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### DIFFERENCES IN HABITAT OF EASTERN AND WESTERN MEADOWLARKS IN HARVEY COUNTY, KANSAS

By DWIGHT R. PLATT

Lanyon (1956) studied habitat preferences of Eastern and Western meadowlarks, *Sturnella magna* and *S. neglecta*, in their area of sympatry in the north-central United States. He found that habitat differences were distinguished most consistently by environmental moisture. The Eastern Meadowlark is found in more moist habitats, while the Western Meadowlark is found more abundantly in dry environments. Tordoff reported that in Kansas Eastern Meadowlarks have an affinity "for smaller fields, deeper vegetation and damper soils, whereas the western birds show a preference for the larger fields, shorter vegetation and better drainage." (Lanyon, 1956:101).

Both species of meadowlarks are common in Harvey County, Kansas. There are two large areas of distinctly different habitats in central and western Harvey County. In the western part of the county is an area of sand prairie underlain by a relatively impervious subsoil (described by Doell, 1938). The low areas between sand dunes are flooded during part or all of the year, forming many small ponds and marshes. The area is used mainly as pasture. The vegetation is variable—tall bluestem grassland, shrubby grassland, low, weedy, sparse vegetation, etc.—depending upon the intensity of grazing and the stability of the dunes. This area is in marked contrast to the level, well-drained, cultivated fields of wheat, alfalfa, and grain sorghum in the central part of the county.

There is a differential distribution of the two species of meadowlarks in these two areas of Harvey County; this distribution supports Lanyon's thesis. On April 27, 1963, the Field Biology class from Bethel College took a census of singing male meadowlarks by driving slowly west from Newton, Kansas. The count was made on nine miles in the central part of the county and on three miles in the sand prairie area. The results (Table 1) supported my earlier impression that the Eastern Meadowlark is more abundant in the poorly drained sand prairie area. This is another instance of differential habitat distribution in an area of sympatry of the Eastern and Western meadowlarks, with environmental moisture due to differences in drainage being an important factor. The depth of vegetation seems to be less important since Eastern Meadowlarks were abundant in both moderately-grazed and heavily-grazed pastures.

TABLE 1  
CENSUS OF SINGING MALE MEADOWLARKS IN HARVEY COUNTY, KANSAS, APRIL 27, 1963.

	Miles Traveled	Number of Singing Males	
		<i>S. magna</i>	<i>S. neglecta</i>
Central Harvey County	9	43	47
Sand prairies of western Harvey County	3	42	4

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*Department of Biology, Bethel College, North Newton, June 29, 1963.*

### OCCURRENCE OF THE PYGMY NUTHATCH IN KANSAS

BY MAX C. THOMPSON AND CARL S. HOLMES

On November 23, 1961, Carl S. Holmes observed a flock of about ten Pygmy Nuthatches, *Sitta pygmaea*, in Sims Park, Wichita, Sedgwick County, Kansas. They were feeding in a grove of juniper and pine trees. The flock was subsequently observed on the following dates: November 26, December 2, 27, 30, 1961, January 1, 3, 4, 6, 7, 13, 1962. Holmes returned to the area on February 3 but could no longer find the nuthatches.

On December 30, 1961, a male, weight ten grams, and moderately fat, was taken by Max C. Thompson in Sims Park. The specimen was determined to be of the subspecies *S. p. melanotis*. It was deposited in the University of Kansas Museum of Natural History and bears catalogue number 40962.

The Pygmy Nuthatch is resident throughout its breeding range and apparently does not migrate to any great extent, except altitudinally (Ligon, 1961:214). The closest the Pygmy Nuthatch comes to Kansas in the breeding season is in Kenton, Cimarron County, Oklahoma (A.O.U. Check-list, 1957:401). This is approximately fifty miles from southwestern Kansas and 313 miles west-southwest of Wichita.

Due to the seeming lack of extensive migration in the Pygmy Nuthatch, the species probably should be considered a casual winter resident in Kansas.

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### QUANTITATIVE SUPERNORMAL RELEASERS FOR NESTBUILDING AND EGG-LAYING IN STARLINGS

BY RICHARD F. JOHNSTON

Supernormal releasers may be defined as stimuli to which animals show responses beyond those elicited by normal stimuli. Thus, some birds are attracted to more contrastingly marked, or inordinately large, models of their eggs over their actual eggs, and many hole-nesting species select artificial nestboxes over natural cavities ordinarily used (see Tinbergen, 1951:44-46; Thorpe, 1956:33). Concerning hole-nesting birds, some species almost completely forego nesting in naturally-occurring cavities when artificial nestboxes are made available in suitable numbers; well-known examples of this are found in English populations of the Great Tit, *Parus major* (Hinde, 1952:100), and eastern North American populations of the Purple Martin, *Progne subis* (Allen and Nice, 1952:614). Discussion concerning nestboxes as supernormal releasers has usually been organized around those aspects of artificial sites that exceed or surpass qualitatively those of natural sites. The observations outlined below appertain in part to qualitative aspects of nestboxes, but also concern a quantitative factor heretofore unremarked.

On March 5, 1961, a colony-house of 72 compartments for Purple Martins was set up in Lawrence, Kansas. The house has four independent units of 18 compartments each, bolted together atop four steel poles. Each unit is four feet long, two feet high, and contains three rows of six compartments; they face the cardinal directions of the compass. In late March a few Starlings, *Sturnus vulgaris*, began

to use the house, and by early April two pairs had established residence. The two males each maintained exclusive use of separate 18-compartment units (those facing west and south); this is consistent with the territorial behavior of male Starlings in North America (Kessel, 1957:264). The remaining half of the house was used occasionally by these birds, and by one or two others, for nestbuilding activity. Events of special interest in the behavior of these birds can best be considered under the subheadings below.

