Proceedings of the Iowa Academy of Science

Volume 91 | Number Article 8

1984

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Proc. Iowa Acad. Sci. 91(4):153-163, 1984

Breeding Birds of Sheeder Prairie Preserve, West-central Iowa

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The avifauna of 10.1 hectare (ha) Sheeder Prairie Preserve in Guthrie County, west central Iowa, was studied from 1980 through 1982. Singing male counts and nest searches were conducted during 1981 and 1982. Territories of grassland species were mapped. Sixty-four species were found, 25 of which were considered to be breeding species. Most numerous breeders, based upon territorial male counts, were in decreasing order of abundance Common Yellowthroat (*Geothlypis trichas* L.), House Wren (*Troglodytes aedon* Vieillot), Field Sparrow (*Spizella pusilla* Wilson), Yellow Warbler (*Dendroica petechia* L.), Gray Catbird (*Dumetella carolinensis* L.) and American Goldfinch (*Spinus tristis* L.). Mourning Dove (*Zenaida macroura* L.) was an abundant breeder among "non-singing" species. Brown-headed Cowbird had parasitized 20.6% of nests discovered but was not deemed to be a significant threat to breeding success. Of the breeding species, 72% are characteristic of woodlands. Two species have wetland affinities. Two grassland species, Dickcissel (*Spiza americana* Gmelin) and Grasshopper Sparrow (*Ammodramus savannarum* Gmelin), bred during 1982 when fields adjacent to the study area were planted to Oats (*Avena sativa* L.). Both were absent when these fields were planted to Corn (*Zea mays* L.). Estimates of the size of the breeding bird populations at the height of the nesting season in late June and early July during 1981 and 1982 were 30 and 28 pairs respectively (5.9 birds/ha and 5.5 birds/ha respectively). The varied topography and resultant vegetational diversity produce a varied avifauna.
INDEX DESCRIPTORS: Prairies, breeding species, grassland birds, woodland birds, breeding bird density.

Little has been published regarding Iowa's remnant tallgrass prairie avifaunas. Only four have had their avifaunas documented and the only intensive study was at Kalsow Prairie in north-central Iowa (Brennan 1969). This study documents the birdlife of one such habitat — Sheeder Prairie Preserve, located in west-central Iowa. An inventory of the avifauna was undertaken and emphasis was placed upon ascertaining the diversity and density of the Preserve's breeding bird population. The only published accounts of the Sheeder Prairie avifauna are brief notes by Knight (1966) and Laubach (1981). The baseline data gathered may be significant with regard to future management of the Preserve and to a better understanding of the composition of pre-settlement avifauna in Iowa.

The study area is located 7.3 kilometers (km) west and 1.6 km north of Guthrie Center, Guthrie County, Iowa (S.W. corner, Sec. 33, Seely Twp., Guthrie County). The 10.1 hectare (ha) Preserve, acquired by the state in 1961, is characterized by the gently rolling terrain of the Kansan glacial surface. It is located in the Sharpsburg-Macksburg soil association area formed from wind-blown loess and glacial till. Drainage is predominately from northeast to southwest and elevations range from 397 meters (m) to 366 m. Kennedy (1970) described the vegetation of Sheeder Prairie. Of its 10.1 ha, 9.29 ha have never been plowed. The remaining 0.81 ha, located along the Preserve's northern and eastern perimeters, was previously planted to Corn (*Zea mays* L.), Oats (*Avena sativa* L.) or Barley (*Hordeum vulgare* L.). These areas are reverting to prairie. More than 180 species of plants representing 54 families have been identified. The grasses (Graminae) and composites (Compositae) are represented by the greatest number of species. Little Bluestem (*Andropogon scoparius* Michx.), Porcupine Grass (*Stipa spartea* Trin.) and Prairie Dropseed (*Sporobolus heterolepis* A. Gray) are the dominant grasses on the steep slopes. Big Bluestem (*Andropogon gerardii* Vitman.) is scattered throughout, with major occurence on the lower slopes and in drainage areas. Porcupine Grass is common downslope as well. The three major drainageways (Figure 1) are dominated by woody vegetation — Box Elder (*Acer negundo* L.), Black Willow (*Salix nigra* L.) and American Plum (*Prunus americana* Marsh.). The former two species reach a maximum height of approximately 18 m. The most extensive stand of trees is located in the Preserve's southeast corner. These trees average 26 centimeters (cm) in diameter at breast height (dbh). The great floristic diversity is due to the varied topography of dry prairie, mesic prairie and drainageways.

Sheeder Prairie was mowed annually in fall from *circa* 1865 through 1965, with the exception of 1963. Periodic burning was used as a management tool from *circa* 1890 through 1946, with the Prairie having been burned approximately every third year. Burning was not resumed until the 1970's. At that time the Iowa Conservation Commission began using controlled burning as a management tool, burning alternate halves of the Preserve during alternate years. The northern half of the Preserve was burned in the spring of 1980 and 1982 while the southern half was burned during the spring of 1981.

METHODS

Thirty-one visits were made to Sheeder Prairie Preserve between 5 July 1980 and 12 September 1982. Six visits were made during 1980, 13 visits during 1981 and 12 during 1982. At least one visit was made during each month of the year.

Breeding bird surveys, nest searches and general observations were made during 1981 and 1982. Three census methods as described by Emlen (1971) were employed to deduce the diversity and density of the breeding bird population. A fixed-strip transect method was used to detect all birds present. The relative small size and openness of the study area made this feasible. A second census method used was the intensive plot method during which all singing males were counted and mapped along four north-south transects across the Preserve during each survey. Strip lines were located approximately 64 m apart. These data were used to compute breeding bird density. A third method was that of nest mapping which involved finding, counting and mapping all active nests. The height of the nest above the ground, the supporting vegetation and the nest contents were recorded. All three methods were carried out during each visit of the 1981 and 1982 breeding seasons. The number of singing males of each species during the peak of the breeding season both years is delineated in Table 1. The status of non-singing species was calculated using nest count data and observations of the total number of individuals of that species. Breeding bird surveys were conducted from 0835 hours (hrs) to 2015 hrs during 1981 and 1030 hrs to 1735 hrs during 1982. The duration of most surveys was approximately three hours. A wide variety of weather conditions were encountered during the study period. High temperatures ranged from 2° Celsius (C) to 35°C. Two observers participated in most surveys.

