

THE RED-TAILED HAWK IN WISCONSIN

RANGE AND POPULATION STUDY—1954

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As ornithologists we record the rarities we see in fairly complete detail, but often neglect to mention the common species. A future investigator studying, say robins, would, by consulting our records, be able to determine the arrival dates of the first robins of spring and the whereabouts of those individuals who remain to brave the rigors of a Wisconsin winter. He would find almost nothing recorded about the majority of the robin population, which is, of course, far more important.

In an effort to collect information about one of Wisconsin's conspicuous birds, a questionnaire was sent to WSO members asking for certain details of the distribution and abundance of the red-tailed hawk (*Buteo jamaicensis*) in the state. The following report is based upon those questionnaires returned by members, published records in *The Passenger Pigeon* and other ornithological journals, books, and personal communications.

Distribution and Migration

The red-tailed hawk has one of the widest distributions of any North American bird. It breeds from the limit of trees in Alaska, Yukon, Mackenzie, northern Manitoba, and northern Ontario, south to the Virgin Islands, Cuba, Jamaica, and Panama, and from the Atlantic to the Pacific (Bent, 1937). It retreats from the northern portions of its range in winter. All of Wisconsin falls well within the breeding range but the northern and central counties are without red-tails in the winter.

Historical records seem to indicate that the status of the red-tail in Wisconsin has not changed appreciably in the last fifty years or more. Kumlien and Hollister (1903) reported it to be "a common species, resident in southern Wisconsin, though much more numerous during spring and fall migrations. Nests in all sections of the state, even in quite thickly settled localities." That statement fits 1955 equally as well.

The distribution in neighboring states is similar to that in Wisconsin. In Minnesota the red-tail is "A summer resident, breeding throughout the state. Occasional in winter." (Roberts, 1936). Similarly in Michigan it is a "Fairly common transient. Summer resident, formerly abundant, now uncommon. A few winter in southern counties." (Wood, 1951).

Rather than being an occasional visitor to Wisconsin in the winter, however, the red-tail is the most common hawk in the southern counties at this season. Sixty-five have been seen during the last five Monroe Christmas Bird Counts and a similar abundance is recorded in Waukesha County (89 in 12 counts). As far north as Winnebago County the species is common throughout the colder months (Kaspar).

Due to the lack of observers in the central counties it is impossible to delimit the northern edge of the winter range in Wisconsin. What little evidence is available indicates that numbers drop sharply rather than decreasing gradually as one moves north. In spite of the winter abundance in Winnebago County, the bird has never been recorded in

the Christmas counts at Green Bay and only twice at Appleton in the last eleven years. The very approximate northern limit of the winter range is shown in Fig. 1.

In view of the marked decrease in the red-tail population in Michigan, it is natural to ask whether there has been a sharp decline in the Wisconsin population also. Since there have been no population studies of red-tails in Wisconsin until recent years, no definite figures are available for comparison. Two opposing factors are responsible for the present status; (1) the killing of the birds by men, and (2) the improvement of the habitat by agriculture.

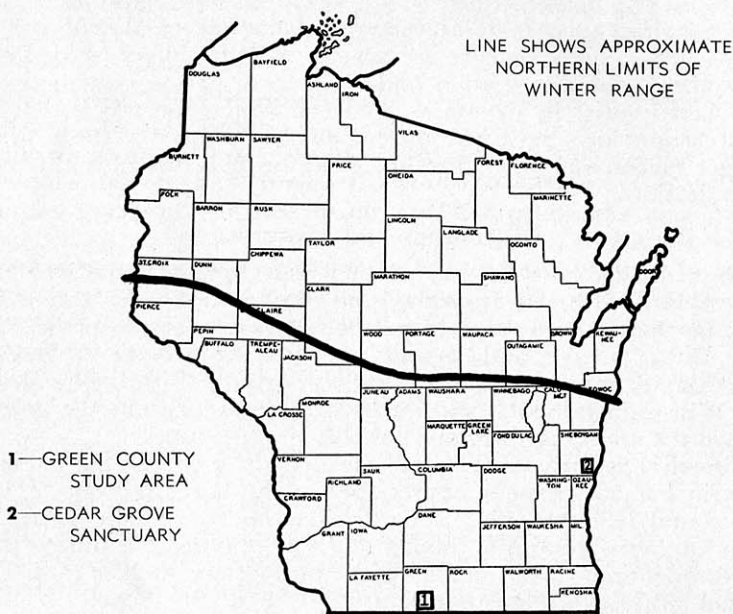


FIGURE 1

The red-tail is a bird of open country. The greatest numbers occur in regions of open fields with small patches of trees for nesting. Through the activities of man such habitat is more prevalent today than at any previous time. This potential increase has been countered by the shot gun so that any precise estimate of change in numbers is impossible. Fortunately, it can be stated, however, that no sharp decline, as reported in Michigan, has taken place in Wisconsin and the red-tail can still be classed as common for a hawk of its size.

