

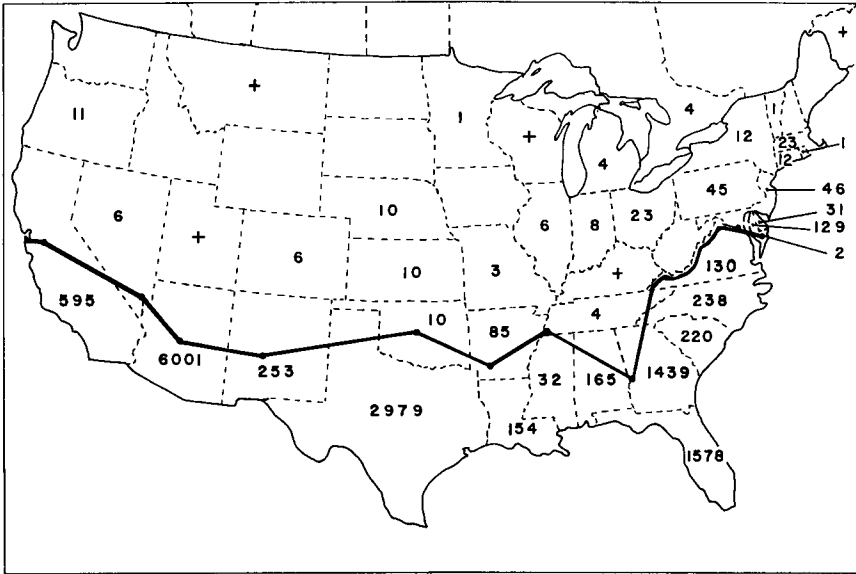


Figure 1. Average number of Chipping Sparrows seen per year on Christmas Bird Counts taken in 1969, 1970 and 1971. The line represents the northernmost regular winter distribution accepted by the fifth edition of the A.O.U. *Checklist*. A plus indicates that fewer than 3 individuals were seen.

Six species not listed in Table 2 were reported on Kansas CBCs and published in *Audubon Field Notes* or *American Birds* (but not duplicated in the *KOS Bulletin*). These 6 species are 4 Harris' Hawks seen at Hesston (1930), 10 Black-crowned Night Herons reported from Wichita (1934, 1935, 1936, 1938 and 1969), one closely observed Western Kingbird at Hays (1946), 2 Greater Yellowlegs at the Quivira National Wildlife Refuge (1969), a Palm Warbler on the Elk City Reservoir count (1971) and a Least Grebe at the Quivira N.W.R. (1971).

A good case can be made for inclusion of several other species on the Kansas CBC list including the Cassin's Finch seen at Hays in 1960 but deleted from the report. Johnston (1965) noted that flocks of this species were seen at both Hays and Dodge City that winter (1960-1961) and that specimens were taken at Hays. According to Johnston (1965), several species foreign to the Kansas CBC overwinter in the western or southwestern part of the state. This list includes the Ladder-backed Woodpecker, Mexican Jay, Common Raven, Pinyon Jay, Sage Sparrow and Clark's Nutcracker (one was reported from Dodge City in 1971, but it was excluded from the final list; another was present for over a month and recorded on the Kansas City, Kansas—Missouri CBC in 1961).

Limited observations of such southwestern birds as the Scaled Quail (2 years), Inca Dove (2 years), Lesser Prairie Chicken (3 years), Burrowing Owl (2 years), Roadrunner (2 years), Scrub Jay (3 years) and Rock Wren (1 year) as compared to an equally uncommon and local, eastern bird like the Pileated Woodpecker (18 years) appears to be due primarily to an uneven distribution of observers. As seen in Figure 2, CBCs taken in the extreme western part of the state are few. There is considerable potential for adding new species when this area, especially Morton County, is surveyed more frequently. The lone count taken in Kearney County (at Lakin in 1953) in western Kansas, added 3 species, provided the only records that year for 4 other species and gave the high count for an additional 21 species. Additionally, 5 Steller's Jays (a species never recorded on a Kansas CBC) were seen there during the week of

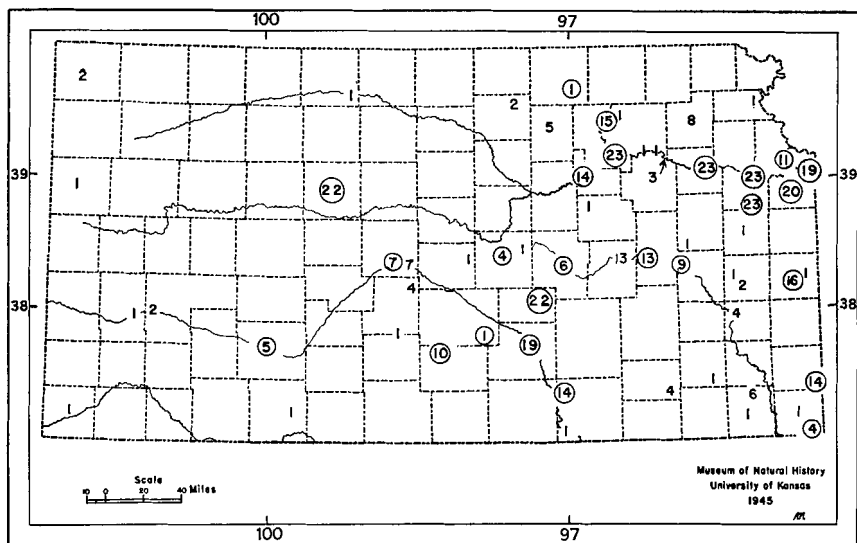


Figure 2. Number of Christmas Bird Counts published in the *KOS Bulletin* at all localities. Circles indicate those localities that are currently making counts.

the count but not on the count day. Another count taken 10 years later in 1963 in Morton County, added 2 new species, provided the only report that year for 2 other species and the high count for 5 others.

