

# Kansas Ornithological Society

## BULLETIN

PUBLISHED QUARTERLY

Vol. 17

September, 1966

No. 3

### NESTING RED-TAILED HAWKS IN LYON COUNTY, KANSAS

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#### INTRODUCTION

From 1 March to 12 May 1965, I located and observed 22 nests of the Red-tailed Hawk (*Buteo jamaicensis*) in Lyon County, Kansas. The study area included the southern two-thirds of Lyon County, or 484 square miles. About 100 miles of road were covered by car each week while locating nests, and each nest was checked at two- to three-week intervals. Certain portions of the county, especially those near Reading in the northeast, and along the southwestern border, are treeless, for the most part, and appear to support few pairs of Red-tailed Hawks. Perhaps because it was checked only after the trees were leaved out, I failed to find nests in the southwestern corner of the county. The general habitat, type of nest tree, estimated height of the nest above the ground, type of nesting material used, clutch size, color of eggs, and number of young hatched for each nest were recorded.

TABLE 1  
TREES USED BY NESTING RED-TAILED HAWKS

Tree Species	Number of Nests	Per cent
Cottonwood	9	41.0
American Elm	6	27.0
Sycamore	3	14.0
Osage Orange	1	4.5
Willow	1	4.5
Black Walnut	1	4.5
Hackberry	1	4.5
Total	22	100.0

#### HABITAT AND NESTS

Nests were most commonly located in isolated groups of tall trees in farming or pasture areas. Many of the nest trees were near small creeks, but only one nest was near a large river. Nests were not less than one mile from each other, but grouping seemed to be evident.

Red-tailed Hawks in Lyon County nested at an average height of 40 feet, with extremes of 20 and 70 feet. Johnston (*The Breeding Birds of Kansas* (Univ. Kansas Publ., Mus. Nat. Hist.), 12, 1964:607-608) gives an average height of 40 feet for 36 other Kansas Red-tailed Hawk nests. Trees selected for nesting in Lyon County were cottonwood (*Populus deltoides*), American elm (*Ulmus americana*), sycamore (*Platanus occidentalis*), osage orange (*Maclura pomifera*), willow (*Salix* sp.), black walnut (*Juglans nigra*), and hackberry (*Celtis* sp.) (see Table 1).

The nests were usually constructed entirely from the branches of the tree in which they were placed, but sometimes they also included red cedar (*Juniperus virginiana*) branches, corn and sorghum stalks, corncobs, and buffalo-bur nightshade (*Solanum rostratum*).

## EGGS AND YOUNG

The first Red-tailed Hawk eggs were noted on 10 March. In all, 17 nests with eggs were found, and five additional nests were found after the young had hatched. The 17 nests contained a total of 33 eggs of which 28 (85 per cent) hatched. The clutch size of these nests averaged 1.9 eggs per nest; 10 nests contained two eggs, four nests contained one egg, and three nests contained three eggs. In the five nests not found until after the young had hatched, I assumed the number of eggs to be equal to the number of young present, and thus got a total of at least 43 eggs for the 22 nests and an over-all clutch size of about 2 eggs per nest. Johnston (*op. cit.*) reported the average clutch size of 20 Red-tailed Hawks from Kansas as 2.6. In Lyon County, 38 young were hatched from nineteen (86 per cent) of the nests.

Twenty-four of the eggs were white with light brown spots, and nine were unspotted. Eleven nests contained only spotted eggs, four only unspotted, and two had both types of eggs.

I observed three House Sparrow (*Passer domesticus*) nests woven into the bottom of three different active hawk nests. Morejohn (Condor, 55, 1953:161-162) reported a successful nesting of House Sparrows on the underside of a Red-tailed Hawk nest.

## SUMMARY

Between 1 March and 12 May 1965, 22 nests of the Red-tailed Hawk (*Buteo jamaicensis*) were located and observed in the southern two-thirds of Lyon County, Kansas. The number and color of the eggs laid, kinds of nesting material used, height of the nest placement, genus of the nest-tree, and general habitat of each nest were noted. Nests were placed 40 feet high on the average. The clutches averaged about 1.9 eggs per nest, and 85 per cent of the eggs hatched. Eighty-six per cent of the nests produced young. House Sparrow nests were woven into the underside of three of the hawks' nests.

