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The PASSENGER PIGEON

VOLUME X

April, 1948

NUMBER 2



SECOND YEAR COOPER'S HAWK

EDWARD PRIN

A MAGAZINE OF WISCONSIN BIRD STUDY

Published Quarterly By

THE WISCONSIN SOCIETY FOR ORNITHOLOGY, Inc.

NEWS . . .

Those members who contemplate taking a western trip yet this summer will enjoy reading Al Throne's article before they go. It is the first feature article of this issue.

By the time this magazine reaches your desk, some of your nesting studies for the season will have been completed. There are many late-nesting birds, however, so the work need not be terminated. Establishing the breeding ranges of our birds currently is developing into a popular project. Don't forget to send in your notes at the close of the season!

Members who attended the Waukesha convention will long remember Dr. George Sutton and his entertaining address. There was no need for illustrations on the screen during this program—you could see the pictures vividly in your mind, so well were they expressed. Also, the field trips as taken the following morning, enabled many members to become acquainted with birds not often observed in their own home towns.

Because of the fact that The Wilson Club will combine conventions with us in 1949, our next annual meeting will be held in Madison, about the middle of April. One great advantage about this arrangement is, our members will hear and become acquainted with many nationally known ornithologists.

August Derleth, Sauk City, has been studying the residence period of the whip-poorwill in Wisconsin. His outside limits of the singing period for the past twelve years range from April 21 to September 22; while his sight records, without reference to singing, range from April 13 to October 8. Mr. Derleth would like to hear from other students regarding the residence period of this species in their part of the state.

As many of our members know, Professor Aldo Leopold passed away recently as a result of a heart attack while fighting a fire. Since Prof. Leopold was prominent in the field of conservation and management of wildlife resources, our society is extremely sorry. A suitable article will be prepared and printed in The Passenger Pigeon in the near future, to

which will be added some of the reasons why Prof. Leopold had become an honorary member of our society.

There is good news from the U. S. Fish and Wildlife Service regarding our waterfowl populations. There now appear to be many more than their early surveys had revealed. Last year, as most everyone knows, the situation looked dark indeed.

As announced previously, the American egret will be the subject of our special study project this year. Late this fall, questionnaires will be sent to all members and later a summary article will be prepared with special reference to its range and population in Wisconsin. Please be on the watchout for them this year, and assemble material from other years so that a complete story can be told. Photographs of them also will be welcome.

The Madison Bird Club has been revived again after a few years lapse, and is progressing nicely. Mrs. R. A. Walker was instrumental in creating new interest and also conducted most of the field trips this year. T. J. Stavrum is president, Miss Joan Kirk, secretary, and Leon Edmunds, treasurer.

Dr. Daniel S. McGeen, formerly of Waukesha, has been working up articles on both the king rail and the marsh hawk in Wisconsin. He has assembled much information, but now invites members of our society to send something. Data needed are migration dates for your locality; winter records; nesting studies; food habits; relative abundance, etc. Please send to Dr. D. S. McGeen, 1231 Cass Lake Road, R. R. 9, Pontiac, Michigan.

One member of our society in the western part of the state has donated copies of Silent Wings (our society publication in connection with the unveiling of the passenger pigeon monument) to several libraries with the following label attached: "Compliments of _____, In Memory of Aldo Leopold." Since the first article printed in Silent Wings is by Prof. Leopold, this idea sounds like a good one toward perpetuating a consciousness of sound conservation practices as the author stood for.

W. S. O. members are cordially invited to write feature articles for The Passenger Pigeon (Concluded on page 87)

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SOME WESTERN BIRD OBSERVATIONS

By ALVIN L. THRONE

During July and August, 1946, it was my good fortune to be able to make a 7400-mile camping trip through several of the southwestern states with my family and two very good friends. The trip was primarily for collecting certain *Lepidoptera* and plants. All in the party being interested in birds, it was inevitable that we should spend some time in observing them, although we had no time for detailed study. It is with the hope that some of our observations may prove of interest and value to others that I record them here.

The first noticeable change in bird life from what we find around Milwaukee was in the Ozarks in Missouri. The plant life of the region was so abundant in species new to me that I had little time to look for birds. However the cardinal was so numerous, conspicuous, and so constant a singer, it could not be overlooked. The evening of July third seemed strange and peaceful, far away from firecrackers, as we listened to the song of a trout stream in front of the tent door and the song of the mockingbird overhead. As darkness settled around us, the song of the mockingbird was replaced by the hooting of two barred owls.

In Oklahoma and northern Texas the never-to-be-forgotten scissor-tailed flycatcher, gray and black with a touch of pink under the wings, and the extremely long tail which characteristically spreads open and closed, claimed our attention.

One of the most beautiful birds we saw, all the way from Texas to Nevada, was the western tanager. It was not abundant but in almost every place we camped there were a few. I suppose our scarlet tanager is just as beautiful and maybe more beautiful than the western. Perhaps it was the newness of it to me that made the western seem more striking than our own. It is about the same size as the scarlet tanager, with black wings and tail, brilliant yellow body with head, neck, and throat the most amazing shade of orange-red. They were rather friendly, always flashing their brilliance in the open woods and not at all afraid of one's approach.

The small mountain meadows of northern New Mexico at elevations from 8,000 to 11,000 feet are veritable flower gardens in early July, which are alive with hummingbirds. Here the broad-tailed and the rufous hummers reigned. Often, within a radius of two rods there would be fifteen to twenty hummers zipping among the flowers and sitting on the small trees and bushes but a few feet away, giving us wonderful views of them.

The most abundant species was the broad-tailed, almost an exact counterpart of our ruby-throat but somewhat larger. On July 12th in a little valley about twenty-five miles south of Taos, I found two nests of the broad-tailed within a half hour without even looking for them. Both nests were about six feet from the ground in the small outer branches of spruce trees and each contained three tiny white eggs.

The next most abundant was the rufous hummer, a most gorgeous species. It is a little smaller than the broad-tailed and where that species is green, the rufous is a shining metallic brown, with a brilliant red gorget. After returning home from the trip, I read in Bent's life history studies of the species that he claims the southern nesting range is south-

ern Montana. He also mentions that it has been reported as nesting in the Pecos Valley in northern New Mexico but "that the reports are probably erroneous." Had I read that statement before entering the Pecos Valley and the neighboring valley of the Rio Pueblo de Picuris I would have spent some time in searching for the nests. The birds were so abundant during the second week of July as to indicate that they were nesting. The favorite flower of both species was the scarlet gilia, *Gilia aggregata*.

Another very common bird of the higher New Mexican mountains was the gray-headed junco. Any one who knows our slate-colored would have no difficulty in recognizing the New Mexican ones as juncos. They differ from ours mainly in having a large, conspicuous rusty spot that covers nearly the entire back. In one place in particular, Sandia Peak, about twenty miles northeast of Albuquerque, they were very numerous, and during the second week of July were nesting at the summit at an elevation of 10,600 feet.

We camped on the summit two nights and spent parts of three days in exploring the area. There were so many plants and butterflies to collect, I found time to sit and observe the juncos for about an hour only. The nest I observed was on the ground under a small dense spruce which was growing under a heavy cover of aspen. There were three well feathered young in the nest. I watched the parents come and feed them but because of the poor light I could get no kodachromes of them. The old ones would light on the ground about fifteen feet from the nest, then hop and crawl through the vegetation to the nest, feed the young, and hop away a few feet and then fly. I could not distinguish the sexes but I know that both male and female brought food and fed the young, for sometimes both adults were together at the nest.

