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Lark Sparrows Breed at Rhine-Luzon Drop Zone, Camp MacKall, Scotland County, N. C.

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Two pairs of Lark Sparrows (*Chondestes grammacus*) nested at the Rhine-Luzon Drop Zone, Camp MacKall, Scotland County, in the Sandhills of North Carolina in 1988. The drop zone is a large man-maintained sandy field characterized by extensive areas of bare ground, herbaceous plant cover, and with scattered saplings, at an elevation of about 70 m. Nesting territories of both pairs of Lark Sparrows were large.

I confirmed breeding of both pairs on 17 June. One end of the drop zone is higher than the remaining portion. Here, at 0741 h, I flushed a female Lark Sparrow with one juvenile from the ground, 50 m from where the male had been recently singing. The female and juvenile flew a short distance and resumed foraging on the ground, where the female fed the juvenile at least twice. The birds flew again shortly afterward and I lost contact with them. At 0914-0917 h, I flushed the pair with the juvenile near the previous site and followed and flushed the threesome three times. Each time, they flew over 65 m, staying within the male's territory; the juvenile's flight was strong though labored.

At an adjacent territory on fairly level ground, I watched a second pair of Lark Sparrows, usually the male alone, bring food four times to the vicinity of a presumed nest-site from 0800-0817 h. At 0818 h, I located the nest which contained at least three young, about 6-7 days old. I did not closely examine the nest because I feared the young might prematurely fledge.

I returned on 22 June and collected the nest which no longer had young (AMNH 60463). The nest was built on the ground at the base of an oak (*Quercus* spp.) seedling, about 0.45 m high by 0.75 m wide. The nest was placed in a shallow depression, facing SE. Leaves from an overhanging branch of the oak shielded

it. The side of the nest at the base of the oak was compact, so the length of the outer cup was 13.0 cm at its narrowest, 14.5 cm at its widest. The outer cup was composed of grasses and one piece of string. The symmetrical inner cup, 7.0 cm across, was composed of fine grasses and rootlets. The bottom of the inner cup was firm, not flimsy. However, light passed through the cup and a thin layer of sand rested on its bottom. (See cover photo.)

In 1989, two pairs again nested at the drop zone. An unmated male was also present. The two pairs occupied territories very similar to those used by the two pairs in 1988. The territory of the unmated male was contiguous with the pair nesting on fairly level ground.

I confirmed breeding of both pairs on 4 July 1989. At 1230 h, the pair breeding on fairly level ground was feeding four nestlings, about 2-3 days old. The circular nest was built in a slight depression on the ground and shielded overhead, though not from the side, by a deciduous shrub, about 0.61 m high by 0.92 m wide. The nest faced SE and the nest-site was in a slightly elevated sandy area. Later that day, on the territory of the other pair, the male occasionally sang on the high ground while its mate was nearby, tending to two very recently fledged juveniles.

Earlier, on 29 May 1989, the pair nesting on fairly level ground brought food to nestlings at a presumed nest-site fairly close (<25 m) to the site of the confirmed nest on 4 July. The fate of this first nesting attempt is unknown and consequently, I do not know if the nest discovered within this territory on 4 July was a renesting attempt or a second brood. Double-broods for Lark Sparrow have been suspected but never confirmed (Baepler, 1968; Newman, 1970).

The breeding habitat, nest placement, and nest construction of these Lark Sparrows at Rhine-Luzon Drop Zone are in agreement with McNair (1982, 1985).

Associated proven or probable breeding species on these Lark Sparrow territories in both years combined were Northern Bobwhite (*Colinus virginianus*), Mourning Dove (*Zenaida macroura*), Common Nighthawk (*Chordeiles minor*), Northern Mockingbird (*Mimus polyglottos*), Blue Grosbeak (*Guiraca caerulea*), Field Sparrow (*Spizella pusilla*), Eastern Meadowlark (*Sturnella magna*), Orchard Oriole (*Icterus spurius*), and American Goldfinches (*Carduelis tristis*). Horned Lark (*Eremophila alpestris*), Eastern Kingbird (*Tyrannus tyrannus*), and Chipping Sparrows (*Spizella passerina*) frequently visited the Lark Sparrow territories to forage. All these associated species closely agree with those found at Derby, N.C. (McNair, 1982). The only notable difference was a pair of Killdeer (*Charadrius vociferus*) which nested at the Rhine-Luzon Drop Zone in 1989.

I only visited the Lark Sparrow territories at the drop zone on five dates from 20 May to 22 June in 1988 for a total of 15 hours and on three dates from 3 May to 4 July in 1989 for a total of 6 hours, so I have a limited amount of information about nesting, foraging, vocal, and other behaviors.

The pairs of Lark Sparrows at the nests permitted me to approach closely when they brought food to the young in both years. Small grasshoppers were the most common food item brought to the nest by both sexes (N = 12 trips), although more often by a male, even when a female was absent. This agrees with Wilson (1931) and Baepler (1968). I never saw a male offer food or feed a female off the nest, which also agrees with Baepler (1968). Only a female brooded the young. On 17 June 1988, after I approached the nest indirectly, the female fluttered off silently and flew directly away for 10 m before landing. Later, I directly approached the female

on the nest. She responded with a silent "rodent run" and feigned a broken-wing injury for 10 m.

