

Lapland Longspur.—

<i>Animal matter:</i>	INSECTA	DIPTERA	TIPULIDAE	
		LEPIDOPTERA	PIERIDAE	
		COLEOPTERA	CURCULIONIDAE	
		COLEOPTERA	— — —	(beetle wing)
	GASTROPODA	— — —	— — —	small snail
<i>Vegetable matter:</i>	(Moss capsules and leaf remains)			
	(Seeds of <i>Carex</i> and <i>Draba</i>)			
	(Unidentifiable seeds)			
<i>Mineral matter:</i>	(Traces of gravel)			

Smith's Longspur.—

<i>Animal matter:</i>	INSECTA	HETEROPTERA	SALDIDAE	
		COLEOPTERA	CARABIDAE	
		COLEOPTERA	STAPHYLINIDAE	
		COLEOPTERA	CHRYSOMELIDAE	
		COLEOPTERA	CANTHARIDAE	(<i>Podabrus</i>)
		HYMENOPTERA	TENTHREDINIDAE	
	ARACHNOIDEA	ARANEIDA	LYCOSIDAE	
		ACARINA	— — —	(Mites)
<i>Vegetable matter:</i>	(Moss capsules and leaf remains)			
<i>Mineral matter:</i>	(Traces of gravel)			

*Ithaca**New York*

THE EFFECT OF TREE REMOVAL
ON A MOURNING DOVE POPULATION

BY H. ELLIOTT McCLURE

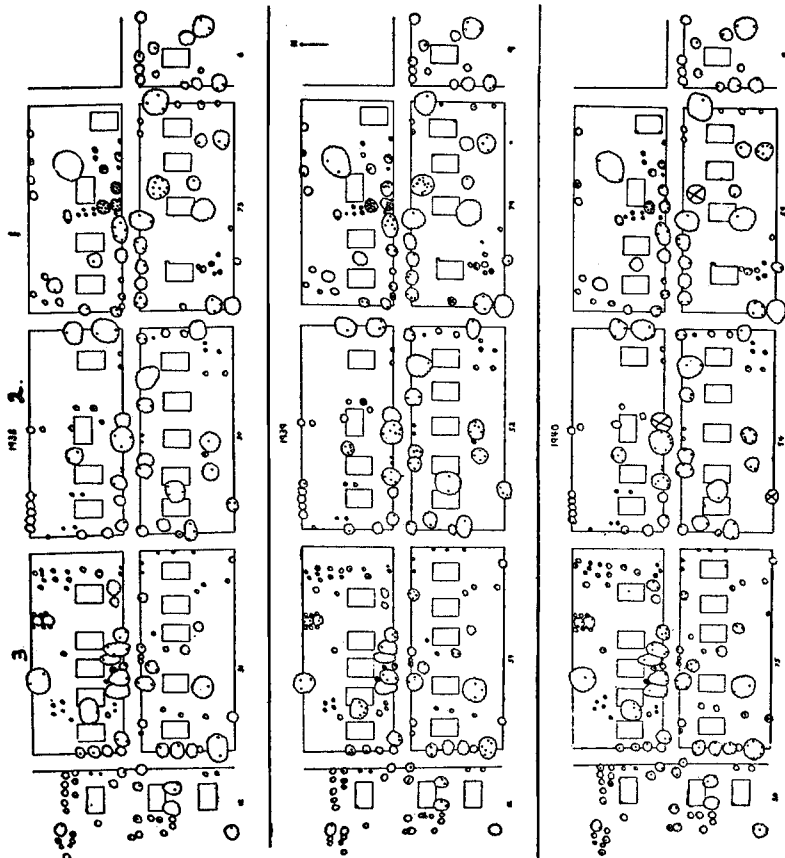
Plate 26

DURING the course of observations on the Mourning Dove in southwestern Iowa, it became evident that certain individual trees or groups of trees within the town of Lewis and nearby farmyards were preferred as nesting sites by the birds. These trees were so consistently used year after year that the term "patron trees" is suggested for them. Although the Mourning Dove is not necessarily gregarious in its nesting habits, some trees are so desirable as nesting sites that many pairs will use them. The birds' territorial demands are elastic enough that they submit to crowding to the point that sometimes there are as many as seven active nests in a tree. The upper figure in the accompanying photographs (Plate 26) shows a group of red pine, *Pinus resinosa*, near Lewis and the lower figure shows a group of one Norway spruce, *Picea abies*, two blue spruce, *Picea pungens*, four apples, *Pyrus malus*, one large American elm, *Ulmus americana*, and several other trees on a private property within

Lewis which were preferred nesting sites. The third pine shown in the upper figure was the one that had seven active nests as mentioned above.