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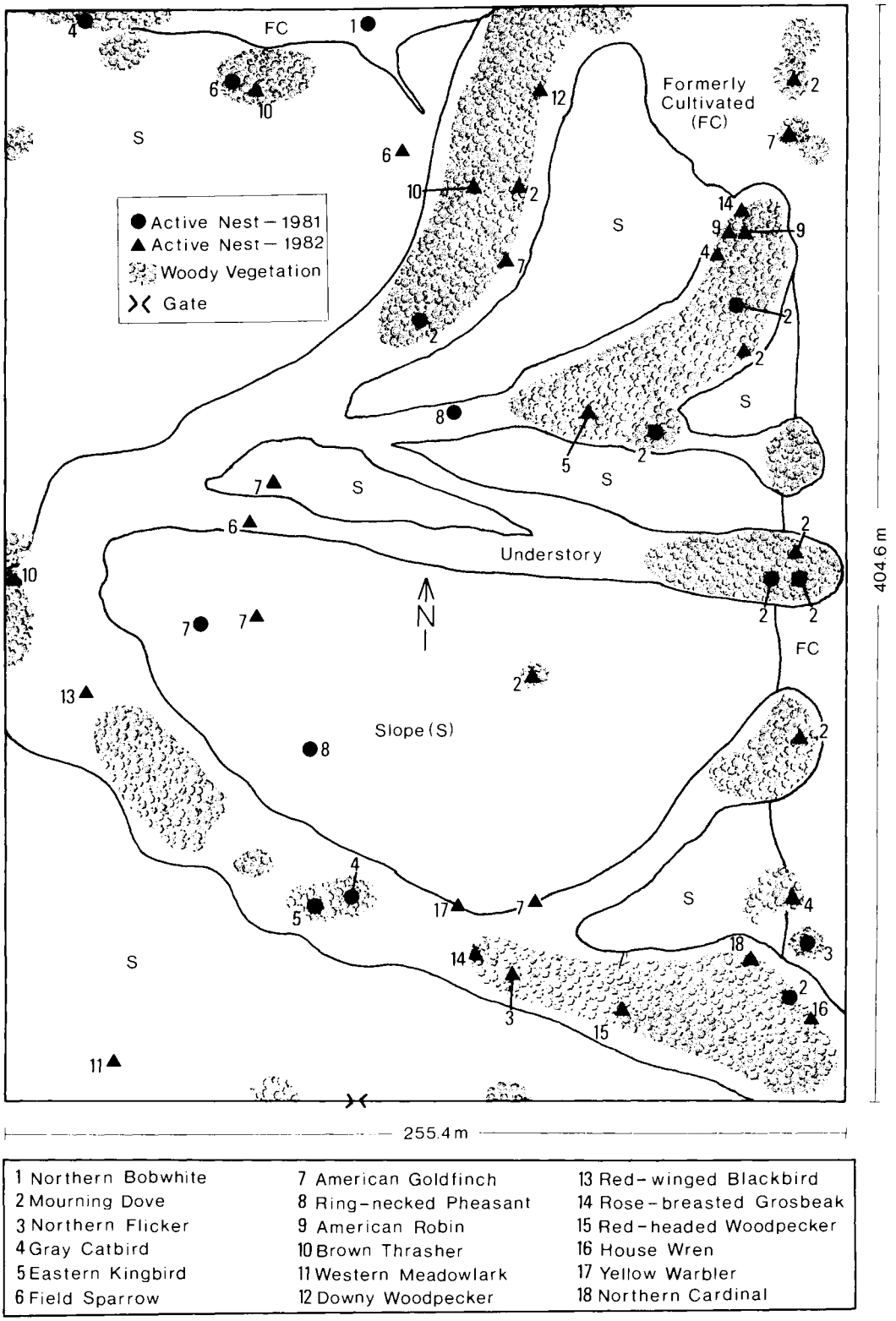

Fig. 1. Active nest locations at Sheeder Preserve, 1981 and 1982.

RESULTS

Breeding Avifauna

Sixty-four species were encountered during the three year study period (Figure 2). Of these, 25 species are considered breeding species based upon the presence of nests and/or territorial males. Nests of 18 species were found. Active nest locations during 1981-82 are mapped on Figure 1. Of 44 active nests discovered during the study period, 12 were those of the Mourning Dove, the most for any one species. This species also had the most protracted breeding season, with active nests being discovered from late May through mid-September (Figure 2). Of the grassland species, Field Sparrow and Western Meadowlark (*Sturnella neglecta* Audubon) had the most protracted breeding season with singing males of the sparrow recorded from May through August, while Western Meadowlark sang the territorial song from April through July (Figure 2).

Nesting Density

Late June and early July represented the peak of the breeding season for the majority of species at Sheeder Prairie. The most prolific breeding species were Mourning Dove with six active nests discovered during both 1981 and 1982 and Common Yellowthroat, represented by six pairs during 1981 and five breeding pairs during 1982 based upon singing male counts. The breeding bird populations of 1981 and 1982 were similar in density, especially considering that only seven singing male counts were made during 1981 while 10 counts were made during 1982 (Table 1). Based upon territorial male counts, the breeding bird population during the height of the nesting season in late June and early July was estimated to be 30 pairs in 1981 and 28 pairs in 1982. For the two years combined, July had 33% of the season's singing males and 20% of all active nests found. June had 28.9% of singing male activity and 34% of the nests found. May was third with 28% of the singing males and 25.7% of active nests found. August was represented by 6.9% of the season's singing males and 8.6% of the nesting activity. September had 0.6% of singing male activity and 5.7% of all active nests. April was represented by 0.6% of all singing male activity, but it should be noted that no surveys were made during April 1981. There were strong parallels between 1981 and 1982 for most months (Table 1). A notable exception was August 1981 when 10 singing males were recorded, while only one singing male was recorded during the same month of 1982.