I had no blind but was sitting on the ground about six feet away from the nest. Although the parents were nervous, they came regularly to feed the nestlings. After watching about an hour, I moved up closer to examine the young more carefully. When I was three feet from the nest, the young scattered rapidly through the vegetation. In a few minutes they were twenty feet from the nest. The parents set up a loud cheeping, flew to the ground with the young, and tried to lead them farther away from me. It was late in the afternoon so I left them to allow the parents to care for their brood before darkness set in. We saw the same species in the high mountains of Arizona and Colorado.

That evening after dark, we had an excellent view of a saw-whet owl in the aspens above our tent. It objected in no way to the beam of a flashlight being turned on it for several minutes at a time. It was still above us, calling softly, long after we crawled into our sleeping bags. The next night it called upon us again.

The precipitous southern face of Sandia Peak apparently was the nesting site of the white-throated swift. As I watched from the top of the cliffs, there were several of these birds constantly on the wing, one moment far below me and the next far above, so swiftly did they fly. The small size of the birds, combined with their exceedingly rapid flight, made it difficult to follow them with the eye and impossible to do so with the binoculars. I believe they are the fastest flying birds I have ever seen.

The place of greatest interest to the bird student on our entire trip was Carson Sink, Nevada. This is the area where the Carson River,

unable to find a pathway through the hills, spreads out into endless swamps and lakes, thus losing its identity; evaporation and seepage keeping pace with the inflow so that the level of the water in the swamps and lakes remains fairly constant. In this moist area the vegetation is much more abundant than that in the dry sandy ground surrounding the Sink. It is an ideal breeding grounds of the mosquito and those pests fairly drove us crazy by their immense hordes surrounding us, even though recently developed mosquito dope kept them from eating us alive.

This area is not only a haven for mosquitoes but also for thousands of waterfowl. Our stay was limited to a few hours so our observations were hasty and very incomplete. It is an area where an ornithologist could profitably spend many days, if he could endure the mosquitoes. As we walked or drove along the bumpy, winding sand road between the swamps and lakes, great flocks of birds, new to me, rose and flew about to settle a little distance away.

There were numerous ducks and small shore birds that I made no attempt to identify, or in fact to barely observe, for I was so enthralled at seeing countless numbers of white-faced glossy ibis, and avocets near at hand with great white pelicans flying high over head. One of the most handsome of all the birds, and the one that appealed to me most, was the black-necked stilt. It is a little smaller than an avocet, jet black above and white below with long, brilliantly red legs which stick straight out in the rear when the bird is flying.

In the sage covered hills at the border of the swamp we got our first look at a Gambel's quail. Here we also found the strikingly colored magpie, so widely distributed throughout the west.

In the high mountains of Rocky Mountain National Park, Colorado, the birds I noticed most regularly were the Rocky Mountain jay, almost the exact counterpart of the Canada jay we find in northern Wisconsin and the larger and more striking Stellar's jay. The latter is a deep blue and black bird with a crest much longer than that of our blue jay, and which it keeps raised much of the time. It is less commonly seen than the Rocky Mountain jay and is less bold, though on one occasion I was able to attract one to within fifteen feet of me, using peanuts as the lure.

The red-shafted flicker was seen several times. It is much like our northern flicker excepting that it has a red mustache instead of a black one, and red under the wings in place of yellow. Gray-headed juncos were fairly common.

Above timber line it was possible to get quite close to the grayish white-tailed ptarmigan, so nearly the color of the rocks as to be quite indistinguishable when the birds were not moving. Apparently feeling secure in this camouflage, they allow one to approach within fifteen or twenty feet, and then upon closer approach, will slowly walk away attempting to get a rock between them and the observer. I have never seen them fly although they will of course do so if frightened. Another bird we occasionally saw high above timberline was the brown-capped rosy finch.

On the dry plains immediately east of the mountains, in the region of Longmont and Loveland, there were several reservoirs for the storage of irrigation water. When we were in the area, during the second and third weeks of August, these reservoirs were the nightly resting places

of countless numbers of Franklin's gulls. Shortly after daybreak these gulls would leave the water and fly to distant fields which were their feeding grounds. They would remain all day and then about sunset would return to the reservoirs. That in itself was not astonishing, but what surprised me greatly was the fact that in flying to the feeding grounds and in returning to the reservoirs, the gulls flew in excellent V-formation. The V's varied greatly in size, the smaller being composed of only twenty to thirty birds, while the larger flocks contained several hundred. Some V's were very symmetrical while others were greatly asymmetrical, one arm of the V being four times longer than the other arm. In some asymmetrical flocks, a third arm would come off of the inside of the long arm about half way back from the apex, forming the apex of a new V at that point. In the morning the birds left over a considerable length of time. In the evening, however, the return of the flocks was crowded into a comparatively short time. Thus it was that in the sunset glow, we at times saw as many as six or seven V's in the sky at the same time.

Milwaukee, Wisconsin, March, 1948.

THE BIRDS OF HICKORY HILL

By **HAROLD KRUSE**

Much of interest has been written concerning the birds of continent, nation, state, and county. This article is to deal with the birdlife of a division even smaller—of Hickory Hill Farm; in point of size, an insignificant portion of the earth's surface, yet interesting, because of its varied flora and fauna.

Located among the rolling, wooded hills of central Sauk County, its 200 fertile acres provide food, shelter, and home-sites for a large number of our furred and feathered friends. Of the latter, a fair number are permanent residents, but the majority take part in the annual migrations, returning each spring with remarkable accuracy to its woodlands, meadows, and fence-rows from their winter homes in the far-off Latin Americas and isles of the Gulf of Mexico and Caribbean Sea.

As may be expected, a varied animal population is usually an indication of an equally abundant and varied floral-life. Such is the case at Hickory Hill, where may be found growing in a natural or semi-natural environment, about 400 distinct plant species, some introduced, but the majority native to Sauk County and this immediate vicinity. Included among these are such as yellow ladies-slipper, showy orchis, jack-in-the-pulpit, shooting star, purple avens, and a host of other beautiful and interesting varieties; from the simplest one-celled thallophytes to the more complex flowering plants.

A number of interesting mammals are present, or have been seen of late years, ranging in size from the diminutive but voracious shrew to an occasional transient white-tailed deer. Of particular interest were the badger, last seen in this vicinity in 1936, and the opossum, recorded for the first time in January of 1948. More might be said concerning the habits of these and other species, were such the purpose of this article;

rather, we shall confine our attentions to the birds. Being about during daylight hours, they are more easily observed and studied than are most of the shy, nocturnally-active mammals. Also, the lower forms of animal life are well represented by the various snakes, amphibians, minnows, and crayfish, together with the usual abundance of insects and lesser creatures—a world of Nature in themselves for anyone having the time and inclination to study them.