Among the Kansas CBC species records listed in Table 2, there is a likelihood that some of the individuals reported are not only questionable, but listed in error. As those involved with preparing the annual summaries have discovered, decisions whether to accept or reject unlikely species are made with difficulty. Some rare birds like the 10 Pygmy Nuthatches seen at Wichita in 1961 and the Curve-billed Thrasher seen at Hays in 1967 were substantiated by specimens collected and leave no question as to their validity. However, many sightings, such as the single observations of the Broad-winged Hawk (1955), American Woodcock (1954) and House Wren (1950) are certainly doubtful. Although the latter 3 species seem to be most unlikely birds in Kansas in winter, the national CBC in 1971 revealed that all 3 appear to have occurred on an irregular basis in areas considerably north of their normal winter range. In winter the Broad-winged Hawk is normally found (within the U.S.) only in Florida. On the 1971 count individuals were reported from all of the Gulf Coast states except Alabama and they were also seen in Georgia, South Carolina, Virginia, Illinois, Ohio and New York. The American Woodcock is a bird of the southeastern part of the United States in winter, but is known to occur irregularly farther north. Records of woodcocks on the 1971 count came from as far north as Massachusetts, New York, New Jersey, Maryland, Ohio and Wisconsin. One group of observers from Nova Scotia reported a lone woodcock that was "captured, thawed and released" on Cape Breton Island. The House Wren is normally found only in the South in the winter season. More than 20 individuals were observed in 9 northern states on the 1971 CBC. Most of these wrens were seen at close range.

The first record of the Clay-colored Sparrow on a Kansas CBC in 1971 (2 at Wichita) was not as surprising as the observations of single Clay-colored Sparrows at feeders in Florida and Massachusetts. On a CBC taken in 1952 but not published in the *KOS Bulletin*, a single Clay-colored Sparrow was reported from Goddard, Kansas.

## CHANGES IN WINTER BIRD NUMBERS

Many birds seem to be in a continual state of change in their occurrence and abundance, presumably in response to changes wrought by such factors as weather and man. To some extent CBCs have value in measuring these changes. One possible response to man's alteration of the natural habitat is indicated in Table 3. In the past 2 decades numerous flood control reservoirs have been constructed in Kansas, providing large expanses of standing water. Waterfowl numbers and species diversity generally were low in the 1950s, but both have increased since then.

The number of Mallards has fluctuated widely on CBCs in Kansas, but Mallards make up 70 per cent or more of all waterfowl counted in every year but one prior to 1969 (Table 3). Excluding 1953 (see below) nearly twice as many Mallards have been counted in the last 11 years of the count (1961–1971) than in the 11 years prior to 1961. This increase in Mallards is typical of most other birds regularly recorded on the Kansas CBC. The *percentage* decline of Mallards since 1965 (Table 3) is primarily due to the notable increase of Common Mergansers, Canada Geese and Green-winged Teal. The latter two species were not recorded on 3 counts in the 1950s, but have recently been among the most numerous. A similar rise in the number of Canada Geese has been documented for Colorado by Bock and Smith (1971).

Although waterfowl numbers seem to show an upward trend, the factors causing this year to year variation seem too complex to be readily understood. Marvin Schwilling (*in litt.*), a waterfowl biologist for the Kansas Forestry, Fish and Game Commission had the following comments about duck populations in Kansas in winter:

We in Kansas could have a high waterfowl count in years of low continental waterfowl numbers if we had better water and food conditions than Oklahoma or Nebraska, or vice versa. . . . Waterfowl are creatures of the best available habitat and are mobile enough to find and move to the best conditions. This makes their variable numbers difficult to analyze on a state-by-state or area-by-area basis.

Another factor that complicates analysis of the abundance of a particular species or a group of species such as waterfowl, is the influence 1 or 2 counts may have on the statewide total. The all-time high count for waterfowl occurred in 1953. That year 175,000 Mallards were reported from Lakin (Lake McKinney) alone. No CBCs have been made there before or since (Figure 2). However, the Kansas Forestry, Fish and Game Commission (M. Schwilling, *in litt.*) has made a one-day census there every year except one since 1960, between 18–30 December. On 9 of the 11 counts more Mallards were tallied than on the entire statewide CBC for the same years—on the average, twice as many Mallards were found at Lake McKinney. Only 2,174 Mallards were reported throughout Kansas in 1965 which is the all-time low for this species; however, 80,000 Mallards were recorded at Lake McKinney that year.

