

Upland Bird Survey at the Savanna Army Depot

1997 Annual Report

Prepared by

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The Savanna Army Depot is scheduled for base closure in 2000. Upon its closure, thousands of acres of native sand prairie and savanna will be transferred to the U.S. Fish and Wildlife Service. In a joint agreement with the U.S. Fish and Wildlife Service, the Illinois Department of Natural Resources will take the lead in managing the upland sand prairie and sand savanna portions of the Depot. In order to effectively manage this valuable resource, a thorough assessment of the bird communities of the site are needed.

Bird research at the Depot was initiated in 1997 as part of a large scale study of Illinois grassland bird populations. This research was focused on developing guidelines for landscape-scale grassland bird conservation efforts by comparing grassland bird populations among grasslands of varying sizes, composition (native vs. non-native grasslands) and management practices (burned, mowed, grazed and idle). Research at the Depot in 1997 has added important data on a new habitat (large sand prairie) and a new management practice (grazed prairie) to these ongoing studies.

Research at the Depot in 1997 included both bird censusing and nest monitoring. Bird populations at the Depot were monitored using nationally established point count procedures. We used five minute, fixed-radius (100-m) point counts to estimate relative abundance of birds at the Depot. We also collected information on litter depth and vegetation height-density at each census point location.

A total of 80 species were recorded during the bird censusing at the Depot in 1997 (Table 1). Grasshopper sparrows were the most numerous species recorded, with an average density of 2.5 birds/point (only considering birds detected within 100-m of a point center). Western Meadowlarks were the second most abundant species with an average density of 1.3 birds/point (Table 1). A complete listing of birds recorded at the Depot in 1997 is shown in Table 1.

Compared to other major grassland areas in Illinois, the Depot has the highest densities of grasshopper sparrows, killdeers, lark sparrows, vesper sparrows, northern mockingbirds, horned larks, and western meadowlarks that we have discovered in our studies of Illinois grasslands to date (Table 2).

Estimates of grassland bird nest success at the Depot in 1997 were variable (Table 3). Estimates of nest success reported in Table 3 based on fewer than 10 nests should be interpreted with some degree of caution. For the five species of grassland birds with the largest samples in 1997, three (grasshopper sparrow, vesper sparrow, and field sparrow) had nest success estimates that appear comparable to other locations in the state. Nest success for eastern/western meadowlarks (meadowlark nests were combined due to difficulties assigning some nests to species) at the Depot appeared to be considerably higher than at other locations in Illinois, whereas estimated nest success for lark sparrows at the Depot appeared to be somewhat lower than elsewhere in the state. The overall frequency of nest parasitism by brown-headed cowbirds on grassland birds at the Depot was low and ranged from a high of 27.8% for field sparrows to less than 5% for most other species (Table 3). Nest parasitism rates for four of the five species with more than 10 nests (excluding the common nighthawk which is not parasitized by brown-headed cowbirds) were higher at the Depot than at other grasslands around the state, although these differences were generally small (Table 3).

TABLE 1. Number of birds recorded at the Savanna Army Depot Ordinance in 1997. Data are the mean number of birds recorded at 58 100-m fixed-radius point count stations. Birds are listed in decreasing order of abundance.

Species	Abundance (#birds/pt.) 1997
grasshopper sparrow	2.541
western meadowlark	1.303
field sparrow	0.670
lark sparrow	0.550
chipping sparrow	0.422
brown headed cowbird	0.394
vesper sparrow	0.394
horned lark	0.339
house wren	0.303
eastern meadowlark	0.229
morning dove	0.211
American robin	0.202
red-winged blackbird	0.193
brown thrasher	0.183
eastern kingbird	0.174
Baltimore oriole	0.174
blue jay	0.165
orchard oriole	0.138
gray catbird	0.138
common grackle	0.128
song sparrow	0.128
killdeer	0.119
northern mockingbird	0.119
American goldfinch	0.119
eastern bluebird	0.110
rose-breasted grosbeak	0.101
northern cardinal	0.092
European starling	0.092
great-crested flycatcher	0.083
indigo bunting	0.064
black-capped chickadee	0.046
eastern towhee	0.064
northern flicker	0.064
common yellowthroat	0.064
American crow	0.073
warbling vireo	0.046
yellow warbler	0.037
American kestrel	0.028
downy woodpecker	0.028
red-headed woodpecker	0.028
wood thrush	0.028
cedar waxwing	0.028
blue-gray gnatcatcher	0.028
yellow-throated vireo	0.018
Kentucky Warbler	0.018
upland sandpiper	0.009
eastern wood-pewee	0.009
ovenbird	0.009
mallard	0.009
red-eyed vireo	0.009
American redstart	0.009

TABLE 1. Continued.