When not at or near the nest, foraging Lark Sparrows were generally shy in 1988, and thus were difficult to watch (Brooks, 1938). In 1989, however, I closely approached foraging Lark Sparrows frequently. Lark Sparrows fed on or near the ground on seeds and small grasshoppers (Baeppler, 1968; McNair, 1982). Adults fed separately or together, depending on their other activities.

Singing by males was not the most frequent activity I observed as in 1981 at Derby, N. C., except for observations on 3 May 1989, probably because I missed the courtship period (Baeppler, 1968; McNair, 1982). The unmated male sang more frequently than the paired males in 1989. Wilson (1931) and I have noted singing activity is low when parents are tending nestlings or fledglings. Males usually sang from the tops of taller shrubs, infrequently from the ground, and occasionally in flight though I never observed a flight song, consistent with my observations at Derby (McNair, 1982) (Recordings taken in both years archived at FMNH). I also heard both extended and *sotto voce* songs. As in 1981, singing males were generally not easy to approach. Males frequently flew some distance (65-100 m) between perches before singing again.

The other vocalization I heard, from both sexes, was a quiet metallic *tic* note, given under a variety of situations, i.e., when foraging, when the male was calling to the female on the nest before delivering food or to persuade the female to leave the nest, when the pair were both near the nest with or without food, or when any adult was alarmed at my presence. Both parents together uttered a series of *tics* on 17 June 1988, when they could not deliver food to their young because I was too close to the nest.

From 1030-1150 h on 22 June 1988, the adult male on the territory with the nest was visibly disturbed by heat stress. The bird's bill was not open but it extended the wings with the carpals out, fanned its tail, and erected its feathers. In response to my intrusion, it flew quite a few times, but only over 50 m once which was unusual, and it always dangled its legs in flight. The male once sought refuge in the adjacent pine forest, which was also unusual at this locality. The temperature was about 34 C. The day was clear and dry.

Recent breeding records of Lark Sparrow in North Carolina are restricted to the Sandhills in the 1980s. Lark Sparrows nested at Derby, Richmond County, in 1981 (McNair, 1982). In 1983, I saw single adults at two sites in Derby on 17-18 May and R. Davis later saw one singing male at one site on 25 June (Chat 48:26, 1984). In 1984, H. LeGrand saw one non-singing adult in Derby (Chat 49:27, 1985). The habitat at the major breeding site is no longer suitable because the young longleaf pines (*Pinus palustris*) and scattered saplings have grown to form a densely vegetated stand.

At Nijmegen Drop Zone, Fort Bragg, Hoke County, J. Carter and others confirmed breeding Lark Sparrows at two sites within the drop zone in 1984. Three adults and three or four adults were seen at one site on 16 April and 26 June; on 5 July, three adults were seen with one juvenile. On 10 July, one adult was with two juveniles at a different site (Chat 49:27, 1985). At another locality within Fort Bragg, Hoke County, J. Carter and others saw an adult male singing on 29 April 1984 at the Holland Drop Zone (Chat 49:27, 1985). In 1985, J. Carter saw one Lark Sparrow at Nijmegen Drop Zone on 25 June (Chat 50:27, 1986). In 1987, J.

Carter and others saw one to two adults at the Nijmegen Drop Zone by May (Amer. Birds 41:418, 1987).

Near Emory, Montgomery County, J. Carter and others found one Lark Sparrow on 15 May 1988 in the North Carolina Sandhills, but did not revisit the site (Chat 53:50, 1989).

On 3 May 1989, I watched an unmated male sing from 0930-1030 h at a level grassy and sandy pasture near the tower of the Camp MacKall Airfield, Richmond County, about 4 km from the Rhine-Luzon Drop Zone, but I did not locate any Lark Sparrows at this locality thereafter (recording archived at FMNH).

In the Sandhills of South Carolina, R. Carter saw two adult Lark Sparrows (one singing male) near Lucknow, Lee County, on 25 June 1987, and one adult at the same site on 3 July (Amer. Birds 41:1424, 1987).

Only one historical confirmed breeding record of Lark Sparrow exists for North Carolina, in the Piedmont at Raleigh, Wake County, in 1890 (McNair, 1983). The A.O.U. Check-list (1957) and Baeppler (1968) state that the Lark Sparrow breeds in western North Carolina at Cranberry, Avery County, though neither Pearson, Brimley and Brimley (1942) nor the fourth edition of the A.O.U. Check-list (1931) mention this breeding record. The Cranberry record may be based on G. B. Sennett's "full grown young" (AMNH 83557) that he shot on 9 August 1886 from the top of "an apple tree in old orchard near old house on Cranberry Hotel Farm" at 915 m (Sennett, 1887; catalog entry, W. E. Lanyon, *in litt.*). Lanyon (*in litt.*) states that this Lark Sparrow specimen has nearly completed its postjuvinal molt, "for it has its adult plumage except for the retention of a dusky, streaked band across the upper chest. The rectrices and primaries are somewhat worn, certainly not fresh." Obviously, this bird could have wandered a considerable distance from its natal locality. Thus, evidence is insufficient, based on this specimen, to support the contention that this species nested at Cranberry.

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Request for assistance

Information on sitings of Least Tern nests is needed for an ongoing study. Please send information to:

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Rt. 2, Box 167
Greenpond, SC 29644

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