The number of individuals of all except 2 of the common species seen on Kansas CBCs has increased between 1949 and 1971. In figures 3 and 4 we have documented the widespread trend of increasing numbers of 2 groups of birds, the woodpeckers and hawks, along with the number of observers and miles traveled. The technique often used to compare bird numbers from place to place is by first converting the data to birds per party-hour (see Jackson and Rising, 1968). Unfortunately, prior to 1965 the time spent in the field was not always recorded in party-hours (Table 1). However, where data are available, there is a good, straight line correlation ( $r = 0.893$ ) between party-hours and number of observers (see Table 1). Miles traveled were not universally recorded prior to 1956 so our presentations begin at that time. In Figure 3, total numbers of woodpeckers seen (all 7 species in Table 2 except the Pileated) are plotted against two measures of observational effort—numbers of observers and miles traveled on foot. In most years both number of observers and/or miles traveled on foot are directly correlated with the increase or decreases in woodpeckers seen. However, there are no apparent trends in the number of woodpeckers per observer (mean = 7.3 and range = 5.5 – 10.1) or woodpeckers per mile traveled

TABLE 2. SPECIES RECORDED ON CHRISTMAS BIRD COUNTS IN KANSAS, 1949-1971.

Species	Mean	Minimum	(Year)	Maximum	(Year)	Number of years seen
Common Loon	-	0	(71)	4	(65)	4
Horned Grebe	-	0	(71)	2	(59)	2
Eared Grebe	-	0	(71)	1	(65)	1
Pied-billed Grebe	3	0	(63)	14	(70)	16
White Pelican	-	0	(71)	5	(69)	4
Double-crested Cormorant	1	0	(70)	27	(57)	4
Great Blue Heron	6	0	(61)	26	(71)	15
Whistling Swan	1	0	(70)	19	(71)	2
Canada Goose	4,035	0	(54)	28,771	(71)	20
White-fronted Goose	56	0	(66)	934	(71)	8
Snow and Blue Goose	652	0	(64)	5,175	(71)	11
Mallard	40,384	2,174	(65)	188,516	(53)	23
Black Duck	5	0	(67)	16	(52)	19
Gadwall	89	0	(61)	447	(69)	21
Pintail	624	3	(54)	12,747	(71)	23
Green-winged Teal	656	0	(59)	6,999	(71)	20
Blue-winged Teal	2	0	(65)	14	(63)	11
American Widgeon	38	0	(62)	228	(64)	16
Shoveler	37	0	(61)	634	(69)	13
Wood Duck	1	0	(69)	11	(57)	5
Redhead	13	0	(61)	72	(71)	18
Ring-necked Duck	15	0	(64)	148	(67)	9
Canvasback	30	0	(64)	300	(71)	19
Greater Scaup	-	0	(71)	5	(53)	1
Lesser Scaup	36	0	(58)	239	(71)	21
Common Goldeneye	19	0	(59)	114	(71)	22
Bufflehead	5	0	(64)	34	(71)	15
Oldsquaw	-	0	(69)	4	(71)	2
Ruddy Duck	8	0	(70)	139	(69)	7
Hooded Merganser	7	0	(61)	53	(58)	20
Common Merganser	1,961	19	(61)	18,527	(71)	23
Red-breasted Merganser	1	0	(71)	12	(55)	5
Turkey Vulture	-	0	(71)	2	(49)	4
Goshawk	-	0	(71)	2	(60)	3
Sharp-shinned Hawk	5	1	(59)	10	(70)	23
Cooper's Hawk	10	3	(54)	34	(63)	23
Red-tailed Hawk	273	50	(49)	614	(70)	23
Harlan's Hawk	6	0	(70)	15	(66)	16
Red-shouldered Hawk	4	0	(71)	22	(58)	16
Broad-winged Hawk	-	0	(71)	1	(55)	1
Swainson's Hawk	1	0	(69)	10	(61)	14
Rough-legged Hawk	51	5	(49)	113	(70)	23
Ferruginous Hawk	3	0	(64)	15	(71)	16
Golden Eagle	5	0	(54)	9	(71)	21
Bald Eagle	16	2	(56)	51	(62)	23
Marsh Hawk	174	30	(49)	382	(70)	23
Osprey	-	0	(71)	1	(66)	2
Prairie Falcon	4	0	(50)	13	(70)	22
Peregrine Falcon	1	0	(71)	3	(59)	10
Pigeon Hawk	1	0	(70)	3	(71)	8
Sparrow Hawk	130	21	(49)	311	(71)	23
Greater Prairie Chicken	83	2	(51)	281	(64)	23
Lesser Prairie Chicken	-	0	(71)	67	(53)	3
Bobwhite	549	96	(49)	1,242	(66)	23
Scaled Quail	2	0	(71)	36	(54)	2
Ring-necked Pheasant	79	0	(49)	260	(63)	22
Turkey	1	0	(71)	16	(67)	3
Virginia Rail	-	0	(71)	1	(62)	1
American Coot	45	1	(64)	273	(69)	23
Killdeer	22	0	(51)	77	(69)	22
Black-bellied Plover	-	0	(71)	1	(65)	1
American Woodcock	-	0	(71)	1	(54)	1
Common Snipe	14	1	(60)	32	(67)	23
Spotted Sandpiper	-	0	(70)	1	(71)	1
Lesser Yellowlegs	-	0	(71)	9	(69)	1
Baird's Sandpiper	-	0	(71)	5	(66)	1
Least Sandpiper	1	0	(67)	15	(69)	5
Semipalmated Sandpiper	1	0	(71)	19	(69)	2
Western Sandpiper	-	0	(71)	1	(69)	1
American Avocet	-	0	(71)	2	(69)	1
Glaucous Gull	-	0	(71)	1	(65)	1
Herring Gull	13	0	(63)	46	(71)	18
Ring-billed Gull	210	0	(63)	1,558	(67)	14
Franklin's Gull	3	0	(70)	65	(69)	3
Bonaparte's Gull	-	0	(70)	3	(71)	3
Rock Dove	655	0	(55)	2,044	(71)	19
Mourning Dove	413	24	(51)	882	(66)	23
Inca Dove	-	0	(71)	1	(65)	2
Roadrunner	-	0	(71)	2	(66)	2
Barn Owl	1	0	(71)	4	(70)	14
Screech Owl	5	0	(54)	13	(71)	21
Great Horned Owl	59	18	(49)	97	(70)	23
Snowy Owl	-	0	(70)	2	(63)	2
Hawk Owl	-	0	(71)	1	(63)	2
Burrowing Owl	-	0	(71)	2	(58)	2
Barred Owl	10	2	(49)	26	(58)	23
Long-eared Owl	6	0	(68)	27	(65)	18
Short-eared Owl	8	0	(57)	47	(67)	20
Saw-whet Owl	-	0	(71)	1	(70)	1
Belted Kingfisher	28	3	(50)	78	(71)	23
Yellow-shafted Flicker	308	68	(49)	584	(71)	23
Red-shafted Flicker	38	9	(49)	95	(71)	23
Pileated Woodpecker	2	0	(71)	5	(66)	18
Red-bellied Woodpecker	276	67	(49)	539	(70)	23