Species	Abundance (#birds/pt.)
	1997
red-bellied woodpecker	0.009
common nighthawk	0.009
savannah sparrow	0.009
tufted titmouse	0.009
black-billed cuckoo	0.009
house sparrow	0.009
yellow-bellied flycatcher	0.009
barn swallow	- ^a
Canada goose	- ^a
chimney swift	- ^a
Cooper's hawk	- ^a
double-crested cormorant	- ^a
great blue heron	- ^a
green heron	- ^a
loggerhead shrike	- ^a
morning warbler	- ^a
northern bobwhite	- ^a
northern-rough winged swallow	- ^a
pileated woodpecker	- ^a
red-tailed hawk	- ^a
rock dove	- ^a
scarlet tanager	- ^a
tree swallow	- ^a
turkey vulture	- ^a
wild turkey	- ^a
willow flycatcher	- ^a
white-breasted nuthatch	- ^a
yellow-billed cuckoo	- ^a

^a Detected only outside of 100-m point count circles

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TABLE 2. Comparison of bird populations at major grassland areas in Illinois. Figures are the mean number of birds recorded at 100-m fixed-radius point count stations between 1995 - 1997. The number of point count stations at each site is shown in parentheses below each site. Birds are listed in taxonomic order.

	Des Plaines Conservation Area (43)	Goose Lake Prairie (43)	Green River Conservation Area (50)	Midewin National Tallgrass Prairie (107)	Nachusa Grasslands (48)	Savanna Army Depot (58)
upland sandpiper	0.01	0.00	0.00	0.18	0.01	0.01
killdeer	0.01	0.10	0.00	0.03	0.01	0.12
northern bobwhite	0.06	0.04	0.12	0.01	0.01	0.00
ring-necked pheasant	0.02	0.09	0.03	0.01	0.18	0.00
morning dove	0.06	0.04	0.30	0.03	0.05	0.21
downy woodpecker	0.02	0.00	0.11	0.00	0.01	0.03
red-headed woodpecker	0.00	0.00	0.16	0.01	0.00	0.03
northern flicker	0.02	0.00	0.09	0.00	0.02	0.06
eastern kingbird	0.28	0.03	0.47	0.26	0.09	0.17
willow flycatcher	0.05	0.00	0.07	0.01	0.23	0.00
horned lark	0.00	0.06	0.00	0.01	0.00	0.34
blue jay	0.08	0.00	0.09	0.02	0.04	0.17
European starling	0.04	0.03	0.01	0.50	0.01	0.09
bobolink	0.09	0.05	0.43	1.36	0.09	0.00
brown-headed cowbird	0.37	0.12	0.80	0.12	0.50	0.39
red-winged blackbird	1.06	2.82	2.37	1.77	1.22	0.19
eastern meadowlark	0.98	0.80	0.21	1.36	0.31	0.23
western meadowlark	0.00	0.00	0.00	0.00	0.00	1.30
orchard oriole	0.26	0.00	0.17	0.05	0.01	0.13
Baltimore oriole	0.07	0.00	0.05	0.05	0.03	0.17
common grackle	0.15	0.10	0.12	0.06	0.06	0.13
American goldfinch	0.52	0.35	0.28	0.13	0.58	0.12
vesper sparrow	0.00	0.00	0.02	0.01	0.10	0.39
savannah sparrow	0.01	0.11	0.02	0.59	0.15	0.01
grasshopper sparrow	0.55	0.72	0.48	1.51	1.12	2.54
Henslow's sparrow	0.27	0.29	0.00	0.02	0.01	0.00
lark sparrow	0.00	0.00	0.22	0.00	0.04	0.55
chipping sparrow	0.00	0.00	0.16	0.02	0.03	0.42
field sparrow	0.99	0.19	0.87	0.36	0.69	0.67
song sparrow	0.48	0.33	1.31	0.32	0.79	0.13
swamp sparrow	0.00	0.02	0.09	0.00	0.09	0.00
eastern towhee	0.11	0.00	0.13	0.01	0.01	0.06
northern cardinal	0.07	0.00	0.37	0.02	0.13	0.09
rose-breasted grosbeak	0.05	0.00	0.11	0.00	0.02	0.10
indigo bunting	0.22	0.01	0.48	0.08	0.11	0.06
dickcissel	0.07	0.07	0.45	0.77	0.41	0.00
tree swallow	0.01	0.05	0.34	0.04	0.03	0.00
cedar waxwing	0.09	0.00	0.11	0.03	0.03	0.03
warbling vireo	0.06	0.00	0.20	0.02	0.02	0.05
Bell's vireo	0.01	0.00	0.08	0.00	0.04	0.00
yellow warbler	0.14	0.00	0.33	0.04	0.24	0.04
common yellowthroat	0.46	0.65	0.99	0.07	0.50	0.06

