

Most birds were seen in crabapple thickets and all but 4 were in areas with an understory of blackberry and scrub oaks. Birds were often seen feeding on the ground in small clearings with sparse herbaceous cover, especially in a 1-year-old plantation adjacent to the nesting area. The major food item (Table 1) was three-seeded mercury (*Acalypha virginica*), an important food in young pine stands in the Piedmont region (Landers et al., Oriole 42:10-12, 1977). This plant flourishes in areas of disturbance associated with tree planting or agricultural practices where little or no herbicides are applied.

Seedling pine stands with patchy herbaceous cover provide a variety of desirable small seeds for food. The sapling stage plantations, if interspersed with bushy thickets and sparse ground-level vegetation, can provide favorable sites for nesting and roosting for Ground Doves and other species.—J. LARRY LANDERS AND JAMES L. BUCKNER, *International Paper Company, Southlands Experiment Forest, Bainbridge, Georgia 31717. Accepted 7 Sept. 1978.*

*Wilson Bull.*, 91(3), 1979, pp. 468-469

**Loggerhead Shrike eggshell thickness in California and Florida.**—Eggshell thinning has been documented in numerous birds of prey. Magnification of pesticide residues through the food chain of these species is likely responsible for alterations in shell structure (Anderson and Hickey, Proc. 15th Int. Ornithol. Congr., 514-540, 1972; Cooke, Environ. Pollution, 4:85-152, 1973). Loggerhead Shrikes (*Lanius ludovicianus*) prey on invertebrates and small vertebrates (Bent, U.S. Natl. Mus. Bull. 197, 1950), and thus may be susceptible to residue buildup through their diet as reflected by eggshell thickness.

All eggs measured were at the Western Foundation of Vertebrate Zoology. Eggs collected in California (1948-1976) and Florida (1950-1968) were compared to eggs collected prior to 1947 (pre-DDT). The length and breadth of blown eggs were measured (nearest 0.01 mm) with dial vernier calipers and weighed (nearest 0.001 g) on a Mettler P 120 balance. A "shell thickness index" (Ratcliffe, Nature, 215:208-210, 1967) was calculated for all eggs. All post-1947 indices were combined as results did not vary between decades. Data on pesticide content of shrike eggs were not available.

Little difference was found in shell indices between pre- and post-DDT Loggerhead Shrike eggs (Table 1). The minor change in the California sample was likely attributable to observer error and/or sample size. About 28 clutches of Loggerhead Shrike eggs must

TABLE 1  
THICKNESS INDICES OF LOGGERHEAD SHRIKE EGGS

Locality	Mean thickness index $\pm$ SE (mm)		Percent change
	Pre-1947	Post-1947	
California	0.52 $\pm$ 0.004 (20/113) <sup>a</sup>	0.53 $\pm$ 0.005 (29/157)	+1.92 <sup>b</sup>
Florida	0.52 $\pm$ 0.005 (17/81)	0.52 $\pm$ 0.006 (14/66)	—

<sup>a</sup> Total number of clutches/total number of eggs within clutches.

<sup>b</sup>  $P > 0.05$ ,  $df = 47$ ,  $t$ -test.

be measured to detect differences of 5% in shell thickness (Klaas et al., *Wilson Bull.* 86:156-164, 1974). Klaas et al. (op. cit.) calculated a thickness index of 0.515 for shrike eggs collected in Florida ( $N = 73$  clutches) prior to 1943, which was nearly identical to indices calculated in this study.

The diet of shrikes is usually less than 30% vertebrates (Miller, *Univ. Calif. Publ. Zool.* 38:11-242, 1931). Pesticide accumulation may have been insufficient to cause eggshell thinning in shrikes. However, pesticides can cause reproductive failures even in the absence of shell thinning (Fox, *Wilson Bull.* 88:459-477, 1976). Although stable in the western United States, shrike populations are declining over much of the remainder of their range (Arbib, *Am. Birds* 31:1087-1097, 1977). Studies on the effects of low dietary pesticide levels on the viability of shrike eggs would be useful.

I wish to thank C. E. Grue, C. A. Campbell, and E. E. Klaas for reviewing the manuscript. Financial support during the study was granted by the Western Foundation of Vertebrate Zoology.—MICHAEL L. MORRISON, *Western Foundation of Vertebrate Zoology, 1100 Glendon Ave., Los Angeles, California 90024.* (Present address): *Dept. Fisheries and Wildlife, Oregon State Univ., Corvallis, Oregon 97331.* Accepted 19 Sept. 1978.

*Wilson Bull.*, 91(3), 1979, pp. 469-470

**First sight records of Lincoln's Sparrow for Costa Rica.**—Lincoln's Sparrow (*Melospiza lincolnii*) has been recorded south to El Salvador and Honduras; there are also 2 records (including a specimen) for Panamá (A.O.U., Check-list of North American Birds, Baltimore, 1957; Ridgely, Guide to the Birds of Panama, Princeton, 1976). Therefore, Costa Rica and Nicaragua constitute a hiatus in the species' known winter range. While studying North American migrants at Monteverde on the Pacific slope of the Cordillera de Tilarán, northwestern Costa Rica (10° 18' N, 84° 49' W) during the winter of 1976-77, I observed a single Lincoln's Sparrow on 3 occasions. On 9 January, I "spished up" a bird from dense tall grass on a hillside. On 17 February, Thomas Kemp, Marcie Lawton and I saw another (?) bird fly up from dense grass into a low shrub on a steep hillside. Spishing also brought this bird into clear view several times. Finally, on 20 February I saw a Lincoln's Sparrow at close range in short dense grasses and malvaceous forbs along a roadside. All these locations are less than 1 km apart and between 1390 and 1440 m elevation near the center of the Monteverde community, so it is possible that all 3 observations represented a single individual.

Each time the bird was observed in full sunlight through 8× binoculars. In both markings and actions, the birds were typical of the many Lincoln's Sparrows I have seen in North America except the buffy breast band was not evident (Lincoln's Sparrows occasionally lack this feature). The only other sparrow-like finch at Monteverde is the resident Rufous-collared Sparrow (*Zonotrichia capensis*), of which I saw many each day. Immature *Z. capensis* bear a superficial resemblance to *Melospiza* sparrows. During January-February very few *Z. capensis* were in the immature plumage; I saw only 2 such birds during my stay. Both were easily recognizable by their uneven upper breast streaking (heaviest on the sides of the neck), noticeably white throat, no eyering or malar stripe, the beginnings of a rufous nape patch, noticeably notched tail, and more stocky shape than *Melospiza lincolnii*. Rufous-collared Sparrows rarely used the overgrown habitats where Lincoln's Sparrows were found; rather, they preferred the vicinity of fencerows or clumps of small trees in open, close-cropped pastures.