Species	Mean	Minimum	(Year)	Maximum	(Year)	Number of years seen
Red-headed Woodpecker	96	3	(49)	230	(71)	23
Yellow-bellied Sapsucker	14	1	(50)	142	(63)	23
Hairy Woodpecker	79	28	(51)	142	(71)	23
Downy Woodpecker	320	122	(49)	540	(70)	23
Horned Lark	3,807	389	(49)	14,567	(68)	23
Blue Jay	607	123	(49)	1,419	(71)	23
Scrub Jay	1	0	(69)	8	(63)	3
Black-billed Magpie	19	0	(62)	52	(71)	17
White-necked Raven	5	0	(71)	98	(52)	4
Common Crow	2,764	678	(49)	8,665	(63)	23
Black-capped Chickadee	1,153	441	(49)	2,107	(70)	23
Carolina Chickadee	41	0	(62)	223	(70)	18
Tufted Titmouse	338	139	(50)	537	(70)	23
White-breasted Nuthatch	44	5	(51)	130	(71)	23
Red-breasted Nuthatch	18	0	(64)	69	(61)	20
Pygmy Nuthatch	-	0	(71)	10	(61)	1
Brown Creeper	56	16	(56)	149	(71)	23
House Wren	-	0	(71)	1	(50)	1
Winter Wren	7	2	(68)	16	(56)	23
Bewick's Wren	2	0	(68)	8	(67)	16
Carolina Wren	73	8	(64)	186	(54)	23
Long-billed Marsh Wren	-	0	(71)	5	(63)	5
Rock Wren	-	0	(71)	1	(63)	1
Mockingbird	54	4	(51)	128	(71)	23
Catbird	-	0	(71)	2	(69)	5
Brown Thrasher	6	0	(53)	21	(66)	20
Curve-billed Thrasher	-	0	(71)	1	(67)	1
Robin	1,659	176	(71)	7,856	(69)	23
Hermit Thrush	-	0	(70)	4	(71)	6
Eastern Bluebird	266	29	(61)	662	(71)	23
Mountain Bluebird	1	0	(70)	16	(56)	7
Townsend's Solitaire	5	0	(49)	16	(68)	22
Blue-gray Gnatcatcher	-	0	(71)	2	(65)	1
Golden-crowned Kinglet	85	14	(62)	212	(67)	23
Ruby-crowned Kinglet	5	0	(66)	19	(71)	21
Water Pipit	2	0	(69)	15	(54)	8
Sprague's Pipit	-	0	(70)	1	(71)	2
Bohemian Waxwing	2	0	(71)	26	(61)	4
Cedar Waxwing	275	10	(64)	1,255	(69)	23
Northern Shrike	1	0	(70)	3	(50)	8
Loggerhead Shrike	-	9	(49)	112	(71)	23
Starling	99,298	502	(50)	1,793,322	(71)	23
Orange-crowned Warbler	-	0	(71)	3	(62)	4
Myrtle Warbler	9	0	(58)	64	(62)	17
Black-throated Green Warbler	-	0	(71)	1	(70)	1
Pine Warbler	-	0	(71)	8	(65)	1
Yellow-breasted Chat	-	0	(71)	1	(68)	1
House Sparrow	9,279	1,499	(49)	19,896	(70)	23
Eastern Meadowlark	545	8	(50)	1,451	(70)	23
Western Meadowlark	847	8	(49)	2,700	(63)	23
Yellow-headed Blackbird	-	0	(70)	3	(71)	4
Redwinged Blackbird	245,462	0	(49)	3,281,196	(71)	22
Bullock's Oriole	-	0	(71)	1	(65)	1
Rusty Blackbird	339	0	(53)	1,568	(55)	21
Brewer's Blackbird	229	0	(51)	1,110	(55)	21
Boat-tailed Grackle	-	0	(71)	1	(69)	1
Common Grackle	1,615	0	(54)	31,813	(69)	21
Brown-headed Cowbird	2,851	1	(50)	50,175	(69)	23
Cardinal	1,552	505	(49)	2,983	(66)	23
Dickcissel	-	0	(71)	1	(69)	1
Evening Grosbeak	6	0	(71)	109	(61)	5
Purple Finch	50	0	(58)	192	(57)	21
House Finch	16	0	(65)	182	(70)	8
Pine Grosbeak	1	0	(71)	16	(69)	3
Common Redpoll	1	0	(70)	9	(71)	5
Pine Siskin	185	0	(66)	1,297	(65)	22
American Goldfinch	911	98	(49)	1,812	(67)	23
Red Crossbill	21	0	(71)	120	(50)	12
White-winged Crossbill	-	0	(71)	2	(61)	1
Rufous-sided Towhee	42	0	(56)	152	(54)	22
Savannah Sparrow	7	0	(69)	39	(54)	13
Le Conte's Sparrow	1	0	(68)	18	(54)	8
Vesper Sparrow	3	0	(70)	11	(71)	15
Lark Sparrow	-	0	(71)	3	(53)	4
White-winged Junco	1	0	(71)	12	(51)	3
Slate-colored Junco	3,659	925	(49)	7,832	(66)	23
Oregon Junco	103	1	(50)	368	(67)	23
Tree Sparrow	6,989	795	(49)	15,738	(71)	23
Chipping Sparrow	26	0	(68)	262	(63)	14
Clay-colored Sparrow	-	0	(70)	2	(71)	1
Field Sparrow	60	1	(49)	117	(71)	23
Harris' Sparrow	2,946	175	(49)	7,129	(70)	23
White-crowned Sparrow	98	24	(51)	297	(54)	23
White-throated Sparrow	27	1	(49)	103	(70)	23
Fox Sparrow	13	0	(63)	116	(53)	21
Lincoln's Sparrow	8	0	(59)	27	(65)	22
Swamp Sparrow	10	0	(49)	62	(56)	22
Song Sparrow	424	79	(61)	828	(63)	23
McCown's Longspur	6	0	(71)	108	(55)	3
Lapland Longspur	8,480	75	(49)	45,078	(70)	23
Smith's Longspur	37	0	(71)	771	(54)	8
Chestnut-collared Longspur	6	0	(71)	100	(59)	3
Snow Bunting	1	0	(71)	15	(55)	3