(continued)

TABLE 2. Continued.

	Des Plaines Conservation Area (43)	Goose Lake Prairie (43)	Green River Conservation Area (50)	Midwin National Tallgrass Prairie (107)	Nachusa Grasslands (48)	Savanna Army Depot (58)
yellow-breasted chat	0.01	0.00	0.01	0.00	0.01	0.00
northern mockingbird	0.00	0.00	0.00	0.05	0.00	0.12
gray catbird	0.23	0.02	0.44	0.03	0.17	0.14
brown thrasher	0.18	0.02	0.39	0.07	0.10	0.18
house wren	0.11	0.01	0.65	0.04	0.06	0.30
sedge wren	0.14	0.43	0.12	0.13	0.09	0.00
marsh wren	0.00	0.09	0.00	0.00	0.00	0.00
black-capped chickadee	0.05	0.00	0.05	0.01	0.02	0.05
American robin	0.28	0.08	0.39	0.14	0.16	0.20
eastern bluebird	0.01	0.00	0.19	0.01	0.03	0.11

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TABLE 3. Comparison of nest success at the Savanna Army Depot Ordinance (SAD) with other grassland areas in Illinois.

	SAD (1997)				STATE (1995-1997) ¹					
	N	Nest Success ²	Nest Parasitism	# Fledged/ Succ. Nest	# Fledged/ Nest Attempt ³	N	Nest Success ²	Nest Parasitism	# Fledged/ Succ. Nest	# Fledged/ Nest Attempt ³
Grasshopper Sparrow	85	17.0%	3.5%	3.0	0.51	139	18.5%	2.2%	3.5	0.65
Eastern/Western Meadowlark	46	35.5%	2.2%	3.6	1.29	197	9.3%	2.0%	3.1	0.03
Vesper Sparrow	24	21.3%	8.3%	2.1	0.44	14	17.2%	0.0%	2.7	0.46
Lark Sparrow	19	11.5%	21.1%	3.1	0.36	11	44.8%	27.3%	2.4	1.07
Field Sparrow	18	22.2%	27.8%	2.4	0.53	300	20.1%	10.7%	2.7	0.54
Common Nighthawk	16	79.9%	0.0%							
Morning Dove	8	61.2%	0.0%	2.0	1.22	11	22.3%	0.0%	2.0	0.44
Killdeer	5	100.0%	0.0%	2.5	2.50	5	53.6%	0.0%		
Brown Thrasher	4	100.0%	0.0%	2.5	2.50	79	42.5%	2.5%	2.6	1.10
Chipping Sparrow	4	100.0%	0.0%	3.0	3.00	7	8.6%	0.0%	3.0	0.26
Upland Sandpiper	2	100.0%	0.0%	4.0	4.00	17	81.2%	0.0%	3.7	3.00
Horned Lark	2	3.8%	0.0%							
Blue Jay	1	100.0%	0.0%			4	37.3%	0.0%	2.3	0.86
Blue Grosbeak	1	100.0%	0.0%	3.0	3.0	1	100.0%	0.0%	3.0	3.00
Red-winged Blackbird	1	20.9%	100.0%			192	14.7%	8.3%	2.7	0.39
American Goldfinch	1	0.7%	0.0%			94	36.6%	4.3%	3.5	1.28

¹ Includes nest data from Des Plains Conservation Area (Will Co.), Goose Lake Prairie (Grundy Co.), Green River Conservation Area (Lee Co.), Midewin National Tallgrass Prairie (Will Co.), Nachusa Grasslands (Lee Co.).

² Mayfield estimates of nest success

³ Calculated as *Mayfield nest success* x *the number of birds fledged/successful nest*.

[sad97sum.tab]