By far the most conspicuous and enjoyable members of the Hickory Hill wildlife community are the birds, large and small, of drab or brilliant plumage, with melodious, inspiring song or inconspicuous chirp. During the past ten years of active observation, I have recorded a total of 150 species, not a record number for an area of like size, but enough to provide the bird enthusiast with a continuous source of enjoyment throughout the twelve months of the year. Of the above number, 80 species have been known to nest in this immediate vicinity, the remainder being found as transient and winter visitants. Due to location and topography of the farm, perching birds constitute the majority of the resident and migrant populations, with most waterfowl, shore and marsh birds appearing only as uncommon transient visitants.

At this point, a brief description of the topographical features of Hickory Hill Farm, and some of the reasons for its attractiveness to wildlife may be in order. The farm is L-shaped, one mile in length and one-half mile wide at its base. The greater portion of its acreage lies in a narrow valley fringed by wooded hills and with a small branching creek traversing its full length. This creek, in former years containing clear, running water at all seasons, is now dry during most of the summer and fall months because of excessive wood cutting and poor soil management over much of its watershed area. These vicious practices result in a lowering of the soil's capacity to absorb rainfall and release it gradually through the springs and seepage spots. As one result, damaging floods have been all too frequent of late years, with disastrous effects on the bank swallows and other creek-nesting birds, if they occur during the nesting season. In June of 1947, the entire swallow colony, with the exception of two pairs, was destroyed by such a flood which occurred in the night. It is hoped that more general use of soil conservation practices will help to correct these undesirable conditions.

The dryness of the creek at certain seasons of the year is, however, amply offset by the five small springs located on the farm. Although not large enough to supply the creek with running water, they do provide a never-failing source of cool, fresh water for the various wild creatures. The largest of these springs, located at the edge of a woodlot, is a favorite drinking and bathing spot for many species of resident and migrant birds. Here, on pleasant April days, one may see dozens of juncos, fox and white-throated sparrows, redwings, and others bathing in the shallow waters, preening their feathers in the warm sunlight, or scratching industriously among the dry leaves in search of weed seeds and such insects as are to be found at that season. As the season advances, the later migrants and summer residents may be seen at the spring, although in smaller numbers.

The type of nesting habitat on the farm ranges from marshy meadows and creek bottoms suitable for red-wings, meadowlark, song sparrow, spotted sandpiper, killdeer, and yellow-throat, to dry upland fields attrac-

tive to horned lark, upland plover, and grasshopper sparrow. Woodlands comprise about 40 per cent of the total farm area, the largest single wooded tract being 45 acres in extent. In this largest woodlot may be found nests of the pileated woodpecker, ruffed grouse, oven-bird, and occasionally, owl or hawk. Red oak, hickory, and soft maple are the dominant species of trees, with many other hardwoods and introduced conifers being found in lesser numbers. Several small cut-over and second-growth tracts provide an ideal environment for catbirds, thrashers, and other thicket-nesting birds. Ornamental plantings of barberry, evergreens, and other varieties in the vicinity of the farm buildings attract a fair share of the summer residents, notably the chipping sparrow, house wren, mourning dove, and robin.

Crows and Their Enemies

Crows also find the above-mentioned large woodlot (particularly a second-growth area in which the young trees do not exceed 30 feet in height) much to their liking as a nesting site and invariably have one or two nests therein, unless evicted by some stronger bird.

On one occasion (1938), a pair of horned owls had appropriated the territory by the time the crows returned to their nesting site in late February. Two eggs were laid, both of which hatched, but only one owlet reached maturity. I do not know what fate befell the other one.

The nest was near the top of a 20-foot white oak sapling so I attempted to photograph the owlet. I had expected the parent birds to attack me as I climbed to the nest, but, except for hissing threateningly, they remained at a distance throughout the proceedings and made no attempt to frighten me away.

In early April of 1945, the crows had newly completed their nest-building and egg-laying activities when a pair of Cooper's hawks found this particular nest to their liking and decided (in whatever way birds are able to make "decisions") to appropriate it. The crows were promptly and unceremoniously evicted and their eggs broken, to be replaced shortly by two cream-colored, rather soiled eggs of the hawk. Both eggs hatched, and the young were raised successfully.

The crows appeared to be the only birds seriously affected by the presence of these hawks, there being no noticeable decline in the numbers of other species nesting in the woodlot during the season. I believe this due to the fact that the hawks did most of their hunting over a wide area and at a greater distance from the nest, thus leaving the neighboring birds unmolested.

Even the poultry flocks of the neighborhood suffered little from the depredations of these birds. On only one occasion was I informed of the loss of several chickens to the hawks. This occurred after the young had left the nest, and, apparently, were being taught to hunt for themselves, since the two young and one adult were seen together at the site of the above-mentioned chicken theft. There may have been other such cases but none were reported. It is unfortunate that some farmers and so-called sportsmen will take a few incidents such as this as sufficient evidence to warrant the extermination of any and every hawk venturing within range of their guns.

The Cooper's hawks were extremely shy birds, and would take flight while the observer was still at a considerable distance from the nest. In fact, I was not at first able to positively identify them as Cooper's hawks. At most times they would appear only as shadowy forms passing swiftly from sight among the branches, and, shortly afterwards, berating the intruder with their harsh "Kak, kak, kak" from some hidden perch in the treetops. Lack of time prevented my making a more thorough study



CROW'S NEST

GEORGE PRINS

of their habits. No doubt such a study would have revealed a number of interesting facts.

Pileated Woodpecker and Red-tailed Hawk

One of the most impressive of our resident birds is the large pileated woodpecker. Although it is found here throughout the year, its presence is apparently known to very few people. Only recently, a neighbor approached me to ask the identity of this bird, saying that he had seen one for the first time and had been totally unaware that such a bird existed in this vicinity (or anywhere else for that matter). The fact that the pileated is not a common or abundant bird, and prefers to work in the more extensive and secluded woodlands, would explain its being unknown to most people, since few persons, other than the hunter and naturalist, spend any great amount of time in its natural habitat.

The comparative rarity of this second largest member of the woodpecker family is probably due to two main factors, one being a large territorial requirement, and the other a gradual diminishing of the wooded areas of the County. From my observations in this vicinity, I believe that at least ten to fifteen square miles of territory are required by a pair of these woodpeckers, since four pairs are found within a radius of four miles of our home. This number has remained constant during at least the last six years. The territorial requirement may be smaller in more heavily wooded areas.

Some concern was felt as to the fate of our particular resident pair when their nesting woodlot on an adjoining farm was logged off several years ago. However, with another suitable woodlot (the one mentioned earlier in this article) nearby, they were not seriously affected, but merely transferred their nesting activities to our side of the fence.

The nesting cavity is usually located 15 or 20 feet from the ground in a dead or dying poplar (***Populus grandidentata***) of ten or more inches diameter. I have also located cavities in oak, maple, and elm, but believe that these are merely refuge nests or possibly "cock nests" if the pileateds make use of such devices. More thorough observations would probably reveal their true purpose.

Although primarily a bird of the woodlands, they may at times be seen over the open portions of the valley, in passing from one woodlot to another. On one occasion, but only once, were three of the woodpeckers seen following each other in close succession; usually they are seen singly or in pairs. Very rarely, one will even alight in the great oak overshadowing our house, but any sudden movement on the part of the observer will cause it to take flight.