TABLE 3  
WATERFOWL RECORDED ON CHRISTMAS BIRD COUNTS IN KANSAS

Year	Total Individuals	No. of Species	No. of Mallards	Per cent Mallards	No. of Canada Geese	No. of Common Mergansers	No. of Gr.-winged Teal
1971	145,917	23	71,319	49	28,771	18,527	6,999
1970	42,124	21	22,136	53	13,112	1,993	455
1969	108,073	20	71,105	66	22,102	1,318	6,482
1968	62,488	20	54,616	87	5,167	1,582	166
1967	21,930	20	15,452	70	3,397	1,474	271
1966	21,385	18	16,638	78	11	3,899	266
1965	6,339	17	2,174	34	116	3,656	97
1964	90,069	16	82,351	91	6,835	238	116
1963	68,738	16	62,502	91	5,818	174	69
1962	48,386	16	46,985	97	775	348	81
1961	17,845	9	17,293	97	472	19	16
1960	27,694	12	26,974	97	1	652	23
1959	11,489	12	10,088	88	484	886	0
1958	39,808	11	37,880	95	1,591	240	0
1957	61,340	17	59,258	97	1,346	432	8
1956	16,826	11	15,457	92	1,100	218	9
1955	39,062	9	37,422	96	1,370	214	0
1954	8,950	12	7,607	85	0	1,266	11
1953	189,641	16	188,516	99	10	523	2
1952	59,966	18	56,201	94	317	3,154	2
1951	11,031	13	8,886	81	13	2,022	5
1950	11,537	8	11,368	99	0	83	3
1949	8,884	15	6,600	74	0	2,190	8

on foot (mean = 6.2 and range = 4.1 - 8.3). Individually or collectively the 4 most numerous hawks (the Red-tailed, Rough-legged, Marsh and Sparrow Hawk) also show increasing numbers over the past 2 decades (Figure 4). This increase is probably due to the increase in miles traveled by car which generally maximizes the potential for seeing these open country birds. The mean number of hawks per mile traveled by car is 3.0 (range = 2.2 - 4.0) with no apparent trends.

Because the effort put into CBCs has continually increased, it is not surprising that the numbers of individual birds reported has also increased. However, year to year variation is large enough, owing to numerous factors (see Stewart, 1954), that trends in true abundances are difficult to discern. If, however, the number of sightings of a species remains constant or declines, a real decline in the population would seem to be indicated. The annual totals of White-crowned Sparrows and Fox Sparrows have not increased commensurately with the number of observers or effort by observers as expected (Figure 5). The numbers of these two species by virtue of their lack of increase, seem to represent declining populations.