Nest Sites

A large portion of Sheeder birds (41%) built nests in shrubs or small trees American Plum, Elm (*Elmus* spp.), Elderberry (*Sambucus canadensis* L.), Multiflora Rose (*Rosa multiflora* Thunb.) (Table 2), at heights of from 1.0 m to 2.0 m (Table 3). The nests of three ground nesting species were discovered — Northern Bobwhite (*Colinus virginianus* L.), Ringnecked Pheasant (*Phasianus colchicus* L.) and Western Meadowlark (Figure 1). Two species, American Goldfinch and Field Sparrow, built nests in tall forbs — Rosinweed (*Silphium integrifolium* Michx.) and Field Thistle (*Cirsium discolor* (Muhl.) Spreng.). The nests of four species of cavity nesters were found — Northern Flicker (*Colaptes auratus* L.), Red-headed Woodpecker (*Melanerpes erythrocephalus* L.), Downy Woodpecker (*Dendrocopus pubescens* L.) and House Wren. Trees utilized by cavity nesters were Box Elder and Black Willow. Eastern Kingbird (*Tyrannus tyrannus* L.) nests averaged 8 m above the ground in Box Elder trees and were the highest nests.

Cowbird Parasitism

Eggs and/or young of the Brown-headed Cowbird (*Molothrus ater* Boddaert) were found in seven nests of five species — two of Field Sparrow and one each of Western Meadlowlark, American Robin (*Turdus migratorius* L.), Red-winged Blackbird (*Agelaius phoeniceus* L.) and Northern Cardinal (*Cardinalis cardinalis* L.). The identity of the host of one nest was not determined. Of the 34 nests in which identifiable eggs or young were clearly seen, seven (20.6%) had been parasitized by Brown-headed Cowbird. In only one or perhaps two cases (Red-winged Blackbird and Western Meadowlark) were cowbird young fledged. Cowbird eggs were found from April through July. Most heavily parasitized was a Red-winged Blackbird nest which contained three cowbird eggs in addition to two Redwing eggs on 5 June 1982. Field Sparrow was the most heavily parasitized species with two of three nests containing cowbird eggs.

Other Species

Two species, Yellow-billed Cuckoo (*Coccyzus americanus* L.) and Song Sparrow (*Melospiza melodia* Wilson) were recorded during the breeding season and are thought to have nested in areas adjacent to or near the Preserve. Both spent time feeding on Sheeder Preserve and are likely breeding species for the Preserve itself.

An additional 25 species are classified as "visitors". A number of these regularly forage on the Preserve: Barred Owl (*Strix varia* Barton), Chimney Swift (*Chaetura pelagica* L.), Hairy Woodpecker (*Dendrocopus villosus* L.), Eastern Phoebe (*Sayornis phoebe* Latham), Northern Rough-winged Swallow (*Stelgidopteryx ruficollis* Vieillot), Barn Swallow (*Hirundo rustica* L.), White-breasted Nuthatch (*Sitta carolinensis* Latham), Eastern Bluebird (*Sialia sialis* L.), European Starling (*Sturnus vulgaris* L.), Orchard Oriole (*Icterus spurius* L.) and Common Grackle (*Quiscalus quiscula* L.). Eastern Phoebe and Eastern Bluebird were observed feeding fledgling young on the Preserve during the study. Northern Junco and American Tree Sparrow (*Spizella arborea* Wilson) were the most abundant species from late fall through early spring. Seven species were encountered only during spring and/or fall migration periods (Figure 2).

DISCUSSION

Grassland Species

Of 25 species nesting at Sheeder Prairie, five (20%) are characteristic of grasslands — Ring-necked Pheasant, Western Meadowlark, Dickcissel, Grasshopper Sparrow and Field Sparrow. Western Meadowlark and Dickcissel are described by Shelford (1963) as ". . . strictly prairie birds". Grasshopper Sparrow is listed by the same author as a resident of short-grass grasslands. Of the four native species, Dickcissel is endemic in the region (Johnsgard, 1979). Field Sparrow has eastern faunal affinities, while the meadowlark has western faunal affinities. Johnsgard (1979) designates the Grasshopper Sparrow as a grassland adapted sparrow. All five of the grassland affiliated species build ground nests. Field Sparrows also build in forbs, shrubs and small trees up to a height of 1.0 m. At Sheeder all but Field Sparrow built ground nests. The 1982 territories of Western Meadowlark, Grasshopper Sparrow, Dickcissel and Field Sparrow as determined by singing males and nest locations were mapped (Figure 3). The meadowlark nest and the Grasshopper Sparrow's territory, whose nest was not found, were located in the well-drained southwest corner of the Preserve. This area is characterized by grasses and forbs of shorter stature. Grasshopper Sparrows made abundant use of fence post song perches while Western Meadowlark used utility wires. Such easily visible song posts are important to these grassland species. Grasshopper Sparrow had not previously been observed at Sheeder during the study period, nor since 1977 when the author began visiting the Preserve. The change from corn to oats in fields to the north and especially to the west during 1982 may have provided more suitable Grasshopper Sparrow habitat. This species commonly nests in oat fields in Iowa. Two Dickcissels were found during 1980, but no singing males were located until 1982. Two Dickcissel territories were also located along the western boundary of the Preserve, adjacent to