Like the pileated woodpecker, the red-tailed hawk is a noble and inspiring bird, especially when seen in flight. More than once have I thrilled at the sight of a red-tail mounting in a wide spiral ever higher and higher into the azure sky, moving its pinions but slightly to take advantage of each rising current of air, and finally, from a lofty height, folding its wings and plummeting earthward in a long, diagonal plunge, to repeat the performance upon the next favorable updraft. In my experience, this performance is surpassed only by the majestic flight of the bald eagle or turkey vulture, both of which are known to us in this vicinity only as rare transient visitors.

A pair of red-tails is resident throughout the year in this vicinity, nesting in the woodlot of an adjoining farm. The nest, fully two feet wide and 12 inches deep, is composed principally of coarse twigs and is located near the top of a 60-foot poplar. The same nest was repaired and re-used year after year until, in the summer of 1945, a severe wind brought tree and nest to the ground. Late in February of the following year, it was rebuilt in an almost identical tree nearby.

Incubation is usually under way by March 15, the earliest nesting of any bird found here, with the exception of the horned owl. I do not know when the young first leave the nest, but apparently they do not venture forth from the shelter of the home woodlot until early July. At this time they may be seen soaring with unsteady wings over the countryside, usually accompanied by one or both adults, and frequently giving vent to their plaintive and rather harsh cry. As the season ad-

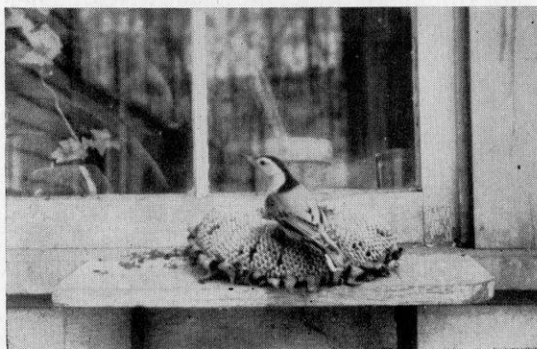
vances, this "food call"(?) is heard less frequently until, by early autumn, it has disappeared entirely.

The claim that red-tailed hawks deserve the name of "chicken hawk" is not substantiated by my observations. We have a large number of chickens on open range throughout the greater part of the spring, summer, and fall months, but I have yet to see one taken by a hawk. This, in spite of the fact that the hawks may frequently be seen soaring over the range, and, occasionally perching in the trees overshadowing the poultry yards. At most times they may be seen hovering over the meadows and pastureland in search of field mice and other rodents. On one occasion, I surprised a red-tail in the act of devouring a rabbit which it had recently killed, and again, one was seen flying overhead with a snake in its talons. Quite possibly they do take chickens under some unusual circumstances, but certainly this could be overlooked in view of the valuable service rendered by them in keeping the rodent population under control. I should gladly part with a few chickens, if necessary, for the privilege of having a pair of red-tails within observation distance.

I had often wondered how the hawks managed to catch mice while the ground was covered by a thick blanket of snow. The answer to this question came on a wintry day of 1946, as I was standing concealed in the woodlot near their nest. Suddenly, one of the hawks appeared, diving swiftly toward a small clearing in the woodlot, alighted on the snow, and rose again with a mouse clutched in its talons. The mouse was deposited on a fence post, after which the hawk returned to its perch in a tree some 500 feet distant. Several minutes later the same procedure was repeated and a second mouse placed beside the first. At this point I stepped out to investigate, upon which the hawk flew off, leaving both dead mice on the post. The tracks in the snow indicated that the mice had left their hidden runways for some unexplained reason, and were surprised by the hawk before they could return. One had been captured near the burrow entrance, while the other had run off wildly for about 20 feet across the snow before losing its race for life. The hawk did not return to its prey while I was within observation distance.

Birds at the Feeder

In contrast to the shy hawks and pileated woodpecker, are the chickadees and nuthatches, to whom must go the title of "most friendly and trusting" birds. On winter days, as many as six or eight chickadees and several white-breasted nuthatches may be seen industriously carrying sunflower seeds from the window-sill feeder to some convenient branch, or crevice in the bark, where they can extract the edible portion of the seed.



Although friendly and sociable at most times, they insist upon privacy at the feeder. I have seldom seen more than one bird at the feeder at one time, the others awaiting their turn in the nearby branches or clinging to the window sill. The chickadees and nuthatches seem to be about evenly matched in this respect, but both will give way before the larger downy woodpecker, who is in turn dominated by the cardinal. Bluejays appear to be next in line of preference, although they seldom visit the window-sill feeder, preferring the one in the garden at some distance from the house. At the top of the social order, is the beautiful red-bellied or (more appropriately, it seems to me) zebra woodpecker. At his approach, even those ever-present nuisances, the English sparrows, must retire to a respectful distance.

Hairy woodpeckers have never yet visited the feeders, preferring to search for food in the trees. Although closely related to the downy, they are quite unlike their smaller cousins in their relative shyness and avoidance of human habitations.

Red-heads, when present during the winter, are regular visitors at the feeder, preferring acorns and corn to sunflower seeds. These birds may be found here in large numbers one winter and be entirely absent the next. Their numbers are no doubt dependent to a large extent upon the success or failure of the acorn crop, upon which they feed.

It is interesting to note how the various birds dispose of the seeds. Chickadees and bluejays carry them to a convenient branch, where they can hold the seed with their feet while splitting the shell with their beak and extracting the kernel. The nuthatches and woodpeckers deposit seeds in some suitable crevice in the bark, while the cardinal remains at the feeder, cracking the seeds with its beak, finch-like, and consuming as many as two dozen at a sitting. By the close of winter, the ground beneath feeder and nearby trees is thickly littered with discarded sunflower seed husks.

At the approach of the nesting season, the chickadees and nuthatches retire to the more secluded portions of the woodlots, and are seldom seen near the farm buildings again until the following autumn.

Some Interesting Summer Residents

Their places at this season are taken by purple martins, barn swallows, chipping sparrows, and the energetic, inquisitive little house wren, whose antics provide amusement throughout the late spring and summer months. Besides providing entertainment, they are most valuable allies in our gardening activities, their continuous search for caterpillars and other insects making unnecessary the use of poisonous sprays on flowers and vegetables. The same may be said of nearly all of the resident and migrant birds, that, in addition to their aesthetic values, they are of considerable economic importance to agriculture. It is partly for this reason that many of the fence-rows of Hickory Hill Farm do not have the clean-swept, brush-free appearance so popular with some farmers. Better to devote a bit of extra land to attracting the birds than to have the crop yield reduced through insect damage.

It would appear that curiosity can kill wrens as well as the proverbial cat, as witness the fate of one of our wrens which lost its life by entering a wire rat trap, from which it was unable to escape. Unfortunately, I did

not find it in time to effect its rescue. The trap was located in a position where one would hardly have expected any bird to venture. The wrens, however, seem to be unhampered by such a thing as inaccessibility, with the result that no nook or cranny can escape their thorough investigations.

Most abundant among the summer resident birds at Hickory Hill are the sociable swallows, including purple martins, bank, rough-winged, barn, and cliff swallows, with tree swallows found as transient visitants. Of these, the bank swallows are the most numerous, nesting in the creek banks wherever the bare soil has been exposed by the erosive action of flood waters, and the banks are of sufficient height—about five feet. Here, in late April and early May, they excavate their long nesting burrows extending two to four feet into the bank, construct a simple nest of dry grass and feathers in an enlarged cavity at the end of the tunnel, and lay their four or more pearl-white eggs. They are among the first birds to leave for their winter homes, having all departed by mid-August or earlier.

