

COWBIRD PARASITISM AND NESTING SUCCESS OF LARK SPARROWS IN SOUTHERN OKLAHOMA

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FRIEDMANN (1963) considers the Lark Sparrow (*Chondestes grammacus*) to be a relatively uncommon host of the Brown-headed Cowbird (*Molothrus ater*). During the summer of 1968, I made observations of 33 active Lark Sparrow nests in the vicinity of the University of Oklahoma Biological Station on the north side of Lake Texoma approximately 2 miles east of Willis, Marshall County, Oklahoma. These observations were made from 7 June 1968, through 1 August 1968. The purpose of the study was to seek information on the incidence of Cowbird parasitism upon Lark Sparrows and to gain additional nesting data on Lark Sparrows. Dr. George M. Sutton and I banded a total of 35 Lark Sparrow nestlings during the time of the study.

NESTING SITES

Of the 33 nests observed, 10 were located on the ground in pasture land which was grazed periodically throughout the summer. Another ground nest was located in a cultivated peanut field. These nests were usually placed at the bases of small herbaceous or woody plants which provided some shade during the day. Three of the ground nests, however, were built in short grasses and were relatively unprotected. The following eight species of plants were utilized as ground nesting sites: *Asclepias viridis*, *Cnidoscolus texanus*, *Trifolium repens*, *Diospyros virginiana*, *Cynodon dactylon*, *Andropogon scoparius*, *Smilax Bona-nox*, and *Arachis hypogaea*.

Twelve species of plants were used as nesting sites by Lark Sparrows that built their nests above ground (Fig. 1): *Cupressus arizonica*, *Pinus* sp., *Juniperus virginiana*, *Rosa setigera*, *Lagerstroemia indica*, *Thuja occidentalis*, *Ulma alata*, *Salix nigra*, *Quercus stellata*, *Yucca* sp., *Crataegus* sp., *Maclura pomifera*.

Three nests were unusual and warrant mentioning. Nest 23 was situated in a cavity of a dead willow (*Salix nigra*). The nest was loosely constructed and consisted of a matting of medium sized grasses upon which a lining of small grasses and rootlets was placed. When found this nest had six eggs, four Lark Sparrow eggs and two Cowbird eggs (Fig. 2). The nest was destroyed by a predator before the eggs hatched. Nest 6 was built under a "cow chip" which had been raised by grass. The "chip" completely surrounded the nest except for an opening to the southeast. Four Lark Sparrow eggs were laid in the nest; all of them hatched. A heavy rain washed away the nest before the young fledged. The foundation of nest 25 was built by a Mockingbird and the lining



FIG. 1. Lark Sparrow on nest in *Juniperus virginiana*.

placed by a Lark Sparrow. I did not observe any encounters between the two species. It appeared that the Mockingbird had abandoned the nest before its completion and only after it was abandoned did the Lark Sparrow utilize it. Two Lark Sparrow eggs were laid in the nest; both eggs hatched and the young fledged.

PREDATION

Nesting success was significantly greater for nests built above ground (44.5 per cent) than for nests built on the ground (23.7 per cent). These percentages are based upon the number of Lark Sparrows fledged per total Lark Sparrows eggs laid. The greater success of nests built above ground is probably because these are better protected from the elements and from predation.



FIG. 2. Nest 23 showing four Lark Sparrow eggs and two cowbird eggs.

TABLE 1
SUCCESS OF PARASITIZED AND NON-PARASITIZED NESTS

Nest	Height (Meters)	Cowbird Eggs	Parasitized			Non-parasitized	
			Cowbirds Fledged	Host Eggs	Hosts Fledged	Eggs	Fledged
1	ground	1	0	3	0		
2	ground	1	0	3	0		
3	ground	1	0	3	0		
4	ground					3	0
5	ground	1	1	3	3		
6	ground					4	0
7	ground	1	0	4	0		
8	ground	1	0	4	0		
9	1.22					4	3
10	1.83					4	3
11	1.22	1	1	3	3		
12	ground					4	4
13	0.74					4	0
14	ground					4	0
15	1.02					4	3
16	1.81					4	4
17	3.66					4	0
18	4.58	1	1	3	1		
19	3.96	2	0	3	0		
20	1.94					4	4
21	1.52	2	0	4	0		
22	ground	1	0	3	2		
23	2.44	2	0	4	0		
24	6.10	2	0	3	0		
25	1.52					2	2
26	5.04					4	3
27	1.52					3	0
28	1.52					2	2
29	1.22	1	0	2	0		
30	1.22					4	4
31	0.92					3	?
32	1.22					4	0
33	2.14	1	?	1	?		
Totals		19	3	46	9	65	32

Though I had no direct evidence of predation by snakes, populations of black rat snakes (*Elaphe obsoleta*) and blue racers (*Coluber constrictor*) were known to be high in the study area during the time of the study. Of the nests under observation, 38.7 per cent were preyed upon and 16.1 per cent were abandoned

for causes other than predation. Four of the nests which were preyed upon were disrupted, indicating predation by mammals. Eight other nests were not disrupted, indicating that snakes may have been responsible for the predation.

COWBIRD PARASITISM

Fifteen of 33 (45.5 per cent) nests were parasitized by the Brown-headed Cowbird (Table 1). Wiens (1963) reported an incidence of 19.0 per cent of cowbird parasitism upon Lark Sparrows in the southern Oklahoma region for the years 1956, 1960, and 1961, based on a total of 21 nests. Of 30 incidences of parasitism reported by Friedmann, only two are known to have successfully fledged young cowbirds. Three out of 14 nests in this study are known to have fledged cowbirds. Of 18 cowbird eggs laid, 33.4 per cent hatched and only 15.8 per cent of the young were successful in leaving the nest. Forty-five host eggs were laid in the same 14 parasitized nests; 17 (37.8 per cent) eggs hatched and 9 (20.0 per cent) young fledged.