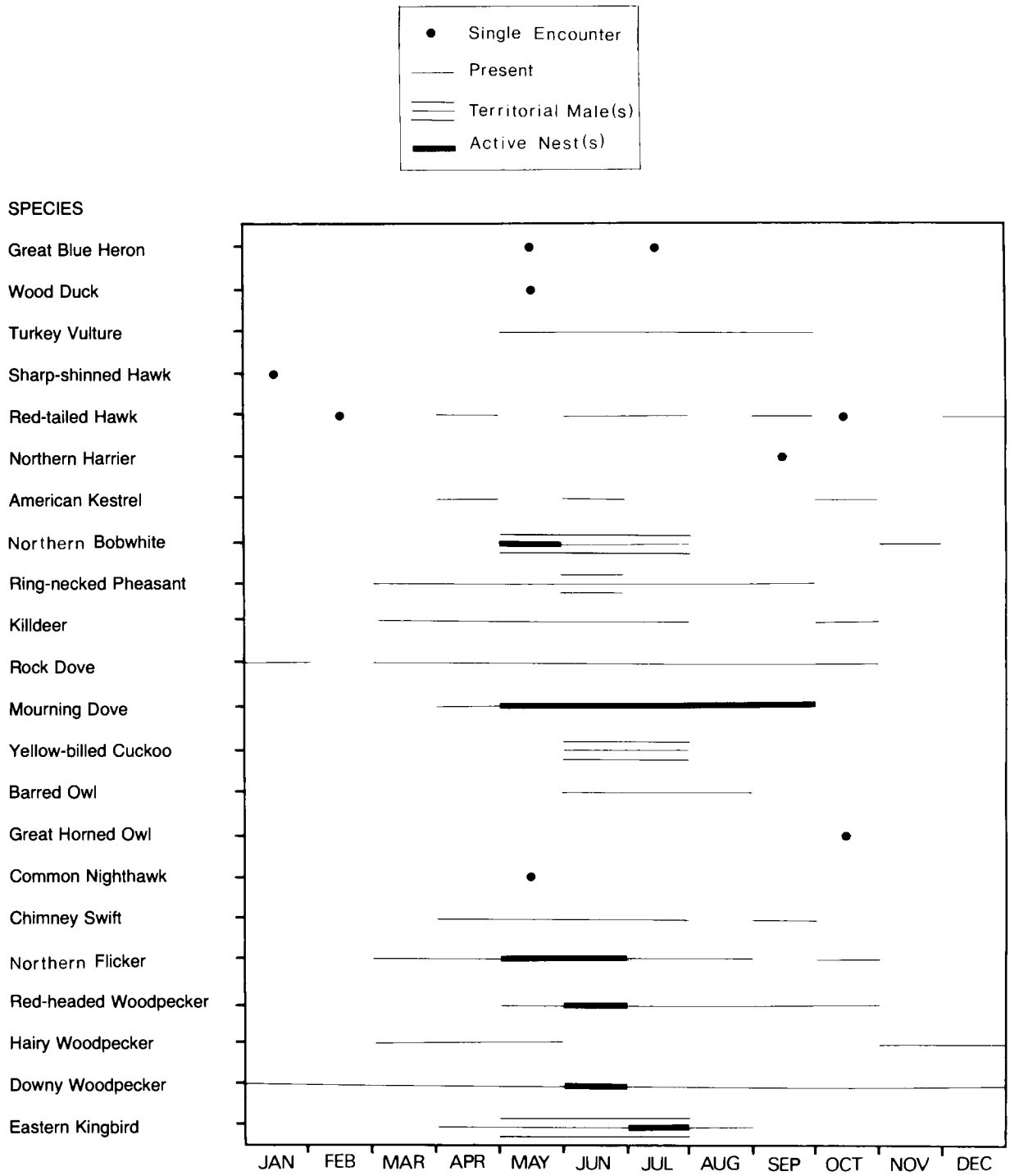

Fig. 2. Status of Sheeder Preserve avifauna, 1980-1982.

the oats field (Figure 3). Although no nests were located, three singing males were recorded during June 1982.

The portion of the meadowlark's territory within the bounds of the study area was approximately 4.55 ha. The pastureland immediately south of the Preserve was also utilized by this species. Kendeigh (1941) cites 8.1 ha as an average territory size for Western Meadowlark. The Grasshopper Sparrow's territory, within the Preserve, was estimated to be approximately 1.3 ha. Johnsgard (1979) states that this species is somewhat colonial, with territories ranging in size from 0.8 ha to 1.2 ha. Dickcissel territories at Sheeder were estimated to be approximately 1.4 ha in size. Dickcissels utitlized fence posts, small trees and tall forbs as song posts. Their territories included upper and

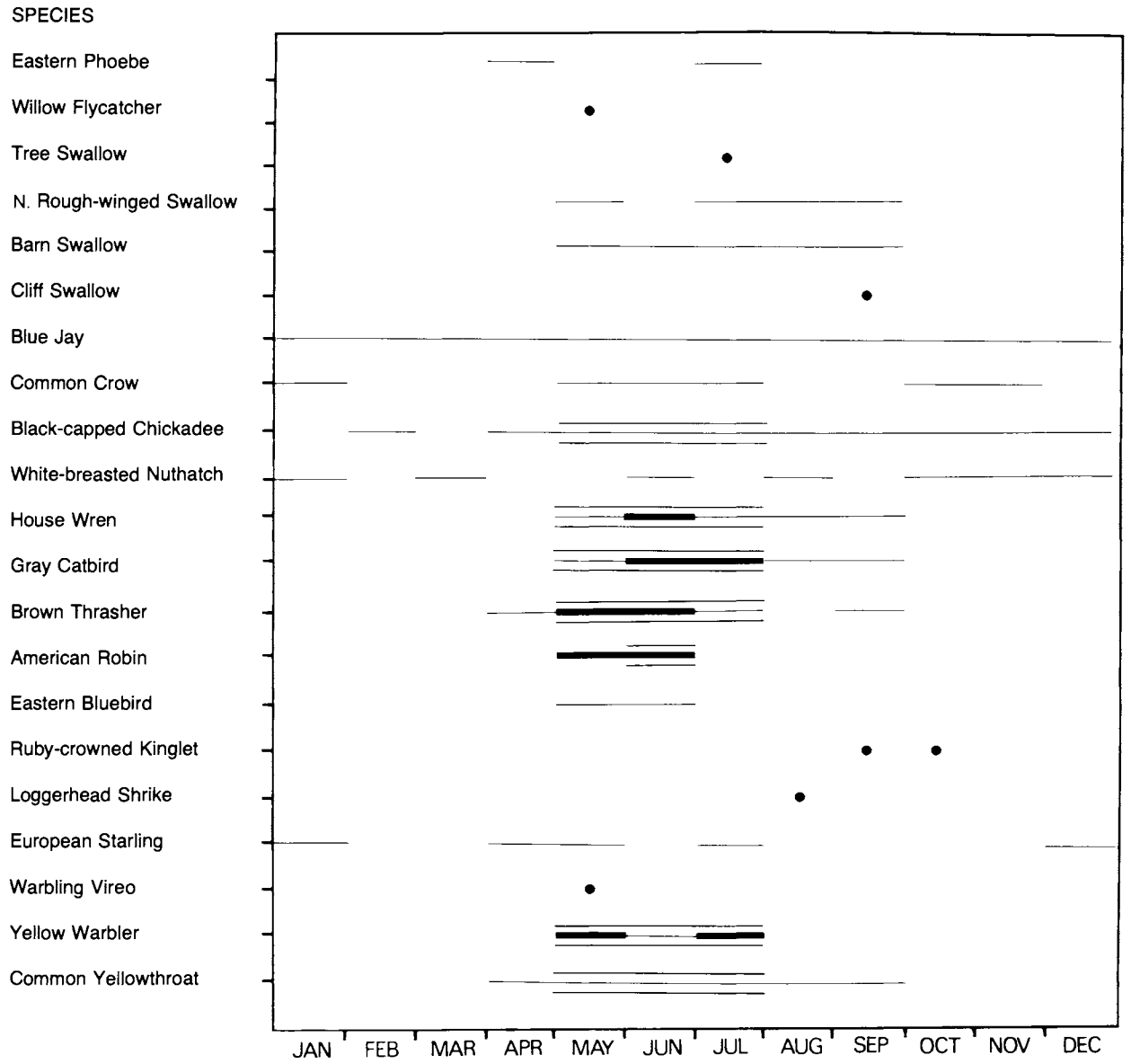

Fig. 2. (Continued)