#### IRRUPTIVE SPECIES

One of the most exciting aspects of birdwatching is looking for rare species. During the Christmas season this group of rare species includes those birds that normally winter considerably north or west of Kansas, but appear occasionally in "irruptions". Although poorly documented as yet, the emigration of these northern or western birds seems to occur in response to a lack of food. Southward movements of Red-breasted Nuthatches (Bock and Lepthien, 1972), Black-capped Chickadees (Bagg, 1969)

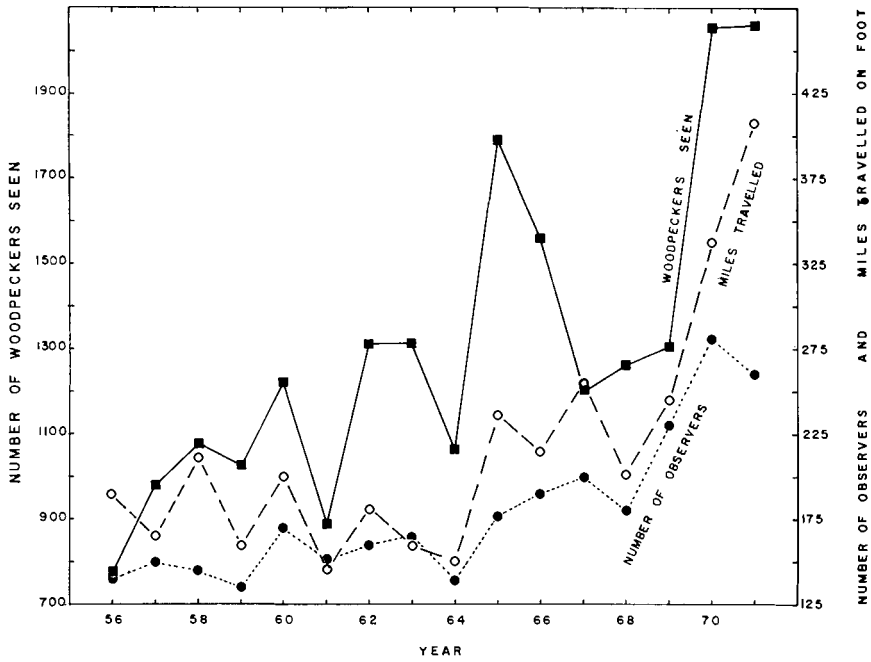


Figure 3. Populations of all woodpeckers that winter in Kansas (7 species—see Table 2) except the Pileated Woodpecker, from 1956 through 1971.

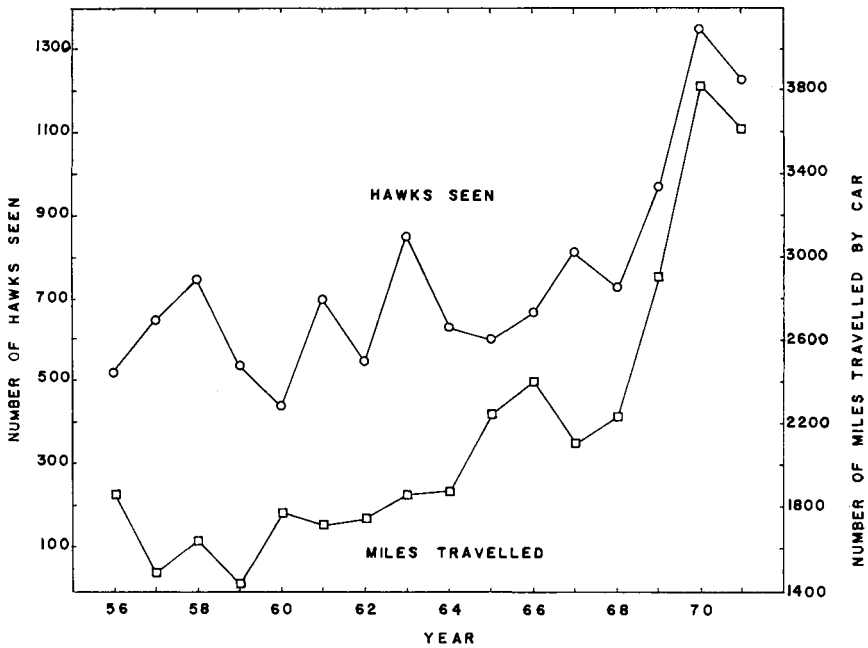


Figure 4. Total numbers of Red-tailed, Rough-legged, Marsh and Sparrow Hawks reported on Kansas CBCs, 1956-1971.

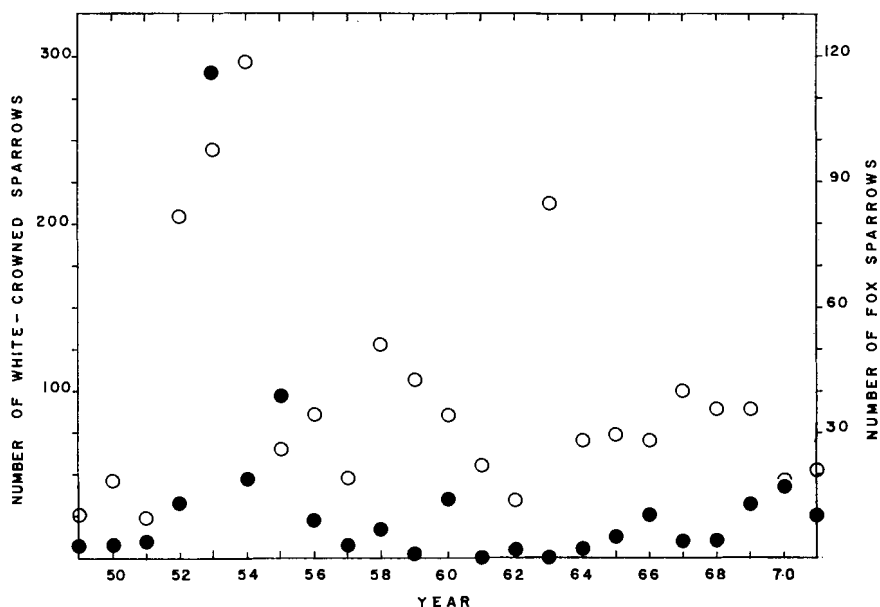


Figure 5. Numbers of White-crowned Sparrows (open circles) and Fox Sparrows (solid circles) seen on CBCs in Kansas.

and several finches (James, 1963) appear to be correlated with years of poor conecrop production. Likewise, predators including the Snowy Owl, Rough-legged Hawk and Northern Shrike are more common on CBCs in those winters when rodent numbers are low in the Arctic (James, 1965; Wallace, 1963).