A total of 58 eggs were laid in 16 non-parasitized nests; 42 (72.4 per cent) of these eggs hatched and 32 (55.2 per cent) young successfully left the nest.

This cowbird parasitism was substantially greater among Lark Sparrows than had been previously recorded. The absence of the Bell's Vireo (*Vireo bellii*), a common host species of the cowbird (Sutton, 1967), might have caused a shift in parasitism to a less frequent host species, i.e. the Lark Sparrow. Bell's Vireo has in the past been a relatively common species of the study area.

Of 11 ground nests, 7 (63.6 per cent) were parasitized, whereas, 8 out of 22 (36.4 per cent) of the "above ground" nests were parasitized. The ground nests on pasture land were probably more easily accessible to cowbirds than those nests built in trees and shrubs, and there were larger numbers of cowbirds in the pasture land than there were in the other nesting areas.

Egg-laying by Lark Sparrows was at its greatest peak during the second week in June (Fig. 3). Cowbirds laid their greatest numbers of eggs during the first two weeks of June and the first week of July. The latest date for a cowbird egg being laid during this study was 5 July. Sutton (1967) records the latest date for egg laying by cowbirds in Marshall County as 3 July. During the second week of July, after cowbird egg-laying had ceased, egg-laying by Lark Sparrows reached another peak.

Baepler (1968) states that good evidence for double-broodedness in the Lark Sparrow is lacking and it is his conclusion that double-broodedness probably does not occur in this species. On 26 June I observed an adult Lark Sparrow feed a young Lark Sparrow on a telephone wire. This same adult was actively building nest 22 between feedings of the young bird. Although this is not

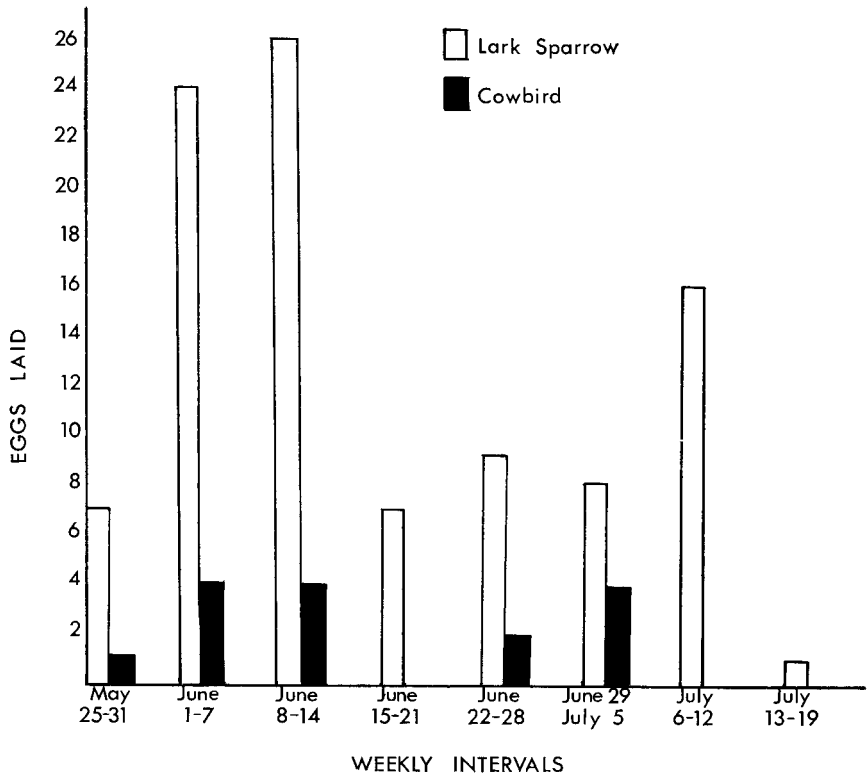


FIG. 3. Number of eggs laid by Lark Sparrows and Cowbirds in weekly intervals from 25 May 1968, to 19 July 1968.

definite proof of a second brood, it is evidence in favor of two broods being raised by the same Lark Sparrow. This points out the need for careful investigations using color-banded birds to clear up the question of double-broodedness in this species. Evidence presented in this paper does indicate that late broods, whether they be second broods or second attempts, do encounter little or no parasitism by the Brown-headed Cowbird.

SUMMARY

Data were collected on 33 active Lark Sparrow nests from 7 June 1968, to 1 August 1968 in the vicinity of the University of Oklahoma Biological Station. Parasitism of Lark Sparrows was greater than had previously been reported. A comparison of the success of parasitized versus non-parasitized nests is presented. Egg laying dates for Lark Sparrows and Cowbirds are presented and analyzed.

General nesting site data is presented along with a detailed description of three unusual nest sites. Notes on predation are also given.

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ANNOUNCEMENT

A collaborative program to study the migration of the Whistling Swan involving The Johns Hopkins University, the Canadian Wildlife Service, the U.S. Fish & Wildlife Service, the U.S. Air Force, and State and Provincial game agencies has been organized. Swans have been marked with colored bands, colored collars, and dyed feathers. Persons who saw marked swans last spring, or who see them this fall should report the details to: Dr. William J. L. Sladen, Johns Hopkins University, 615 N. Wolfe St., Baltimore, Maryland 21205. Those persons who are so located as to see large numbers of swans in migration might well contact Dr. Sladen for report forms and details about the color marking scheme.