lower slopes and portions of drainageways. The ranges of all four grassland species overlapped to some extent. No active nests of the introduced Ring-necked Pheasant were found but numerous egg shells were found, especially after spring burns. Based upon this evidence, the species seemed to prefer nesting in the downslope and low-lying areas where the vegetation was generally higher. Field Sparrows prefer a combinaton habitat of grassy areas and shrubs or low trees. Of three Field Sparrow nests discovered, two were on well-drained slopes and a third in a low-lying area. Rosinweed was a favorite nesting support at least for early season nests. Once this plant grew above 60 cm it tended to spread apart and apparently became unsuitable as a nest location. A very late nesting by this species on 22 August 1981 at Sheeder Prairie was reported on elsewhere (Laubach, 1981). In that instance the nest was located in an American Plum shrub. Late season nests are built up to 1.0 m above ground. Three Field Sparrow territories averaged approximately 1.0 ha in size (Figure 3). All territories combined slopes, uplands and low-lying areas, in addition to trees and shrubs that served as song posts. Johnsgard (1979) gave average Field Sparrow territory size as 1.2 ha with a range of from less than 0.8 ha to 2.43 ha.

Woodland Species

Sheeder Preserve breeding species affiliated with woodlands or their successional stages as characterized by Johnsgard (1979) are: Northern Bobwhite, Mourning Dove, Northern Flicker, Red-headed Woodpecker, Eastern Kingbird, Gray Catbird (*Dumetella carolinensis* L.), Brown Thrasher (*Toxostoma rufum* L.), American Robin, Yellow Warbler, Downy Woodpecker, Black-capped Chickadee, Northern Oriole (*Icterus galbula* L.), Northern Cardinal, Rose-breasted Grosbeak (*Pheucticus ludovicianus* L.), Indigo Bunting (*Passerina cyanea* L.), American Goldfinch, House Wren and Brown-headed Cowbird. These 18 species represent 72% of the breeding avifauna at Sheeder

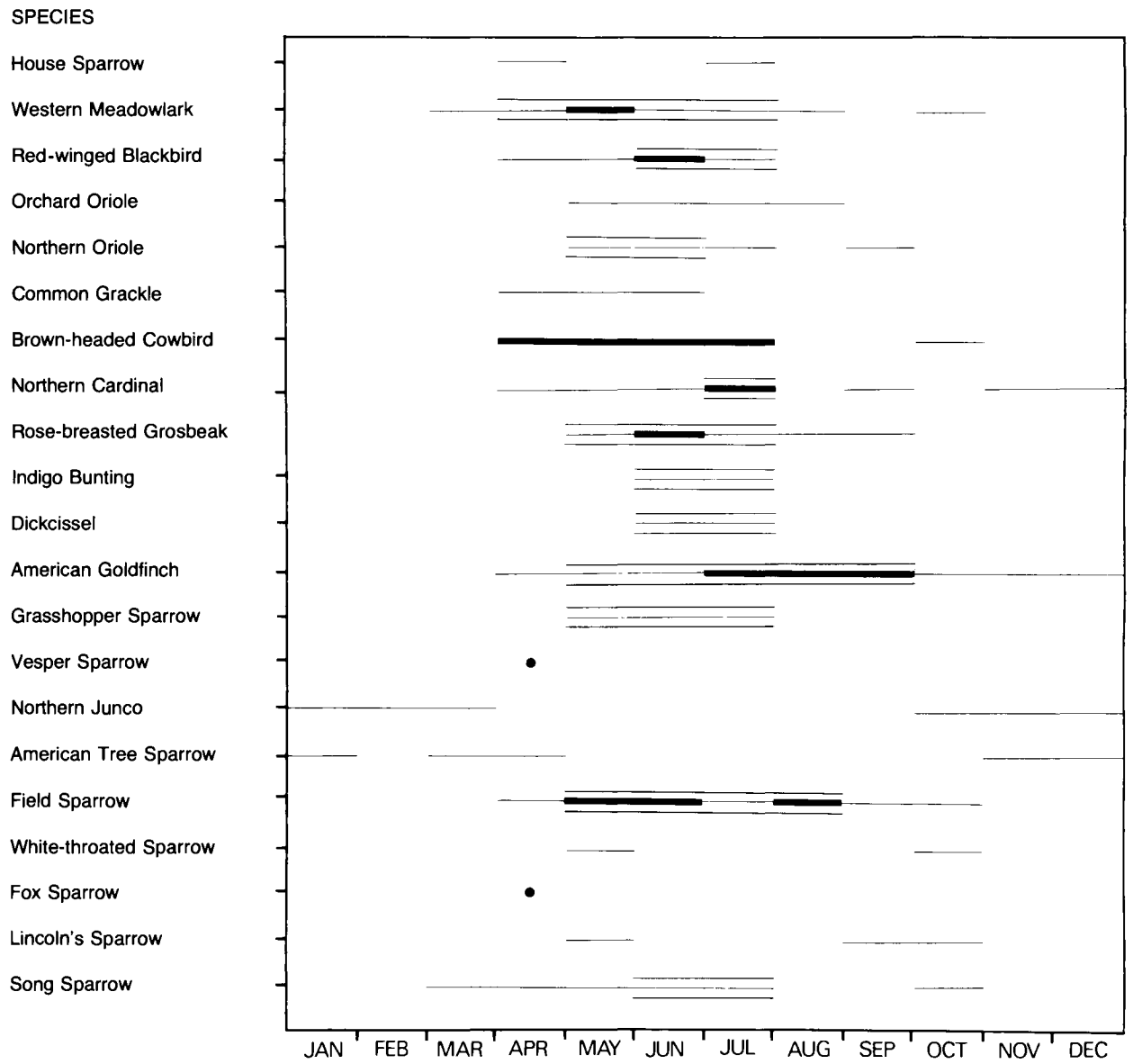

Fig. 2. (Continued)

Prairie. Shelford (1963) lists Brown Thrasher, Gray Catbird, American Goldfinch, Indigo Bunting and Northern Cardinal as species nesting principally in shrubs and small trees and widely distributed in the forest margin of the temperate grassland. Birds listed as having a preference for the marginal trees for nesting and for securing their food from grassland or edge by Shelford (1963) are: Red-headed Woodpecker and American Robin. Of the woodland or seral stage species recorded at Sheeder Preserve, Red-headed Woodpecker, Eastern Kingbird, Gray Catbird, Brown Thrasher, Northern Cardinal, and Rose-breasted Grosbeak have eastern faunal affinities while Mourning Dove, Northern Flicker, American Robin, Yellow Warbler, Northern Oriole and American Goldfinch are considered pandemic (Johnsgard, 1979).

