

rences of such plants. Theoretically, therefore, we ought to find more constancy, i.e., fewer race variations among species inhabiting the coniferous forest than among those species whose nesting localities are restricted to more or less open deciduous growths of trees and shrubs occurring occasionally along streams or the shore, such as small aspens, willows and alders, and this is what we do find. The easterner will not fail to note the fact that such patches of willows and alders are often miles apart in certain sections and occur as small thickets situated notably at the upper ends of little bays where a small stream often enters. Here the Song Sparrows nest, perhaps in family groups, and their distribution is just as local and just as isolated as the thickets themselves. Moreover, these patches of deciduous growths are only able to exist because in the close and complex competition for the occupancy of such areas, between the conifers and the non-conifers, the latter are best fitted to do so, and such adjustment is relatively of a very permanent character (probably often existing for centuries in Alaska) in primitive regions where man has not been continually destroying nesting localities in some sections and creating new ones in others.

*King Street, Cohasset, Massachusetts.*

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## THE MOURNING DOVE (*ZENAIIDURA MACROURA CAROLINENSIS*) AT PANORA, IOWA.

BY L. L. SNYDER.

### *Plate XV*

THE following paper records the present status and some of the habits of the Mourning Dove (*Zenaidura macroura carolinensis*) in the vicinity of Panora, Iowa, with special reference to a nesting pair which exhibited either peculiarities, or, if typical, behavior not usually recorded. Panora is in the center of an agricultural district, the region to the north and east being a rich, level prairie, while immediately south and west of the town the Middle Raccoon River has cut its course along the terminal moraine of Iowa's last glacier. This rugged section is more or less wooded, but

beyond, a rolling farm country extends. The groves, orchards and shade trees of the surrounding farms furnish ideal nesting sites for the Mourning Dove and it finds food in abundance in the grain fields, hog lots, along the railroad right-of-way and country roads. Because of these favorable conditions, together with a lack of shooting, the species is an abundant one. It invades the town to nest, building in the shade trees along the streets and about the lawns.

The species is an early spring arrival, pairs being seen during the first week of April. Nesting is soon started, reaching its height in May, but some pairs are thus occupied until late August. The usual number of broods is two, but it is probable that some pairs rear three. I have never observed any spectacular courtship performance on the part of the male bird,<sup>1</sup> but he is at all times attentive to the female except when nesting duties separate them. One seldom sees a lone bird in summer, this being especially noticeable when making a railroad journey through a region where Mourning Doves are abundant. In late summer the young and old congregate in small flocks which may be seen picking up waste grain and the seeds of many plants along the country roads or in open fields. Occasionally a few remain during the winter, a flock of sixteen birds having been reported to the writer as feeding about a farm yard during the month of January, 1922.

The nesting site, speaking of the species throughout its range, is greatly variable, but in this locality I have known them to use only trees or climbing vines, the elevation varying from four to fifteen feet. A horizontal limb is often selected, although a heavy fork in orchard trees is commonly used. They seem to show a preference for evergreen trees which are commonly planted for windbreaks bordering farm yards, but fruit trees, willows, walnut, box elder, maple and oak are also suitable for them. Wild grape vines are frequently used if favorably situated. I have seen the Mourning Dove make use of a discarded Robin-nest as a foundation for its own simple structure, but I have never observed it using the nest of another species without constructing its own nest upon it. The material used in building the nest is small twigs,

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<sup>1</sup> Barrows, *Michigan Bird Life*, p. 253.

rather uniform in size, and occasionally a lining is added, made from dry grass.

The male bird is, apparently, as attentive to nesting duties as is the female. According to Bendire the female builds the nest unaided,<sup>2</sup> but the pair under observation during June and July, 1921, both participated in constructing the nest. The male was seen carrying material which the female placed in position. After the nest was completed the two eggs were deposited at an early hour on consecutive days. The male was always found on the nest during the day, and by the use of a flashlight the female was found covering the eggs at night. Sex identification was easily made, both birds being well marked, and the nest was located directly under a window of the house where I was staying. Incubation required fourteen days, the eggs hatching on consecutive days as deposited. They were covered at all times, the parents changing rather regularly between eight and nine o'clock in the morning, and five and six o'clock in the afternoon. If flushed from the nest the parent feigned injury, especially if pursued, but would soon return when all was quiet. The newly hatched young were covered by the parents almost continuously for four days. Their condition at that time was extremely altricial but they developed rapidly. Although the nest was not under observation constantly, on no occasion did I see the female feed the young, but from a distance of six feet I frequently saw the male feed them. On several occasions the female was seen in the nesting tree but not near the nest. Judging from the number of occasions on which the male was seen feeding the young it seems evident in this case that the male performed the major part of this duty.