Occasionally, a pair of rough-winged swallows will nest near the bank swallow colony. These birds, hermit-like in contrast to their sociable cousins, prefer to nest apart from the main colony. Usually, a vacant burrow of kingfisher or bank swallow is used for their nesting activities, but they will excavate one of their own if necessary, as when the previous year's burrows have been destroyed by flood water.

We had little success in attracting purple martins, until a new type house, consisting of a colony of eight separate boxes, was erected. In that same season, four of the boxes were occupied, with as many as 15 martins perching on the roofs at times. Most of these visiting birds probably came from nest boxes at Loganville, two miles distant. One of the martins' favorite perches is on the wand-like, topmost branches of the weeping willow, after the leaves have been stripped from these branches and used in construction of the nests. Often, on pleasant summer mornings, have I been awakened by the delightful, liquid warbling of the martins perched in the willow near my bedroom window. Like most species of birds, they are early risers, being active even before the appearance of the sun over the eastern ridge.

Many pleasant moments may be spent at watching the swallows. On quiet summer evenings, especially following a rain, the air seems literally alive with swallows coursing to and fro over meadow and woodland in pursuit of insects. After the young have left their nests, several hundred birds may be on the wing at one time, including all five of the resident species. It is hoped that the construction of several ponds on the farm will result in the addition of tree swallows to this list.

No doubt we could have many more martins and cliff swallows, were it not for the English sparrow plague. I am quite convinced that, with the possible exception of the starling, the English sparrow is the most persistent creature in existence! I once read that they could be discouraged by the simple expedient of destroying their completed nests, but, evidently our sparrows are of a more rugged variety. I tried this plan in our martin house last spring, hoping thereby to free more of the boxes for the martins. Result: by the morning following the first thorough housecleaning, the boxes were again filled to capacity with the usual accumulation of chicken feathers, straw, and quack grass roots (it seems

quite fitting that the sparrows should make use of quack grass, since one is only a slightly more obnoxious nuisance than the other). For the sake of the experiment, I continued to remove the nests every morning thereafter, but, after several weeks, I gave it up as a hopeless task. Even though one pair of sparrows were to become discouraged and move elsewhere, two more pairs would be waiting to fill the vacancy.

Pleasant Moments With the Warblers

One of the highlights of the spring season at Hickory Hill, as in similar wooded areas throughout the State, is the migration of warblers. Beginning with the conspicuous myrtle warblers in mid-April, and continuing through to the last black-polls of early June, they arrive in great variety and seemingly endless numbers, from the abundant, spritely redstarts, to the secretive, thicket-inhabiting Connecticut warbler, a view of which requires no small amount of stealth and patience.

Of the 20-odd species known to pass through this vicinity on migration, only four, the redstart, oven-bird, yellow-throat, and yellow warbler, remain to nest, the oven-bird being easily the most interesting of the four. Since my first oven-bird was seen under natural surroundings in a tract of near-virgin timber, its ringing call, whenever heard, still brings to mind a picture of the forest primeval. For this reason, its presence in our woodlot adds a touch of the primitive such as few other birds can impart. Like its cousins, the water-thrush and Connecticut warbler, it is terrestrial in its feeding habit, walking about on the ground and collecting insects from among the dead leaves, rocks, and low bushes. When singing, or scrutinizing an intruder, it will ascend to a branch 15 to 20 feet from the ground. The dome-shaped nest is also located on the ground, and, so well concealed is it that I have never yet succeeded in locating one, although I am confident the birds nest here every year. Were time to allow, I suppose the best way to locate the nest would be to conceal oneself in a blind near its suspected position, and carefully observe the actions of the adults.

Some of the most enjoyable moments of my life have been those spent in quest of warblers in the May woods; with the early morning sunlight filtering down through the partly-developed foliage of the trees; revealing the woodland floor with its rich and varied covering of gracefully unfolding ferns, carpets of late violets, mayflowers, mandrake, and other plants; where, later in the season, when the ferns have unfolded and the trees are in full foliage, appear such uncommon gems as yellow ladies-slipper and showy orchis; with the delightful medleys of catbirds and thrashers sounding from thicket and treetop on all sides, a wood thrush sending forth his stirring, flute-like notes from some lofty perch in the depths of the woodlot, and numerous warblers flitting among the branches, plucking insects from tree and bush, and singing their varied and pleasing trills. The world of Nature is filled with such beauty, if one but knows where to search for it.

One of the greatest thrills connected with birding as a hobby, is the discovery of a rare species. Such has been my experience on several occasions, and especially on June 11, 1947, when it was my very good fortune to discover a Lawrence's warbler in our woodlot, one of the first recorded appearances of this bird in Wisconsin. Upon first hearing the

bird, I assumed it to be the blue-winged warbler, since the songs of the two species are quite similar. This, of itself, would have been a "find" at this time of the year; instead, it proved to be the Lawrence's, a rare hybrid resulting from a cross between the blue-winged and golden-winged varieties. It remained in the woodlot for the greater part of that day, thus affording me ample opportunity for careful and thorough observations. Had I not "borrowed" a bit of time from the work at hand for a brief hike through the woodlot, this bird would have passed by unheard and unrecorded. Who can tell how many such unrecorded species would be found to occur in our State, were all sections to be thoroughly covered by bird lovers and students of ornithology? As it is, so small a bird as this in so large a territory can quite easily escape detection.

And so one might continue, at great length and in greater detail, to write of our many feathered friends; of snow buntings and juncos drifting before wintry winds over snow-blanketed fields; of bob-whites huddled closely together at the lee side of a rock for protection from a January blizzard, or calling from fence-row and thicket in early Spring; of robins and bluebirds ushering in the Spring season with their cheery notes; of cuckoos slinking furtively about in the trees and shrubbery, as if bent on a mission of some mysterious or underhanded portent; of the numerous native sparrows—vesper, field, Lincoln's, white-throated, and others—drab and inconspicuous in appearance, but of pleasing song and actions; of pewees calling dreamily from the woodlot, and of scarlet tanagers flashing vividly red against the green foliage.

These, and many more, make up the birdlife of Hickory Hill Farm, some species familiar to everyone, others less well-known, but each contributing its bit toward making life in the country more enjoyable and worthwhile.

Loganville, Wisconsin
March, 1948

The Student's Page

By MRS. N. R. BARGER

In a previous article it was pointed out that beginners in the study of ornithology can contribute useful data for research work if they will methodically record their observations concerning bird life and submit them to interested ornithologists or magazines.

One of the most conscientious boys to record detailed bird studies is George Koehler of Madison, Wisconsin. He was among the forty finalists chosen from more than 16,000 high school senior contestants by Science Service sponsored by the Westinghouse Educational Foundation.

Not only did George enjoy the opportunity to go to Washington, D. C., for the five-day Science Talent Institute which included many interesting experiences with all expenses paid, but he also won a \$100.00 scholarship. Many of us will never reach such ultimate success, but it

should encourage us to know that opportunities are within our reach if we are willing to work for them.

George has never spared time nor pains to record in detail his bird observations. It seems to us that he, only 17, is already reaping rewards for his diligent efforts and we are sorry to see him move to California now, where he and his parents will make their new home.