Box 306, Cobden, Illinois, 4 January 1966.

**The Giant Canada Goose.** Harold C. Hanson. 1965. Carbondale, Illinois, Southern Illinois University Press, i-xxiii + 226 pp., 74 figs., 5 maps, 31 tables.  $6\frac{3}{4} \times 10\frac{1}{4}$  inches. Price \$9.75.—In mid-January, 1962, Dr. Hanson and his colleagues were so taken by the extreme weight of Canada Geese they were weighing that they thought the scales were faulty and work was terminated until the scales could be checked. The scales were found to be correct and Hanson realized that the impressive weights he had been getting were characteristic of the supposedly extinct giant race [subspecies as used herein] of the Canada Goose, *Branta canadensis maxima*. This, then, inspired his extensive study and the "rediscovery" of the goose *maxima*, the history of which appears in this comprehensive and interesting book.

The sequence of chapter material is logical. Hanson first convinces the reader that such large geese do exist, that they occupy the same approximate range as always, and that their geographic range is correlated with ecological and physiographic factors which may have been important in the development of certain physical and biological characters that distinguish *maxima* from other races of Canada Geese.

Chapter one is comprised of a series of quotes from letters written from the 1920's to the 1940's, by various professional and lay ornithologists, that recount the speculation involved as to the existence of *maxima*. Hanson variously describes *maxima* by such distinctive characters as white head spots, prominent neck rings, type of cheek patch, spatula-shaped bill, unique scaling of the tarsi, long neck, and heavy weight (recorded weights of 20 to 22 pounds are apparently authentic). The author gives a scholarly account of the breeding range, and a discussion of the geological, ecological, and climatic factors which in part determine *maxima's* range. Migration, wintering grounds, nidification, foods, parasites, physiology, and aspects of management are also discussed. Interestingly, *B. c. maxima* undergoes the longest northward molt migrations carried out by waterfowl. Individuals banded in Wyoming,

Idaho, and Nebraska were recaptured in their late summer molt as far north as the Thelon River, Northwest Territories, Canada.

Characteristically these geese are tame and they tend not to mix with other Canada Geese. Their tameness has impressed hunters, as reported in "Forest and Stream" in 1922: "On this point [near the Arkansas River in Kansas] were about a hundred very large geese, of a lighter color than the rest, and they did not seem so timid." (p. 156-157). Because of their tameness they are easily kept in captivity, and this has probably helped to preserve them. Hanson states, (p. 157) "If this race of geese had been native to Europe, it would have been the progenitor of a domestic breed."

The author has rightly emphasized the importance of a clearly defined taxonomic evaluation as it relates to management. All too often the subspecies concept is belittled as non-essential, scientific poppycock, but in the case of Canada Geese, a species wherein interpopulation gene exchange is rigorously restricted, such a labeling system appears to be most useful. Since banding operations have shown that breeding and wintering ranges of the conventional races are more or less limited to specific areas, hunting pressure must be stringently controlled to preserve these local "genetic populations." The utility of such a taxonomic understanding has been demonstrated in the populations occurring in Utah. It has been determined that the local, resident breeding population is probably not receiving the brunt of the hunting pressure, as had been feared by game management officials; rather, migrant birds from northern Canadian breeding populations make up bulk of the hunter's kill.

The range of *maxima* is described in terms of geological, physiographic and ecological boundaries. This range is in the tall-grass and mixed prairie areas that lie north of the southern limits of the Wisconsin Glaciation. This area in the Dakotas and Nebraska closely follows the Missouri River. In the west the heavy coniferous forest and in the northeast the rocky, relatively sterile Canadian Shield forms the boundaries of their breeding range. This region is nicely defined by Hanson (p. 46) as the area "presaged [in part] by the glacial lake systems that were formed with the retreat of the ice sheet of the Wisconsin Glaciation."