The arboreal and shrubby vegetation provides for an abundance of suitable nesting sites for woodland and edge adapted species. Dense American Plum thickets located in the two northernmost drainageways provided good nesting cover for several species. When peripheral plum shrubs succumbed to controlled burning, other nesting sites were found by these species. Eight species of birds nested in plum shrubs (Table 2). Although only approximately 15% of the study area is covered by trees and shrubs, 34 of 44 active nests discovered during 1981-82 were located in such vegetation (Figure 1). For the Great Plains as a whole, 51% of the avian species have woodland affinities and 11% are grassland birds even though grasslands comprise 81% and woodlands only 15% with regard to coverage (Johnsgard, 1979). The shrubby and arboreal vegetation also serves as valuable foraging habitat, protective cover and as song perches for many species at Sheeder Prairie. Faanes (1984), in a study of North Dakota wooded prairie draws, found the isolated woodlands to be important breeding habitat for 47 species of birds. Of the 10 most abundant breeders in such habitat, eight are also Sheeder breeding species. There are a sufficiently large number of Black Willow and Box Elder trees, both

Table 1. Number of territorial males by month, 1981-1982.

	1981					1982				
Species	May	June	July	Aug.	Sept.	Apr.	May	June	July	Aug.
C. Bobwhite	1	1	1	—	—	—	—	—	—	—
R. N. Pheasant	—	—	—	—	—	1	—	—	—	—
Y. B. Cuckoo	—	—	1	—	—	—	—	1	2	—
N. Flicker	1	—	—	—	—	—	1	1	—	—
Red-headed Woodpecker	—	—	—	—	—	—	1	1	—	—
Downy Woodpecker	—	—	—	—	—	—	1	1	—	—
E. Kingbird	—	—	3	—	—	—	1	—	—	—
B. C. Chickadee	1	2	2	—	—	—	—	—	1	—
H. Wren	4	3	3	3	—	—	2	3	3	—
G. Catbird	1	1	3	1	—	—	1	1	2	—
B. Thrasher	2	1	1	—	—	—	3	—	—	—
A. Robin	—	—	—	—	—	—	—	2	—	—
Yellow Warbler	3	2	1	—	—	—	3	1	1	—
C. Yellowthroat	5	6	7	—	—	1	5	2	4	—
W. Meadowlark	—	—	1	—	—	1	1	1	—	—
Red-winged Blackbird	—	—	1	—	—	—	—	1	1	—
N. Oriole	2	1	—	—	—	—	1	1	—	—
N. Cardinal	—	—	—	1	—	—	—	—	—	—
R. B. Grosbeak	1	1	2	—	—	—	1	1	1	—
I. Bunting	—	1	—	—	—	—	—	3	1	—
Dickcissel	—	—	—	—	—	—	—	2	4	—
A. Goldfinch	—	—	—	4	1	—	—	—	—	—
Grass. Sparrow	—	—	—	—	—	—	1	1	1	—
Field Sparrow	—	3	3	1	—	—	2	1	2	1
Song Sparrow	—	—	1	—	—	—	—	—	—	—
Total	21	22	30	10	1	3	24	24	23	1

living and dead, to provide suitable nesting habitat for cavity nesters. House Wren, the most common cavity nester on the Preserve, nested in Box Elders located in the southernmost drainageway during 1980. Following a controlled burn in spring 1981, the wrens found other trees in which to nest during 1981 and 1982.

Wetland Species

Red-winged Blackbird and Common Yellowthroat represented eight percent of the breeding avifauna at Sheeder. Both species are characteristic of moist environments, and both nested in drainageways. The lush vegetation associated with the drainageways provides

Table 2. Nest locations, 1981-82.

Species	Black Willow	A. Plum	Red Cedar	*Elmus* spp.	Box Elder	Misc. Shrubs	Herbs	Grasses
N. Bobwhite	—	—	—	—	—	—	—	1
M. Dove	—	2	1	4	4	—	1	—
N. Flicker	2	—	—	—	—	—	—	—
G. Catbird	—	3	—	—	—	—	—	—
E. Kingbird	—	—	—	—	2	—	—	—
Field Sparrow	—	1	—	—	—	—	2	—
A. Goldfinch	—	1	—	1	—	—	4	—
R. N. Pheasant	—	—	—	—	—	—	—	x
A. Robin	—	1	—	1	—	—	—	—
Brown Thrasher	—	1	—	1	—	1	—	—
W. Meadowlark	—	—	—	—	—	—	—	1
D. Woodpecker	—	—	—	—	1	—	—	—
Red-winged Blackbird	—	1	—	—	—	—	—	—
R. B. Grosbeak	—	—	—	1	1	—	—	—
R. H. Woodpecker	1	—	—	—	—	—	—	—
House Wren	—	—	—	—	1	—	—	—
Yellow Warbler	—	1	—	—	—	—	—	—
N. Cardinal	—	—	—	—	—	1	—	—
Total	3	11	1	8	9	2	7	2