George wrote the following essay describing the project which won for him distinguished recognition in the talent search:

MY SCIENTIFIC PROJECT

By GEORGE KOEHLER*

I have grown up in a family of "bird-lovers." As far back as I can remember my hobby has been hunting out as many birds as possible so that at the end of each year my list of species would be greater than that of the previous year. And with this method of study I was content until 1943.

During that year I read J. J. Hickey's book, "A Guide to Bird Watching." This book encourages a more scientific study of birds and suggests many projects which immediately appealed to me. My mother and I decided to go into partnership on a study of the bird life in a given area over a four-year period. During this time we planned to answer several of Mr. Hickey's main questions.

After much consideration we chose the Madison, Wisconsin, Forest Hill Cemetery as our study area. Obtaining permission and a great deal of information from the superintendent of grounds, we made a complete physical survey of the cemetery. We found that the area consists of about eighty acres of gently rolling, rather heavily wooded grass plots cut by five miles of winding road.

By January, 1944, we were ready to start our four years of study. We noticed that most of Mr. Hickey's suggestions could be carried out in one or both of two main fields of research: that of censusing the bird population at regular intervals and that of studying the nests of the birds breeding in the area.

On January 21 we took our first census. Since then we have tried to get in one census a month with weekly trips during the migration periods. A "census" is a count of all the birds in the area at a given time with a complete description of each bird's location, actions, and unusual characteristics. All this data is carefully recorded along with such information as the exact weather conditions under which the trip was made, the time, the route taken over the area, and the weather changes since the previous trip. In addition notes are taken on the changes in singing, feeding, and other habits of the predominant species as the migration periods progress. We have found that with all this information to re-

*Additional information on my project may be found in the following publications:

The Passenger Pigeon, Jan., 1945, pp. 15-19

Published by The Wisconsin Society for Ornithology.

Wisconsin Horticulture, Sept., 1945, p. 23

Published by The Wisconsin State Horticulture Society.

Audubon Magazine Breeding Bird Census, 1944 (pp. 20, 21), 1945 (p. 63), and 1947 (not yet published).

cord, our time in the field adds up to only a little more than our time spent on the records.

Of course we very rarely strike the exact number of birds that may be on the area at the time of the census, but we feel that we come very close. We have divided the cemetery into 52 sections, and by a systematic coverage of every section our figures have become very accurate.

During the four years we have seen a total of 106 species in the cemetery, while an additional eleven kinds of birds have been observed flying overhead. Our record for the greatest number of species during one census is forty-nine taken on May 19, 1944. The greatest number of individuals was observed on June 2, 1946, namely 688. The all-time low was set early in 1947 after a two-day blizzard. Two blue jays were the only birds to be found.

The most significant result of these census projects has been the amazing correlation between various weather conditions and the census figures: the effect a heavy snow will have upon the number of ground feeders present; the way a strong wind will drive the small species to the lower, more sheltered parts; the effects of the sun and the time of day on the amount of singing; and the amazing relationship between two graph lines, one representing the temperature on each field trip and the other the number of individuals observed.

The results of these censuses have been many and varied; all have been fascinating. Now, however, I should like to turn to the "nesting" half of our project. I have found the work in this field even more interesting, not only in results but also in the work itself.

Our aim in this nesting project was to answer for ourselves, and for science if possible, some of Mr. Hickey's important questions concerning the nesting habits of our most common species. We decided that to do this we must locate every nest in the cemetery for at least four years and keep a complete case history for each one.

Nest hunting, we found, is a most fascinating sport. We learned the many ways of locating a nest and employed them all. Once found, each nest had to be visited three or four times a week so that we might record accurately its progress. And that job was fully as interesting.

Soon we learned that eighty acres of nests to cover meant seven days a week in the field, and just about that much time in keeping the records up-to-date! We still use the system of recording with which we started: a card for each nest giving the kind of bird, the kind of tree, the height of the nest, a description of the material used, the location in the cemetery, and the day-by-day history of the nest.

We have been very pleased with our results in nesting research. With 446 nests of twenty-one species to observe, we have gathered a great deal of valuable and accurate information. Space will not permit me to go into any detail, but I should like to mention as I did with the census projects the effects the weather has had upon our overall results.

	1944	1945	1946	1947	Total
Total number of nests found	166	181	36	63	446
Calculated total of breeding pairs	167	168	*	90	425*
Breeding density (pairs per 100 acres)	190	191	*	112	
Number of species whose nests were found	15	14	5	11	21
Calculated number of species breeding	24	23	*	23	30

*Because of incomplete data, the breeding population for 1946 was never determined.

It will be noted in the chart above that our figures rose in 1945; then were followed by a sharp drop in 1946, with only a minor rise in 1947. This is exactly as we would expect after studying the weather conditions during those four years. The spring of 1944 was perfect for nesting so that a large percentage of the nests were successful. The next year an even greater nesting population returned, and, since March and April were abnormally warm, nesting began very early. Tragedy in the form of snow and very low temperature struck in May, however, leaving dozens of baby birds dead in the nest. This accounts for the extremely low population during the next year, 1946. In addition, the spring of 1946 was very cold and wet, discouraging the birds from making more than one attempt at nesting. The 1947 season, which was near normal, saw the birds staging a comeback so that the population next spring may reach the average level.

Many separate projects have been carried on in conjunction with the two main ones, censusing and nesting. I can mention but a few: winter feeding, dawn song censuses, banding of fledglings, egg switching, "parent personality" studies, and special detailed studies of mourning dove and robin nesting.

Of course, the census and nesting phases of my project are not entirely separate from each other. Each aids the other as a check. The censuses are essential in determining the breeding population when all the nests cannot be found.

I know that my scientific project has not added anything of great value to the science of ornithology, but it has added a great deal to my knowledge. Perhaps at this stage, that is what counts. Even more important, it has given me valuable experience and taught me the method of scientific research.

109 Chestnut Street, Madison, Wisconsin
December 7, 1947



SHARP-TAILED GROUSE NEST
IN FIELD OF GRASS

PHOTO BY B. J. BRADLE

THE BIRDS OF WISCONSIN

By L. KUMLIEN and N. HOLLISTER

With Revisions by A. W. Schorger

(Continued from last issue)

***Chaulelasmus streperus* (Linn.). Gadwall.**

Found principally as a migrant during April and October. Not nearly as common as formerly, in fact, at the present time, not at all common. Known to nest sparingly near Lake Koshkonong twenty-five or more years ago. Capt. Goss found it breeding in Horicon Lake (now Horicon Marsh). Mr. C. F. Carr records it as breeding in the extreme northern part of the state. "Gray widgeon" of the gunners of Southern Wisconsin, when distinguished at all from the baldpate or pintail.

***Mareca penelope* (Linn.). Widgeon.**

A specimen of this species was purchased, fresh killed, from a gunner on Lake Mendota in 1874, and one was shot on Lake Koshkonong in 1875 by L. Kumlien. These birds were both adult males. Another adult male was mounted in 1877 by Thure Kumlien for some sportsman, this specimen having also been shot on Lake Koshkonong. An immature male was also seen in a hunter's string of ducks as he boarded the train at Milton Junction, after a few days shooting on Koshkonong. Besides the above there are other records for the state about which there is no doubt.

[There are several more recent records for the European Widgeon.]