Hanson's treatment in the Physiology section concerns principally body weight and muscle mass relationships, muscles of locomotion and their variation, metabolic relationships affected by molt and egg laying, and weight of organs such as heart, spleen, liver, gizzard, and pancreas at various phases of the life cycle. Of considerable interest are data on muscle mass changes attributable to various seasonal stresses. The major muscles of locomotion, the sternal muscles for flying and the muscles of the tibiotarsus for walking, show varying degrees of hypertrophy and atrophy with relative degrees of use and disuse. Immediately after the spring migration, sternal muscles show a 13 to 16 per cent weight gain in adult females whereas muscles of the tibiotarsus show a decreased weight. These weight changes are attributed to actual gain or loss of protein fiber, lipid content apparently not changing importantly. A few weeks after the end of migration however, there is a resumption of the "normal" (using wintering geese as the base for comparison) relationships between these two muscle masses. This is apparently brought about by a different balance between walking and flying. During incubation, females show as much as 22 per cent weight loss, which, in contrast to the above-mentioned weight gain, is attributable principally to loss in fat and not muscle mass changes. In passerine species seasonal weight changes can also be the result of a gain or loss of either muscle mass or fat (J. R. King, MS.; C. M. White, MS.).

Hanson relies somewhat on data from captive geese. I would think that some reservation should be placed on the data taken from "giant" Canada Geese on game farms or held by aviculturists unless the geese are known to be relative pure strains. Mr. Calvin Wilson, aviculturist and director of Tracy Aviary, Salt Lake City, told me of the offspring of a large goose (not *maxima*) mated, because of their confines in captivity, with a smaller goose. According to Mr. Wilson, the young behaved somewhat different from the parental types and were intermediate in color and size.

Segments of the data presented in the sections on Nesting, Foods and Feeding Habits, Endoparasites, and Productivity were taken from races currently called

*interior* and *moffitti*. It seems inconsistent and paradoxical to write a book about one race (*maxima*) to emphasize that it is different from other races, and yet to cite data from other races (*interior* and *moffitti*) to imply information about the first race (*maxima*), and then to state (p. x) “. . . a definitive book on this race [*interior*] still remains one of my major objectives,” further implying interracial differences.

Most midwestern ornithologists and hunters, especially those having a love for conservation and life itself, will find this book useful, interesting, and informative, and I hope that they will give it the attention that it deserves.—CLAYTON M. WHITE, *Museum of Natural History, The University of Kansas, Lawrence, Kansas, 25 April 1966.*

**First Specimen of the Gray-headed Junco from Kansas.**—On 29 April 1966, I collected a Gray-headed Junco (*Junco caniceps*) 12 miles northeast of Liberal, Seward County, Kansas. The specimen (Univ. Kansas Mus. Nat. Hist. No. 52746) has the characters of the population named *J. c. caniceps* (mandible and maxilla both pale; tail 70.2 mm); members of this population breed in the central Rocky Mountains south to northern New Mexico [A.O.U. *Check-list of North American Birds* (Lord Baltimore Press), 1957:611]. The bird was a male with the skull fully ossified, weighed 20.0 g, and had much fat; the left testis measured 2 mm.

The Gray-headed Junco was foraging in short, grazed grass with a flock of Chipping and Clay-colored sparrows (*Spizella passerina* and *S. pallida*) in an open cottonwood (*Populus deltoides*) woodland adjacent to the Cimarron River; no other juncos were seen in the area. Although the day was warm (84°F), the spring weather had been highly variable, and leaves were just appearing on the cottonwood trees.

I thank my wife, Trudy L. Rising, who accompanied me in the field, and Maurice Barr and his family who provided additional assistance. Field work in western Kansas has been supported in part by a grant from The Frank M. Chapman Memorial Fund of The American Museum of Natural History.—JAMES D. RISING, *Museum of Natural History, The University of Kansas, Lawrence, Kansas, 1 May 1966.*

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Published September 21, 1966