After the young had developed into half-grown birds, the approach of the parent caused them to stand in expectancy, their wings quivering in excitement. Both young would thrust their beaks into the parent's gape simultaneously, the softened food being regurgitated into the throat by a pumping movement of the parent's head and neck. This was an amusing procedure, giving one the impression that the young had become caught and that the parent was striving to free them. After feeding, the male

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<sup>2</sup> Life Histories of N. Am. Birds, p. 142.



MOURNING DOVE.

1. Settling on eggs.

2. Feeding the young.

would frequently remain near the nest for a time, sometimes giving his soft call notes. No attempt was made on the part of the parent to clean the nest, nor did the young exhibit any instinct which assisted nest sanitation. The sanitary importance of this is small since the droppings soon dry, but I believe they aid materially in supporting the loose twig structure at the time the young become most active in the nest.

In the intervals between being fed the young usually squatted quietly in the nest, both facing in the same direction, but at times they would exercise by stretching their legs and wings, or by clinging lightly to the nest with their feet and rapidly beating their wings. A day or two before leaving the nest they would walk out and back on the supporting limb. This encouraged them to venture still further, finally abandoning the nest entirely. They remained in the nesting tree for two days before they were seen to fly to the ground beneath. Once on the ground they eagerly searched for food, flying back to the tree if startled. After the first day of this precocial existence they disappeared from the vicinity altogether.

Three days later, on July 3, the parents started remodeling the old nest. This was completed in two days and on July 5th an egg was deposited in the nest. On the following day a second egg was deposited. These hatched on July 19 and 20 respectively. Up to the time when my stay was ended the behavior of the pair was without variation from that recorded on the first brooding.

The Mourning Dove is one of the species that has become adapted to the conditions brought about by man. It flourishes in this cultivated area where nearly all trace of original conditions has been erased. It is almost as much at home on an Iowa farm as is the Domestic Fowl and the ventriloquial call of the male is ever associated in my mind with this agricultural region. In its relation to agriculture the species has been proved an asset. Because of this, and other features such as a growing public sentiment in favor of bird protection, it does not face the dangerous agencies which must have destroyed the Passenger Pigeon. When one considers the habits of the species: that it is a poor nest builder; that its eggs are conspicuously white and few in number (2, frequently 1); that the nest is often placed with inadequate support,

it seems there are numerous chances for disaster. The present status of the species, however, proves that these dangers are insignificant in their effect. I have seen the young of the Mourning Dove successfully reared in a nest located in a fallen willow which had lodged in another tree in a most precarious position. While not a prolific species, both parents are diligent workers in attending to nesting duties. They are not easily discouraged, enduring mishaps in a hardy manner, usually replacing a failure by a success. After examining their habits and considering the ecological conditions of the region, the future status of the species may be predicted as favorable.

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## REMARKS ON METHODS IN MEASURING BIRDS

BY (MRS.) ELSIE M. B. REICHENBERGER.

WHEN we look into the history and development of methods of measurements now current in Europe and in America we are forced to conclude that they have originated from the judgment of one or two ornithologists in each hemisphere. There does not seem to be evidence that either the European or the American systems are the result of deliberation on the part of the combined profession such as I have been assured is the case in engineering, which science is also dependent upon precision of measurement.

I have had the privilege of discussing with Mr. Robert Ridgway and others the history of measurements during the past fifty years. In the 'Manual of North American Birds,' 1887, p. 9, Mr. Ridgway in speaking of wing measurements writes as follows: "Length of wing is from the bend or carpal joint, to tip of longest primary, the rule being laid along the outer or convex side and the wing brought up close to it for its entire length." However, in his later work in the 'Birds of North and Middle America,' 1901, Part I, p. xv, we notice the change from the European method previously employed to the then established American method. When I asked Mr. Ridgway to give me information about methods formerly in use and why or when he had changed, he wrote and gave me