x - nests present

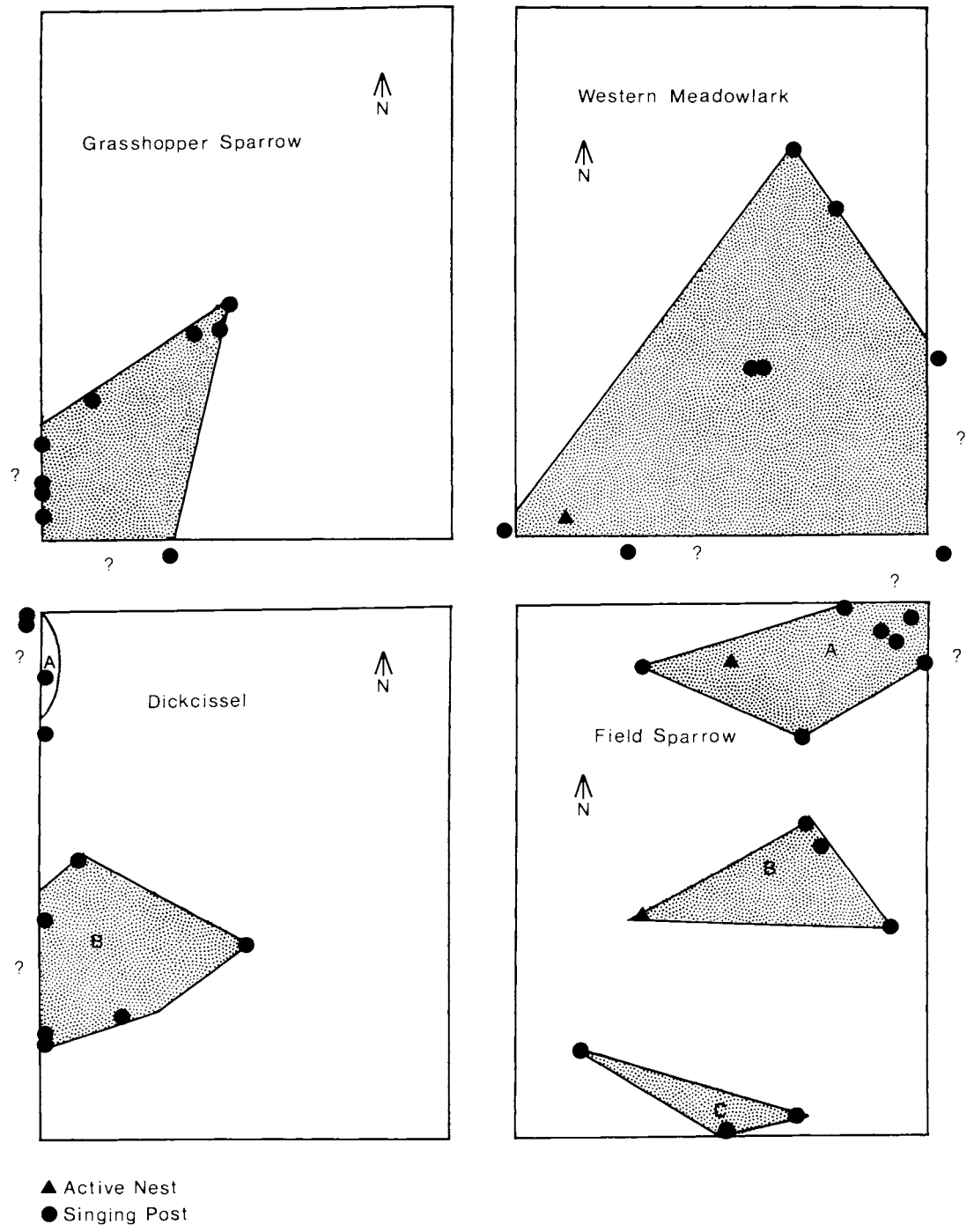

Fig. 3. Territories of grassland species at Sheeder Preserve, 1982.

excellent habitat for Common Yellowthroat. Although no nests were found, the species is one of the most common breeders at Sheeder Prairie. Above normal precipitation fell during 1982 which may account for one pair of Red-winged Blackbirds nesting that year on the Preserve. The intermittent creek was flowing as late as 30 May during 1982. None nested during the previous years of the study. Yellow Warbler, a species associated with wooded areas and preferring moist habitats was also found to be a common breeder in the drainageways. Common Yellowthroat and Red-winged Blackbird are considered as pandemic in the Great Plains by Johnsgard (1979).

Nine breeding species were recorded on Sheeder Prairie by means of a territorial male count by Knight (1966). In all, Knight recorded 26

Table 3. Heights of nests above ground, 1981-82.

Species	Ground Nest	.01-.99m	1.0-2.0m	2.01-3m	3+m
N. Bobwhite	1	—	—	—	—
M. Dove	—	1	7	4	—
N. Flicker	—	1	—	—	1
G. Catbird	—	—	3	—	—
E. Kingbird	—	—	—	—	2
Field Sparrow	—	2	1	—	—
A. Goldfinch	—	3	3	—	—
R. N. Pheasant	x	—	—	—	—
A. Robin	—	—	2	—	—
Brown Thrasher	—	1	2	—	—
W. Meadowlark	1	—	—	—	—
D. Woodpecker	—	—	—	1	—
Red-winged Blackbird	—	1	—	—	—
R. B. Grosbeak	—	—	—	—	2
R. H. Woodpecker	—	—	—	—	1
House Wren	—	1	—	—	—
Yellow Warbler	—	1	—	—	—
N. Cardinal	—	1	—	—	—
Total	2	12	18	5	6

x - nests present

species. Common Yellowthroat was the dominant breeder with nine singing males, followed by Gray Catbird with four. Seven other species were represented by one each — Yellow-billed Cuckoo, Traill's (Willow) Flycatcher (*Empidonax traillii* Audubon) and Vesper Sparrow (*Pooecetes gramineus* Gmelin), are species that were not found to be breeding at the Preserve during the present study. Of the three, only Vesper Sparrow is considered to be a grassland species. It is interesting to note that the one territorial Western Meadowlark found by Knight was located in the same southwestern corner where I found a Meadowlark nest during 1982. Yellow-billed Cuckoo is thought to have nested just east of the Preserve boundary during both 1981 and 1982. Among other species reported by Knight that were not recorded during the present study are Eastern Screech-Owl (*Otus asio* L.), Horned Lark (*Eremophila alpestris* L.), Purple Martin (*Progne subis* L.) and Bobolink (*Dolichonyx oryzivorus* L.). Madson (1982) made brief reference to sighting an Upland Sandpiper (*Bartramia longicauda* Bechstein), a true tallgrass prairie species, at Sheeder Prairie. The observations of Knight and Madson bring the total of recorded species to 69. No doubt other species, especially those that visit the Preserve briefly during migrational periods, will be recorded at Sheeder Preserve in the future.