*Nestbuilding.*—After seemingly desultory nestbuilding activity by at least five Starlings had occurred for perhaps a week, it was found that on April 7 no less than 41 compartments had received attention by the birds and contained some nesting material. Five of these compartments had been visited repeatedly and contained dense mats of dead plant parts, corresponding to nests about one-quarter completed. On April 11, 48 compartments had nesting material in them, on April 18, 62 compartments had some material, and on April 25, all 72 compartments had some material. At this point in time no compartment had a completed nest, but seven had partial nests in such a stage that one day's activity by the birds could have brought them to completion. These seven actually were completed by April 30, but nestbuilding activity continued well beyond this time on other, incomplete nests.

Prior to this time, a third female Starling had been seen bringing nesting material to several compartments on the east side of the house. Because no territory had been set up on the east and because Starlings were infrequently present there, it seemed likely that this bird, if mated, actually had a nest elsewhere, probably in a cavity in one of some medium-sized walnuts and elms about 50 yards from the house. The bird was taken on April 18, 1961, and autopsy showed the bird to have ovulated twice. The ovary had two large, maturing follicles and two ruptured follicles; a shelled egg was in the oviduct. One egg had thus been laid on April 17, but it was nowhere in the colony-house. In fact, this bird did not have a completed nest in which to lay in the colony-house; the three compartments to which the bird took most of its nesting material had nests about one-third completed.

*Egg-laying.*—Three of the seven nests completed by April 30 were on the west side of the house; one of these received a complement of five eggs in the period from May 1 to May 5. Such deposition and schedule in egg-laying is normal, and this clutch can be ignored for present purposes.

Of the four nests completed on the south side, three began to receive eggs on successive days, April 30 to May 7. A total of eight eggs was laid, presumably by the one female; it put three eggs into each of two nests and two in the third. From May 7 to May 11 this bird tended to incubate the two-egg set, but also spent time on one of the three-egg sets. The eggs were removed from all of these nests on May 11 by an unknown agency.

*Discussion.*—Two distinct kinds of non-modal Starling behavior seem to have been stimulated by the concentration of nesting compartments in the 72-room colony-house, namely supernormal nestbuilding and broadcast egg-laying.

We may consider the 72-room house to represent an ideal set of nestsites for Starlings, and each compartment can be considered to be a better nesting site than any of the potentially available natural sites in the area. For the five Starlings observed, the amount of nestbuilding behavior and its persistence in time fits the hypothesis that each compartment represented a supernormal releaser of nestbuilding activity. Moreover, any compartment with an incomplete nest seemed capable of stimulating some nestbuilding by these birds, even after they had completed one or more nests and had begun egg-laying. Therefore, each of the 72 rooms represents a qualitative supernormal releaser, and all in the aggregate a quantitative supernormal releaser, of nestbuilding behavior.

Kessel (*loc. cit.*) noted an approach to the behavior outlined here, but her birds had only ten compartments with which to deal, and completed but one nest, leaving nine variously incomplete.

Broadcast egg-laying is not easily accounted for because a great number of stimuli are involved for a bird laying eggs. It is clear that the female using the south side of the house did work on all four nests completed on that side, and each of these nests must initially have presented the same degree of stimulus to lay eggs. However, after laying one egg the bird could have been expected to have responded

to the nest with egg in a way different from any response to the other three nests. That is to say, one nest could reasonably have been expected to have received all the eggs this female was to lay. That three nests in fact received eggs suggests that stimuli from completed but empty nests were strong enough to induce broadcast egg-laying, which is significantly non-adaptive behavior, in this one female. This conclusion must be considered provisional (Davis, 1958), but it may well indicate one degree to which an aggregate of effective, normal stimuli (completed nest-cups; see, for example, Hinde and Warren, 1959) can act in concert as a supernormal releaser of broadcast laying.

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#### NOTES AND NEWS

At our 15th Annual Meeting earlier this year the Society decided to supplement its quarterly bulletin with a monthly one- or two-page Letter, to be handled in the editorial offices. The Letter would be mimeographed and would be concerned with dissemination of information about members of the Society, unusual opportunities to find certain birds, localities momentarily exhibiting notable quantities of birds, conservation efforts requiring immediate attention, and the like. Please send in current field observations, notes concerning members, and any other item of information suitable for such a Letter, whenever you have material available; this should be considered an open and standing opportunity for Society-wide communication.

At the recent, 81st Annual Meeting of the American Ornithologists' Union, held in Gainesville, Florida, four members of K.O.S. contributed to the paper sessions: Dr. R. M. Mengel on speciation in wood warblers, Marion Phillips on anatomy of swallows and doves, John Newman on behavior of Evening Grosbeaks, and the undersigned on local differentiation in House Sparrows. Dr. Mengel was reelected Editor of *The Auk*. Mrs. Phillips and Mr. Newman both received Marcia B. Tucker Awards for costs of travel from Lawrence to Gainesville. Dr. Ralph S. Palmer received the Brewster Medal for his work on *The Handbook of North American Birds*. The Annual Meeting of the A.O.U. for 1964 will be held at the Museum of Natural History, The University of Kansas, Lawrence, from August 30 to September 3; members of K.O.S. should plan now to attend these meetings, which will present an unusual opportunity for citizens of the Midwest to see what the world's largest ornithological society is presently concerned with.

Date of publication of this number September 9, 1963, at the Museum of Natural History, The University of Kansas, Lawrence, Kansas.—R. F. Johnston, Editor.