***Mareca americana* (Gmel.). Baldpate.**

Common migrant, spring and fall, but like most of our ducks, in constantly decreasing numbers. Formerly bred sparingly as far south as Lake Koshkonong, Horicon Marsh, etc., now in the less settled portions of the state only. Small flocks of a dozen or more immature males, that do not breed, are found on most of the larger inland lakes all summer. This species is to a considerable extent a parasite of the canvas-back, allowing the latter to dive and bring to the surface a bill full of *Naia-daceae*, and gobbling up the nutlets before the rightful owner can get at them. Known to all the hunters as the "widgeon" or "bald widgeon."

***Nettion carolinensis* (Gmel.). Green-Winged Teal.**

An abundant migrant in the spring and fall. As with other ducks, the dates of migration depend entirely on the weather and breaking up or forming of the ice. Of an average season the green-wing arrives early in April, although March records are not infrequent, and large numbers may be found close on to May 1. In fall the majority do not arrive on their southward journey until from the 15th to 30th of September or well into October, and remain in localities where food is plenty until very cold weather. Formerly bred sparingly even in southern Wisconsin, eggs having been taken on Black Hawk Island, Lake Koshkonong, by L. K. in May 1870. At least two other authentic nesting records at this place are known. Farther north they breed more plentifully, but the larger number pass beyond our borders for the summer.

Querquedula discors (Linn.). Blue-Winged Teal.

Formerly one of the most abundant of our ducks, but of late years it has greatly diminished in numbers, perhaps more than any other species, although it is at times still plentiful during late spring and early fall migrations. Arrives much later than the green-wing, and leaves again much earlier in the autumn. Used to nest abundantly in all suitable localities in southern Wisconsin. Thirty years ago a blue-winged teal's nest was such a common affair that we seldom stopped even to find the nest when we flushed the duck. Along every grassy stream or ditch, and in all marshes and meadows and even, at times, in grain fields at considerable distances from water, it nested in abundance. A few still summer with us and breed, but it is a mere fraction of what there used to be. Naturally the most unsuspicious of all our ducks, in localities where it was not disturbed it become so tame as to allow a person to approach within a few feet, especially during the spring months.

Querquedula cyanoptera (Viell.). Cinnamon Teal.

A single specimen of this species was taken by a hunter on Lake Koshkonong, October 18, 1879, and mounted by Thure Kumlien. An immature plumaged male was seen by L. K. in a hunter's string of ducks at Lake Koshkonong, October 9, 1891. The owner flatly refused to part with this bird for any consideration after he found it was not the common teal, although he had not noticed any difference before. There is no doubt but that this species occurs occasionally now. There are several more or less authentic records among well informed sportsmen in different parts of the state, and at club houses on Lake Koshkonong.

[A male, now in the Milwaukee Public Museum, was collected at Madison, May 7, 1939. (J. S. Main, *Auk* 57,1940:424).]

Spatula clypeata (Linn.). Shoveller.

This species does not seem to have decreased in numbers during the past thirty-five years to the same extent that most of the other ducks have. It is still a common duck, but can hardly be called abundant, as it does not occur in such great numbers as many others do. Arrives in southern Wisconsin about the first of April, and many remain until the ice closes the small lakes and streams in late fall, but it is most abundant during October. Essentially a duck of the large marshes and shallow lakes, in these localities considerable numbers still nest within the state, even to the most southern counties. It is exceedingly variable in plumage, and the males probably do not acquire the full dress until they are at least three years old. Anything like a complete series of the plumage changes of this bird would require not less than twenty or more individuals. A remarkable specimen was secured by L. K. in May, 1870, an adult female, just about to deposit eggs, with the breast and, in fact, all the lower parts from the neck down colored like a spring male; the wings also showed an approach to the color pattern of the male. Otherwise the plumage was as in the normal female. We have noticed a tendency this way on one or two occasions before with other ducks. A most excellent table bird.

Dafila acuta (Linn.). Pintail.

An abundant migrant. A few still nest within the state, but they are being gradually pushed farther and farther north for the summer season.

This is one of the ducks that have slowly changed their habits, until now it can be classed as a winter resident in many localities in southern Wisconsin. Wherever there are extensive corn fields, not too far from open spring-brooks, these ducks remain all winter. The pintail is most numerous in March and early April in pond holes and on large fields, and again in October on the lakes and large marshes.

[*Dafilia bahamensis bahamensis* (Linnaeus). Bahama Pintail.]

The remains of a bird found at Lake Winneconne, September 21, 1929, were identified as belonging to this species by O. J. Gromme. (*Auk* 47, 1930:73).¹

***Aix sponsa* (Linn.). Wood Duck.**

Formerly a very common summer resident in all heavily wooded regions about streams. At the present time more common during the migrations, spring and fall, but in much smaller numbers than thirty years ago. Grundtvig (1) gave it as "by far the most common duck at Shiocton," Outagamie County, in 1882-83, breeding "abundantly in the old maples near the river." Considerable numbers still nest in favorable localities in the central and northern part of the state, and in a few places in southern Wisconsin, as about Delavan Lake. Mr. J. N. Clark writes us that it nests regularly in Dunn County. It arrives from the first of April to the first of May, and a few remain into November, but the greater number move southward after it begins to grow cold in October. In fall it resorts to the great wild rice marshes, and while the rice lasts that seems to be its principal food. Later it takes to the oak groves about the streams and lakes, and seems to be especially partial to the acorns of the burr oak. These it eats in large quantities. It often nests considerable distances from water. We know of one instance where it bred regularly for a number of years in a very large hickory. This tree was over two miles from the nearest water in a direct line. One of our most omnivorous ducks, and, contrary to the opinions of many people, should not rank very high as a table bird.

***Aythya americana* (Eyt.). Redhead.**

Arrives in Wisconsin usually with the breaking up of the ice in the smaller lakes, and returns in numbers in October, remaining until the ice again forms. This and the following species show more partiality to certain localities than others of the genus. It has been greatly reduced in numbers of late years, more so than most ducks. Formerly very abundant, it is disappearing at an alarming rate. In the fall this duck is nearly, if not fully, equal to the canvas-back in flavor, and as it commands a high price in the market, is persistently and systematically hunted and shipped to the larger cities despite the law. Has been known to breed at Pewaukee (N. S. Goss) and in Brown County (C. F. Carr). Formerly bred at Lake Koshkonong, and even at the present day a few pairs nest annually in the large marshes about the lake. The principal food of this species in the localities where it resorts in numbers during the autumn is composed of the gemmae or nutlets of one or more species of the pond-weed family, which is also the chief food of the canvas-back when it returns in the fall.

1. On the Birds of Shiocton in Bovina, Outagamie County, Wisconsin, 1881-83. Translated by Chas. E. Faxon, *Trans. Wis. Acad. Sci., Arts, and Let.* X, p. 97-1895.

Aythya vallisneria (Wils.). Canvas-back.