Many irruptions of northern birds are not witnessed on Kansas CBCs owing to the failure of these birds to move that far south, or if they do reach Kansas, it is often later, in January or February. For example, the winter of 1971-1972 (Buckley, 1972) saw the largest Gyrfalcon invasion ever at low latitudes (none in Kansas), Snowy Owls made a huge incursion with 465 separate reports (1 individual in Kansas), a major flight of Bohemian Waxwings occurred (none in Kansas) and among the northern finches which made extensive, but spotty incursions nationwide, only the Common Redpoll was seen in record numbers (9) in Kansas. Rough-legged Hawks were reported in typical numbers on the Kansas Count despite a major continent-wide invasion from Canada. In contrast, Red-breasted Nuthatch numbers on CBCs in Kansas have been directly correlated with the numbers reported on CBCs throughout the United States and Canada (Bock and Lepthien, 1972), being high in years of major southward movements and low in years when other states also recorded few individuals. The analysis of the Red-breasted Nuthatch by Bock and Lepthien (1972) points out the importance of substantiating that no individuals were observed for a particular species in a given area, in determining that species winter range. That is to say, the lack of records of Hoary Redpolls, Gyrfalcons, etc. on a Kansas CBC reveals as much information on their winter ranges and movements as do the records of their presence.

#### DISCUSSION

Information on the distribution and abundance of winter birds in Kansas is rather meager. Christmas Bird Counts are certainly the best single source of information available on winter birds in Kansas. However, it must be remembered that these

counts are not really *mid-winter* counts, but rather, they are *early-winter* counts. Following the NAS's CBC procedure, most counts in Kansas are currently being made within a 15-mile diameter circle. Complete coverage of such a large area (177 square miles) by so few people (12, on the average in Kansas in 1971) in one day seems impossible. Typically, the count area at each locality is established to cover as many different habitats as are available. This procedure tends to maximize the number of species seen (see Sperry, 1970), but is poorly designed to measure populations of birds. Because coverage is incomplete and variable from year to year and place to place, making comparisons or inferences about densities are questionable practices.

James (1965) and Johnston (1962) have noted that temperature and snowfall are important variables affecting bird numbers in winter. High temperatures and the lack of snow permit some birds to remain in Kansas through December, whereas the opposite conditions drive many species south of Kansas. Niles, *et al.* (1969) observed a mass midwinter movement of Tree Sparrows at Lawrence, Kansas in late January immediately following a widespread snowstorm in the northern Great Plains including Kansas. Harsh weather may, however, force some birds south to Kansas which normally winter in the northern states and Canada.

We attempted to determine the relationship between mean December temperature and total December snowfall in Kansas with total numbers of the 97 most frequently seen species of birds over the period 1949–1971. We compared mean temperatures and average total snowfall for four cities across Kansas (Olathe, Manhattan, Wichita, and Hays) as reported in *Climatological Data* (volumes 63–85). Correlation values between total number of individuals seen of each species and mean temperature and total snowfall over this 23-year period were less than 0.6 in all cases. Our failure to find any relationship between birds seen and the two weather variables examined may have been influenced more by the method used to count the birds than by environmental conditions.

Although not ideally suited for measuring winter bird populations, the established count period in late December provides data useful in delimiting the ranges of birds at this season, assessing movements of irruptive species, determining changes in winter ranges and noting the occurrence of rare species. We do not feel any appreciable changes in the procedure used by the National Audubon Society in making Christmas Bird Counts are advisable. We do feel, however, that one additional procedure would enhance the quality of the observations. Each year several unlikely species are listed, but poorly documented on the local CBCs across Kansas. As a result, these observations are often deleted from the final list either by the local compiler or the person presenting the statewide summary. This problem of accepting or rejecting unusual birds could be eased somewhat if each local group made a master list of *only those birds regularly encountered on CBCs at that locality* and then provided this list to all participants. Each report of a species *not on the master list* should then be accompanied by detailed comments (preferably by several observers). Although a list of the "expected" species may bias counts toward those species on the list, we feel this tendency would be more than offset by the value of having all rarities thoroughly documented.

Good estimates of winter bird populations in Kansas can be made by following the NAS's procedure for making "Winter Bird Population Studies." These winter censuses, made in a manner similar to the NAS's "Breeding Bird Censuses", are valuable because they provide data on absolute density which complements the information available in Christmas Bird Counts.

#### ACKNOWLEDGMENTS

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Editor's Note—Readers should accept NAS Christmas Count data with caution. Criteria for accepting “unusual” records vary greatly among various observers, compilers and editors. Numerous erroneous sightings are published and later quoted by other workers.