In Green County the winter population consists chiefly of resident adults which remain in the general vicinity of their nest throughout the winter. Only a few juveniles were to be found on a study area of 90 square miles (Fig. 1). Winter recoveries of banded nestlings indicate that they migrate to the Gulf States for the winter (Orrians).

In contrast, juveniles are more common in winter in many areas of the state, particularly near Milwaukee where they outnumber adults. This may be because juveniles tend to winter where there are no resident adults, and also, being less wary than adults, they move quite readily into the suburbs of the city to feed upon voles in the vacant lots.

When a species is resident in an area during the winter, close observation is necessary to determine when migrants arrive. In Green County it has been possible to detect a definite passage beginning in mid-February and continuing until the end of March, or into early April in cold springs (Orlans). By observing in the city of Oshkosh, where only migrants are likely to appear, Kaspar determined the passage period to be from the end of February until the end of April, many still moving with the large flights of broad-winged and sharp-shinned hawks during the third and fourth weeks of April, long after the Green County flight has ended.

Red-tails apparently make a rather leisurely flight across the state as few appear in the northern counties before March 20. Single individuals seen in Bayfield County February 19, 1943 and Forest County March 2, 1942 (Feeney) probably refer to early migrants rather than winter residents. No information is available on the end of the spring migration period in the north.

The autumn migration of red-tails is even more prolonged than the spring one. Birds are on the move from August to December. With the notable exception of the Lake Michigan flyway, no definite route is taken at this time. Rather, the entire state is crossed in a broad front so that movements are easily missed. Consequently the best available information comes from Cedar Grove, Sheboygan County, where intensive observation has been carried out for many years (Fig. 1).

The first migrant juveniles appear as early as mid-August and by September the flight is well under way. Many birds can be expected during September but the largest numbers are seen in October and in November. The largest flight recorded in recent years took place on November 13, 1948 when several hundred, accompanied by similar numbers of red-shouldered and rough-legged hawks, were observed. Unfortunately, fewer observations have been made late in the fall at Cedar Grove, so that we know less about the November and December flights.

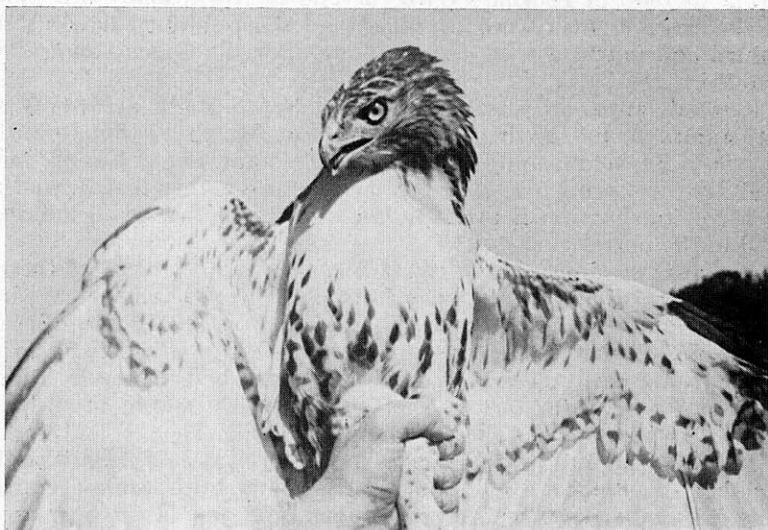
In 1946, however, Kruse noted one hundred in Sauk County between September 29 and October 12, a somewhat earlier peak. This represents an unusually large number of birds to be seen inland in the state. There is no evidence of a flight in Green County in December but some migrants have been noted at Cedar Grove during the first week of the month. Again records are few.

It is well known that hawk flights generally take place on clear days with moderate to strong westerly winds. Yet, we do not know why westerly winds are best; and few hawks are seen on many days with suitable weather of this type. It is likely that the direction of the wind is not the primary factor, if it is a factor at all, but rather the weather accompanying it, since some of the best raptor flights in Europe take place on east winds (Rudeback, 1950; Moreau, 1953). Strong easterlies often bring good weather in Europe but seldom do so in the United States.

Plumage Variation

The taxonomy of the red-tailed hawk has not been satisfactorily worked out in the light of most recent methods. However, the species is divided into a number of subspecies on the basis of plumage. Notable variation is also found within these subspecies.

Red-tails may be either largely white or almost completely black, with every possible intermediate. In Wisconsin most individuals have white underparts with a band of dark markings across the belly, brown back, and a rufous tail in the adult plumage. Immatures to the age of fifteen months lack the rufous tail but are otherwise similar to the adults.