The history of nesting at the town site for 1938, 1939, and 1940 demonstrated the importance of all trees within a preferred situation. Apparently there is an interrelationship between the trees and the birds, and, possibly, the surrounding terrain. In Text-fig. 1 the positions of nests placed in trees on three square blocks, or approximately ten acres, in the better nesting territory of Lewis are shown for 1938, 1939, and 1940. The clump of trees shown in Pl. 26, lower figure, was in the center of the east block on the north side of the street. Not shown in the photograph was a large tamarack, *Larix laricina*, about sixty feet high, from beneath which this photograph was taken. In the center one of the three blocks there were fewer trees, while in the middle of the westernmost block there was a group of box elders, *Acer negundo*, and elms in somewhat the same relationship to each other as were the evergreens and tamarack farther up the street. The tamarack was in perfect health and was one of two within Lewis which, because of their great height, were to be seen as landmarks for miles around. The property bearing this tree changed hands during the winter of 1939-40 and at the whim of the new owner the beautiful tree was cut down. The effect of this tree removal upon the nesting population of doves was startling. Trees removed from areas of low population density did not radically affect dove nesting. The trees marked X in Text-fig. 1 indicate those that were removed.

The use of patron trees is of importance to the success in the breeding of a dove population. The average number of nests built in patron trees in town was 2.6 in 1938 and 1939, and 2.1 in 1940. Because of greater localization of nesting activity in the country, the number of nests per patron tree was 3.4 in 1938, 3.5 in 1939, and but 2.1 in 1940. In 1938, the largest number of nests to be built in one tree in town was in the Norway spruce above mentioned. It then supported ten. In 1939, it was again the most important patron tree, containing twelve nests. The large tamarack bore nine nests in 1938 and eleven in 1939; these were used fifteen and fourteen times respectively. The nests built in the Norway spruce were used thirteen times in 1938 and twenty-one times in 1939. In 1940, use of this tree was reduced to seven nests and seven nestings. In the country in 1938, the largest numbers of nests were built in red pines. One, across the road from the group shown in Pl. 26, upper figure, supported fourteen nests which were used twenty-one times. In 1939, red pines continued



TEXT-FIGURE 1.—Diagram showing the positions of Mourning Dove nests in three blocks at Lewis, Iowa, in 1938, 1939, and 1940. Dots indicate nests and figures beneath each block show the number of nests in that block.

to be the most heavily used trees; one supported thirteen nests which were used seventeen times. Mourning Dove nesting throughout the study area showed a reduction in 1940, but red pines were still important, and one supported seven nests that were used ten times. Sixty per cent of the conifers that were used as nesting sites in town were patron trees, whereas forty-one per cent of the deciduous trees used by doves were patron trees. In the country, patron conifers ranked so high that among the trees of fourteen farmyards, a cemetery and a sixty-acre park, as well as several wooded gullies, thirteen trees bore twenty per cent of the nests in 1938, and sixteen trees bore twenty-five per cent in 1939. From this it would seem apparent that removal of a patron tree could be expected to produce an effect upon the birds.



(Upper figure) GROUP OF RED PINES NEAR LEWIS, IOWA. FAVORITE PATRON TREES FOR MOURNING DOVES. *(Lower figure)* FAVORITE NESTING SITE FOR DOVES IN LEWIS, IOWA. THE TREES IN THIS YARD SUPPORTED 35 NESTS IN 1939.

Beneath the drawing of each block for each year in Text-figure 1 is a numeral indicating the number of nests built that year. In 1938 block 1 contained seventy-three nests, while blocks 2 and 3 had respectively thirty and thirty-one nests. Nesting throughout Lewis increased in 1939, but in block 1 the increase was not great, raising the total to seventy-nine; while in block 2 the number was fifty-two, and in block 3, fifty-four. Either as the result of the removal of the tamarack in 1940, or because the removal of the tree had a contributory action, the total number dropped to fifty-nine. In block 2 there was little or no change (total, fifty-four nests), while in block 3 there was a considerable increase in the nesting population. Here the nests increased to seventy-five. In other words, apparently sixteen pairs left block 1 and sought out the trees of block 3. An examination of Text-figure 1 will show the positions of the nests, and it can be seen how the group of box elders and elms in block 3 came into use in 1940. The number of nests built in the partial blocks to the east and west shows an interesting correspondence with the rest of the population movement. The number of nests in the partial block to the east was six in 1938, increased to nine in 1939, and was eight in 1940. Evidently the birds did not move in this direction. The number of nests in the partial block to the west was twelve in 1938, twelve in 1939, and twenty in 1940, indicating an overflow from the increase in block 3.

There was another interesting result of the loss of this tree, although it may be merely a coincidence. In 1938, none of the doves built nests in eaves troughs in the three blocks. In 1939, two nests were built in eaves troughs in block 1 and one in the partial block to the west. When the birds returned in the spring of 1940 and sought their favorite trees, the tamarack was gone, and they seemed to seek to nest near where it had been, for in the neighboring three houses seven nests were built in eaves troughs, while within blocks 2 and 3, four more nests were found in eaves troughs.

It is believed from this three-year observation that nesting populations of doves are subject to considerable change as a result of change within or among the nesting sites. That this change need not be great is shown, for had there not been a close association in the minds of the birds between the various trees in block 1 they might simply have nested in trees other than the tamarack. Evidence would indicate that they moved westward as a group and nested in another favorable situation.

Ord

Nebraska