**Note on the Indigo-Lazuli Bunting semi-species, with comment on taxonomy.**

On 20 May 1973 I flushed a female Lazuli Bunting (*Passerina amoena*) from a moist, heavily shaded riparian stand of Slender Nettle (*Urtica procera*) in extreme southwestern Geary Co., Kansas. She was immediately joined by a male Indigo Bunting (*P. cyanea*), and the two birds moved about me giving frequent loud chip notes. This behavior, in my experience, is characteristic of a mated pair on territory. No other buntings were nearby.

The male was entirely blue, and the female showed two white wingbars. Later examination of specimens at Kansas University supported my view that white wing-

bars are species-distinctive of *amoena*. However, female *cyanea* and *amoena* are sufficiently similar that the possibility of this female being a hybrid cannot be entirely ruled out.

I found no nest of the apparently mated pair, and although nest building may have been under way, I suspect it was too early for a completed nest, especially in view of the lateness of the 1973 spring. I was unable to return to the area.

Short (Nebraska Bird Review, 19:20, 1961) states that hybrids occur in a 500-mile wide zone from Greeley, Colorado, to Blair, in eastern Nebraska. Geary County is well within that zone. *P. amoena* is scarce in Kansas, being most frequent in the southwestern corner of the state, where it nests. It is occasionally seen in eastern Kansas during migration. *P. cyanea* is common, though often local, in most of the state, becoming rarer westward. I found no buntings during field work in the northwestern corner of Kansas in the summer of 1972. There is some historical evidence that *amoena* was once more numerous eastward.

I spent the weekend of 18-20 May 1973 at an outing of the Topeka Audubon Society near the area where I found the buntings. Other competent birders and I saw many singing male *cyanea*, apparently dispersed territorially. Significantly, we found no female *cyanea* nor any additional *amoena*. I observed birds in the same general area on 20-21 May 1972 and my notes show that *cyanea* was distinctly less numerous and no *amoena* were seen.

A well-marked differential migration of the sexes occurs in *P. cyanea* with the females arriving on the breeding grounds later than the males. It is easy to imagine the absence of female *cyanea* and the presence of a female *amoena* with many advertising and competing male *cyanea* as a situation especially conducive to the formation of a hybrid pair. A cursory attempt to determine a time difference for the arrival of both species at the breeding grounds was unsuccessful due to insufficient data. However, the above mentioned situation must account for at least some instances of hybridization.

Conversely, it points also to the existence of functioning isolating mechanisms. "Pure" mated pairs of buntings have been recorded well inside areas principally occupied by the other species. In view of the differential migration of sexes, such pairs would seem difficult or impossible to establish if there were not some selectivity involved. Thus this is an answer to the question posed by Sibley and Short (Auk, 76: 462, 1959): random mating cannot be taking place. The high number of hybrids taken may possibly be the result of instances such as the present case, along with theoretical instances of slightly displaced buntings being unable to locate mates of their own species. The existence of breeding hybrids no doubt tends to erode further the mechanisms of selectivity. Actually, the relative number of hybrid buntings seems small when compared to the relative numbers of hybrid flickers found in the mid-west.

Although it seems clear that functioning isolating mechanisms are present for the buntings, I do not believe in their specific distinctness as expressed in the Linnean nomenclatural system. Isolating mechanisms can and do break down; in the long spread of time many isolating mechanisms seem quite fragile. In fact, species are groups of living individuals, and their relationships, which in many cases may be expressed in terms of isolating mechanisms, are ever-changing. One of the most deep-seated "frontiers" between these groups is their genetic distinctness; when two "species" produce fertile hybrids, the term "species" then applied to the parents is particularly dubious, in the long view of time. This is a "living species" concept, which subordinates superficial and transient differences to more deeply seated similarities.

There is considerable prejudice against this view, stemming in large part, I believe, from the desire to treat birds and the phenomenal observations of them as objects, in systems and in experience. An important step towards removing this prejudice, it seems to me, is to divorce Linnean taxonomy from popular nomenclature. The Linnean system is a valuable tool whose use is impaired by prejudice. On the other

hand, field guides and distributional studies have a responsibility to discuss identifiable forms, the naming of which rightfully belongs to the people. In Shawnee County, Kansas, where I have studied birds intently, towhees (*Pipilo erythrophthalmus*) of two forms (spotted back, solid back) occur. Because of the marriage of Linnean taxonomy and popular taxonomy, all such towhees now are recorded as one form—the Rufous-sided Towhee. This presents an obstacle to future distributional studies; no longer may one determine the relative abundance of the two forms from observers' reports, now of "Rufous-sided Towhees." In Linnean taxonomy there are many problems to be solved, but the solutions are only impaired by the application of an "identifiable-forms"-type consciousness to the expression of species relationships.

I thank Richard Johnston and Orville Rice for their stimulating remarks concerning this paper.—"woods"<sup>1</sup>, 927 Medford, Topeka, Ks. 66606.

<sup>1</sup> Robert Sutherland prefers to be known as "The man who walks in the woods" or "woods".

**Color-marked cowbirds**—Over 2500 cowbirds were banded and color-marked in Ellis County during late summer and fall as an aid in studying their movements and hopefully to determine their place of origin. Birds are marked with dark blue or yellow plastic leg streamers. Observers should report location and date of sighting, sex of bird and color of leg streamer. Reports of birds in winter roosts are especially desired. RICHARD A. HILL, *Fort Hays Kansas State College, Hays, Kansas 67601.*

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