ADULT RED-TAIL TRAPPED AT CEDAR GROVE

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Pale individuals, generally called Krider's hawks (*B. j. krideri*) are occasionally seen in Wisconsin during the spring and fall. Kumlien and Hollister (1903) report that "This western plains race of the red-tail is a regular fall and spring visitant in western Wisconsin, in small numbers," but in 1948 Schorger could find no unquestionable specimen. Cory (1909) mentions a specimen taken at Meridian, Dunn County, October 22, 1892, by J. N. Clark. Pale individuals were noted in Dane County in the spring of 1921, January 23, 1923, and October 14, 1925 (Taylor, 1926). Kaspar reports one in Winnebago County April 20, 1949, the only one in twelve years' observations there. The most recent record is one observed near Chippewa Falls May 16, 1954, by Barger, Kemper, and Lunde. Extremely white red-tails have been observed at Cedar Grove a number of times during the past twenty years. One was trapped, banded, and photographed there on September 16, 1952 (Berger).

Melanism is rare in the east but many black individuals with red tails are seen in the range of the western subspecies (*B. j. calurus*). *Buteo j. harlani*, of northwest Canada and southeast Alaska, is characteristically

dark with a mottled brown tail. There are therefore three potential sources of the melanistic red-tails observed in Wisconsin: (1) variants in the eastern population, (2) eastward movement of **calurus**, and (3) **harlani** migrating through the plains farther east than normal. If the bird observed has a red tail it is definitely not **harlani**. If it has a brown tail it may represent **harlani** or merely an immature bird of one of the other races. It is doubtful whether **harlani** can be satisfactorily identified in the field.

Kumlien and Hollister (1903) stated that dark individuals, which they called **calurus**, are "Of rare, but regular occurrence in Wisconsin in the late fall." Six or eight specimens were procured about Lake Koshkonong by Thure and Ludwig Kumlien. They also recorded a specimen from Delavan, October 19, 1901, and one taken at Meridian, October 23, 1893, by J. N. Clark. Individuals exhibiting varying degrees of melanism are seen frequently in Minnesota, particularly in the western portions of the state (Roberts, 1936). Wood (1951) does not mention melanistic individuals occurring in Michigan. From this it would appear that melanistic individuals seen in Wisconsin have arrived from the north or west and are not from the east.

In Green County, melanistic birds have been seen frequently between October and March. In the past three years eight black birds with red tails have been seen in the study area. One with a mottled tail was seen there March 28, 1953. In addition, five melanistic individuals have been seen within the county but outside the study area. One, observed in March 1954, appeared to be one of a pair and acted as though it intended to nest but it could not be found again (Orians). Black individuals are not known to nest in Wisconsin or neighboring states. One black bird with a red tail was seen in Adams County on December 20, 1954 (Robbins).

Nesting

Red-tails may either repair one of their old nests or build a new one. Often a pair of horned owls, by using the old nest, force the hawks into the latter alternative. In the southern counties residents may begin nest building as early as the last week of January (Orians), but more commonly not until late in February. Both sexes build the nest and complete it in a few days. Branches are, as a rule, broken from the trees and not picked up from the ground. A new nest can be recognized instantly by the fresh ends to its sticks.

The nest is almost always built where it commands a view of the surrounding country. Even in the heavily timbered northern counties a tall red oak standing in a rather open location or on the edge of a large timber is chosen (Kahmann). In the intensely agricultural south the birds must often, of necessity, nest in open locations, but even here the interiors of large wood lots are avoided. In Green County only seven nests were found where the adults had to fly through thick trees to reach them. Sixteen were on the edges of woods, 24 were in open, grazed wood lots, and 15 more in extremely open locations such as fencerow trees or scattered trees along pastured stream banks. One nest was located in a



RED-TAILED HAWK NEST IN TYPICAL
GREEN COUNTY HABITAT

PHOTO BY THE AUTHOR

lone elm with no other trees for at least one-half mile in any direction (Orians and Kuhlman).

In general, red-tails tend to build their nests on the highest suitable crotches. Therefore nest heights depend upon tree size and differ with locality. Kahmann estimates the average height of nests in Sawyer County to be about 40 feet. Measurements taken by Kuhlman and Orians on 63 nests in Green County gave an average height of 57.6 feet with a range from 30 to 79 feet. This corresponds closely to nest heights in Jefferson County (Kuhlman). It is certain that nests are built much lower in the sand counties where trees are smaller, but measurements have not been made.

The first eggs are laid in early March. Kruse found incubating birds in Sauk County on March 11, 1945 and March 10, 1946. In Green

County the first incubating birds were observed March 1, 1953 and March 13, 1954 (Orians). In the southern counties most eggs are laid before the end of the month.