Cowbird Parasitism

Brown-headed Cowbird, an obligate brood parasite, did not pose a significant detriment to the breeding success of the Sheeder Prairie avifauna. It should be pointed out however that this species' effect upon Yellow Warbler could not be ascertained since no nests of the warbler containing eggs were found. This warbler is an abundant breeder at Sheeder and a common cowbird host.

Breeding Bird Density

The density of breeding birds at the height of the breeding season at Sheeder Prairie in 1981 was 5.9 birds/ha. During 1982 the breeding bird density was 5.5 birds/ha. Kendeigh (1941) studied a 20.2 ha restored prairie and found a density of 5.4 birds/ha, which included species that were common foragers on the prairie as well as breeding species. Abel (1920) in his study of a 259 ha section of upland prairie, almost all of which was in crops, recorded 1.85 birds/ha. Lanyon (1982) in his study of bird diversity and density in various seral stages from cultivated field to mature woodland discovered that the highest density of breeding birds was found on plots that had been allowed to lay idle for 35 years. Such plots contained 19.8 birds/ha. Plots 10 years after cultivation ceased had 9.8 birds/ha, while grassland plots supported only 4.9 birds/ha.

Controlled Burning

Controlled burning, when conducted during early spring, seemed to have no deleterious effects upon the birds nesting at Sheeder Preserve. An active American Robin nest was found in an elm in the midst of a plum thicket only hours after that half of the Preserve had been burned on 3 May 1982. Likewise, viable Field Sparrow eggs were found in a nest supported by Rosinweed on 30 May 1982, only 27 days after burning. So as not to delay nesting, especially by ground nesting species, burning should continue to be carried out in early spring, preferably before 15 April. Burning should continue to be limited to only one-half of the Preserve each year.

Comparisons with other Iowa Prairies

Several other studies of Iowa prairie remnant avifaunas have been conducted (Table 4). Brennan (1969) found only 13 breeding species at Kalsow Prairie in northwest Iowa. Consisting of 64.8 ha of primarily upland prairie, the Preserve contains 14 shallow potholes but very little shrubby or arboreal vegetation. A number of common breeding species at Sheeder Prairie are described as "neighboring species" at Kalsow by Brennan (1969). In all, Brennan recorded 46 species at Kalsow Prairie. The lack of woody vegetation no doubt prohibits some "edge" species from nesting at Kalsow. Youngworth (1953) recorded Henslow's Sparrow (*Passerherbulus henslowii* Audubon) as a breeding bird at Kalsow Prairie.

Platt (1975) made casual observations of Cayler Prairie avifauna over a four year period, listing 35 species as breeders and species that regularly forage on that Preserve. This 64.8 ha preserve in northwest Iowa has considerable topographic relief like Sheeder Prairie. Youngworth (1960) listed meadowlark as the most common nesting species at Cayler. Both Youngworth (1960) and Brennan (1969) regard Dickcissel as a species nesting at the edge of the prairie. This was also the case at Sheeder Prairie, although Sheeder's small size places all of

Table 4. *Comparison of Iowa Prairie Breeding Avifaunas*

Species	Sheeder	Brennan (1969) Youngworth (1953) Kalsow	Lowther (1984) Youngworth (1960) Cayler	Lowther (1984) Freda Hafner
Blue-winged Teal	—	—	x	x
N. Bobwhite	x	—	—	—
R. N. Pheasant	x	x	x	x
Upland Sandpiper	—	—	x	—
M. Dove	x	—	x	x
Burrowing Owl	—	—	x	—
N. Flicker	x	—	—	—
R. H. Woodpecker	x	—	—	—
Downy Woodpecker	x	—	—	—
E. Kingbird	x	—	x	—
Willow Flycatcher	—	—	—	x
Horned Lark	—	x	x	—
B. C. Chickadee	x	—	x	—
House Wren	x	—	—	—
Sedge Wren	—	x	—	x
Marsh Wren	—	x	—	—
G. Catbird	x	—	—	x
B. Thrasher	x	—	—	—
A. Robin	x	—	x	—
Yellow Warbler	x	—	—	x
C. Yellowthroat	x	x	x	x
Bobolink	—	x	x	x
E. Meadowlark	—	—	x	—
W. Meadowlark	x	x	x	x
Red-winged Blackbird	x	x	x	x
Yellow-headed Blackbird	—	—	—	x
N. Oriole	x	—	—	—
C. Grackle	—	—	—	x
B. H. Cowbird	x	—	x	x
N. Cardinal	x	—	—	—
R. B. Grosbeak	x	—	—	—
I. Bunting	x	—	—	—
Dickcissel	x	x	x	x
A. Goldfinch	x	x	x	x
Savannah Sparrow	—	x	x	—
Grasshopper Sparrow	x	x	x	x
Henslow's Sparrow	—	x	—	—
Field Sparrow	x	x	—	—
Lark Sparrow	—	x	—	—
Swamp Sparrow	—	—	x	x
Song Sparrow	—	—	x	x

its area near cultivated fields. Platt (1975) credits pastureland adjacent to Cayler Prairie as very important to the resident species. Of Iowa's prairie preserves that have had their avifaunas studied, Cayler Preserve's avifauna is the most similar to Sheeder Preserve's. Both are characterized by considerable topographic relief and a resultant floristic and avian diversity.

Kendeigh (1941) writing about the birds of a 20.2 ha restored prairie near Lake Okoboji in northwest Iowa, listed Grasshopper Sparrow, Ring-necked Pheasant and Western Meadowlark as primary species that both nested and foraged on the prairie. A number of briefer references regarding Iowa's prairie avifauna include Ennis (1959) who described the birds of the largely treeless 97.2 ha Hayden Prairie Preserve in northeast Iowa. Dominant breeding species were Grasshopper Sparrow, Savannah Sparrow and Henslow's Sparrow.

Sheeder Prairie Preserve has the greatest component of birds with woodland affinities of any prairie preserve studied to date. The reason for this is the significant amount of woody vegetation to be found at Sheeder Preserve.

ACKNOWLEDGEMENTS

The author thanks the Iowa Conservation Commission and State Ecologist Dr. Dean Roosa for permission to conduct the study. Dr. Roosa also critically read the manuscript. Christyna M. Laubach provided a great deal of field assistance during the entire study period, aiding in nest searches and census work. The project would have been difficult to complete without her help. The author also thanks Anita Cuikay, who typed the manuscript.

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