As mentioned previously, red-tails do not arrive in northern Wisconsin until the end of March, but they then begin to nest almost immediately. In Sawyer County eggs are laid in early April (Kahmann). In the extreme northeast breeding begins later. Richter (1948) reports from Oconto County that nesting begins in mid-April and that he found a pair still building on April 29, 1944, a date when bandable young can be found in many nests in the southern part of the state.

Little information is available on clutch size. Kahmann reports three to be the normal clutch in Sawyer County. In Green County either two or three eggs are laid but there are not enough records to establish a tendency to lay more eggs in the north.

Nesting success varies greatly from year to year. Forty-eight young were raised in 27 nests in Green County in 1953, compared with only 36 young in 33 nests in 1954. In 1953 there were only 3 nesting failures and 6 pairs were able to rear three young. In 1954 twelve nests failed completely and only one pair raised three young. Nestlings died while very young and it was generally the smallest one that died.

A census of the breeding population of a large hawk over an area of significant size is a difficult task which has seldom been attempted. In Wisconsin the Green County study area is the only place where this has been done. In 1954 there were 33 nesting pairs, 6 non-nesting pairs, and one unoccupied territory on the 90 square miles giving a density of one

pair per 2.22 square miles. The only figures available for comparison come from the foothills of the Sierras where Fitch (1946) found one pair per 320 acres (one-half square mile), a population over four times as dense.

In Wisconsin red-tails do not actively defend their nests. Many pairs remain out of sight during the visits of human intruders and most others merely circle above the trees screaming. None of the birds which dive at a climber come dangerously close. This does not seem to be true of red-tails in all parts of the country as there are many references in the literature to climbers actually being hit by a diving bird.

Food

Its large size and adaptability enable the red-tail to utilize a wide variety of prey. Significant differences in diet are found in various parts of the state. Obviously studies of the food of red-tails in other regions cannot be used to infer the diet here.

In Sawyer County snowshoe hare, red squirrel, various mice, groundhog, chipmunk, thirteen-lined ground squirrel, and occasionally ruffed grouse have been found beneath nests (Kahmann). Errington and Breckenridge (1938) visited many nests in south-central Wisconsin noting the following food items: thirteen-lined ground squirrel 50, *Microtus* 47, cottontail 21, chicken 19, arboreal squirrel 11, plus a long list of species of which but a few individuals were found. In Green County the remains of 38 pheasants, 18 rabbits, and 17 chickens, plus another long list of minor items, were found (Oriens and Kuhlman).

In time one would undoubtedly find at the nests the remains of all small and medium-sized mammals and birds found in the locality. In Green County, one of the state's best pheasant counties, that bird forms

the staple food, whereas in other areas of the state pheasants are seldom found in the nests. Rabbits and hares are of general importance over most of the range of the species. In the north, where the snowshoe hare replaces the cottontail, the red-tail readily utilizes that species and so extends its range north to the limit of trees in Canada.

Food remains in the nests offer a fairly accurate picture of the larger prey species but most small food items are swallowed whole and do not appear. In contrast to owls, hawks have powerful digestive juices which destroy bone, and therefore the pellet method of determining food, so useful with owls, cannot be utilized. It must be remembered, therefore, that the



YOUNG RED-TAILS IN THE NEST

PHOTO BY THE AUTHOR

importance of mice and voles is undoubtedly underestimated in the above account.

The rather alarming number of chickens taken deserves further attention. Both Errington and Orians have found that red-tails take chickens which are feeding on fields spread with manure by farmers. It is not known how many are obtained in this manner but manure on the feathers testifies that some are. This fact should be kept in mind when evaluating the relationship between red-tails and agriculture.

Relationship to Man

Through the questionnaire an effort has been made to evaluate the attitude of the public towards hawks in general and red-tailed hawks in particular. The results have been rather discouraging. Not one of the members reported that local residents were able to or cared to distinguish one species of hawk from another. All were unanimous in saying that hawks are shot whenever possible in their area. The attitude that the only good hawk is a dead hawk still prevails.

Wisconsin has a law protecting all species of hawks but it is clear that such a law is not effective until public opinion is behind it. Here is a challenge to everyone who professes to be genuinely interested in our wildlife and its welfare. This is not a plea for prosecutions but rather a plea for destroying the need for them. Wisconsin is frequently used as an example of a state with good protective legislation. It is hoped that soon she can also be used as an example of enlightened public opinion behind such legislation.

I wish to express my gratitude to the WSO Research Committee for affording me the opportunity to conduct this survey, and to the following WSO members who have cooperated by sending information to me: S. D. Robbins, Adams; N. R. Barger, Madison; J. L. Kaspar, Oshkosh; F. Kuhlman, Lake Mills; M. Reichwaldt, Kiel; K. W. Kahmann, Hayward; M. E. Morse, Viroqua.

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