Common migrant. Thirty to forty years ago this duck was supposed to remain only a few days in early spring and October in favored localities where the so-called "wild celery" grew in abundance. Such localities were apparently not numerous, and the species was rated as one of exceedingly irregular distribution. During the past twenty-five years it has become more universally distributed over the state, and locally, at least, not greatly diminished in numbers. We have known for a number of years that the so-called "celery buds" with which these and other ducks are actually crammed to the bill, was no part of the plant **Vallisneria spiralis**, but still we were unable to determine what it was. What little we do know in this connection is due principally to the careful observations of Mr. H. L. Skavlem, of Janesville. Mr. Skavlem took the "buds" from the oesophagus of freshly killed specimens of the canvas-back, and keeping them in water in the cellar through the winter, succeeded in growing the entire plant the next season. This plant proved to be one of the pond-weed family (**Naiadaceae**), of which there are numerous species in the northern states. These gemmae, or nutlets comprise the great bulk of the food of this duck in October and November in Wisconsin. In shape they are spindle form, from one-half to one inch or more in length, of a whitish color and highly farinaceous. The pond-weed grows very luxuriantly in Lake Koshkonong and other waters of the state. Where the "celery" (**Vallisneria spiralis**) grows in abundance they no doubt eat parts of it, but this condition does not obtain in quantities sufficient to furnish food enough to tempt the ducks to remain. The unusually hot, dry summer of 1901 made the shallow water of Lake Koshkonong almost hot, and the pond-weed, as well as other aquatic plants suffered greatly, so that the nutlets were smaller than usual and much fewer in number. As a consequence the ducks remained a much shorter period than usual. It is our opinion, in which Mr. Skavlem concurs, that this particular pond-weed is found in greater abundance than formerly. It also grows in shallower water than the **Vallisneria**, often even inside the belt of rushes. There is not a shadow of doubt but that the bulk of the canvas-back's food consists of the nutlets of this plant at the present day, but has anyone noted any difference in the flavor of the flesh? A number of crippled birds remain on Lake Koshkonong through the summer, and we know of three instances of females being seen with nestlings, but incline to the opinion that the birds were winged and could not continue the journey northward. In December, 1877, some farmers who were digging the decayed vegetable matter, known locally as "muck," for fertilizer, exhumed in a small bay on Lake Koshkonong, a beautiful specimen in the condition known as adipocere. With the exception of the feathers, every part, even to the intestines, was perfectly preserved, and had the appearance of meerschaum. Several shot holes are plainly noticeable on the breast and abdomen, and one shot is imbedded in the sternum. The specimen is now in the collection of Milton College.

Aythya marila (Linn.). Scaup Duck.

Migrant. Of regular, but far from common occurrence on all the larger water courses of the state, frequenting most plentifully the deeper lakes and large rivers. Arrives earlier in spring and departs later in fall than either of the other "blue-bills." We have no evidence that leads us

to suspect that this species ever breeds in the state. More common on Lake Michigan. We have seen large numbers of these birds, with a few of *affinis* and *collaris* in the Milwaukee market, all killed on the lake, and we suspect this is the common form which winters on Lake Michigan. More common inland in fall than spring.

***Aythya affinis* (Eyt.). Lesser Scaup Duck.**

An exceedingly abundant migrant, both spring and fall. Probably the most abundant duck in Wisconsin, arriving with the breaking up of the ice and remaining in the fall until well into December, or until every lake is frozen over. To a limited extent a breeding species even in southern Wisconsin, having been known to nest anywhere from the southern counties northward, but as with most of our ducks and waders by far the greater majority pass beyond our borders to nest. On every lake of any size, Winnebago, Koshkonong, Delavan, etc., numbers pass the summer in flocks on the open water. These are not breeding birds, however. Easily decoyed, consequently great numbers are annually killed, but the species seem to hold its own as to numbers better than most ducks. The true scaup ducks are more largely animal feeders (especially on mollusca) than the next.

***Aythya collaris* (Donov.). Ring-necked Duck.**

Very common during spring and fall, and to some extent a summer resident. Thirty to forty years ago the ring-neck nested in numbers anywhere in the state, and even at the present day some few nest regularly as far south as Rock County, and more in the less settled sections. We think this species is still as abundant during the migrations as thirty years ago. A most excellent table bird; feeds largely in fall on the same food as does the canvas-back. Usually known to Wisconsin gunners as "black-head" or "ring-bill."

***Clangula clangula americana* (Bonap.). American Golden-eye.**

Common migrant and abundant winter resident wherever there is open water. Has apparently become a more common winter resident during the past fifty years. There are several breeding records for northern Wisconsin, and we have ourselves seen adult males at various northern points during the summer, but found no actual evidence of nesting. Fifty years ago this species was not considered as abundant as the next by Thure Kumlien in southern Wisconsin in winter. Three partial albinos have come under our notice, and one supposed hybrid—*Clangula* x *Aythya*.

***Clangula islandica* (Gmel.). Barrow's Golden-eye.**

Actual records for the state are not many. Reported from Racine in 1860 by Dr. Hoy. One specimen was sent to Thure Kumlien from Edgerton in 1877, and one was shot by L. Kumlien November 14, 1896, on Lake Koshkonong. Large numbers of golden-eyes remain on Lake Michigan during winter, and no doubt this species is of regular occurrence with them. Many remain all winter also in open water at Neenah and Menasha, and at different places on Fox River, but as these birds have not, to our knowledge, been studied with any care, we do not know how often *islandica* may occur. No distinction is generally made by gunners, so ornithologists get but few records from this source, and furthermore the females and immature birds are very difficult to distinguish from

americana by anyone. In a copy of Rev. Mr. Barry's list of 1854, although he does not include this form, we find pencil notes by Thure Kumlien as follows: "*Clangula vulgaris* (= *C. c. americana*) only one specimen taken; is here not as common as *C. barrowii* (= *islandica*) in winter, 1854."

[This species is not entitled to a place on the state list. The Wisconsin specimens cited by E. W. Hasbrouck (*Auk* 61,1944:553-4), on re-examination, proved to be *americana*.]

***Charitonetta albeola* (Linn.). Buffle-head.**

Very common migrant in spring and fall, but greatly diminished in numbers of late years. Young still unable to fly have been shot on Pewaukee Lake by B. F. Goss, which is the only authentic breeding record for Wisconsin. Even this should be considered as exceptional. Immature birds are frequently taken in the larger inland lakes in summer, but are evidently not breeding. Universally known among Wisconsin hunters as "butterball."

***Harelda hyemalis* (Linn.). Old-squaw.**

Very abundant on Lake Michigan in winter. During the unusually severe winter of 1880-81 hundreds froze to death in the ice off Milwaukee, and boys peddled them, principally bones and feathers, about the streets at ten cents a dozen. Of late years becoming more and more common on the inland waters. Twenty-five years ago it was considered "quite a take" in the interior, and those found were usually young birds in October and November. Now they are anything but rare on most of the larger lakes, and are sometimes taken in numbers, even in spring, but we have never seen them in Wisconsin in breeding plumage. On the lake a few arrive early in October, and their numbers increase until well along in the winter. By March they become restless, soon begin to gather in immense flocks, are then very noisy, and are all gone by early in April, except possibly a few in immature plumage which remain until well along in the month. When one has seen and heard these ducks as they arrive at their northern breeding grounds in immense flocks, and congregate on the ice about the open water in May, he does not wonder that Sundevall should speak of them as "*Anas canora, ob cantum vernalem suavem et sonorum*," for heard at some little distance, with several hundred voices in concert, it ceases to be a jabber, and is really melodious.

***Histrionicus histrionicus* (Linn.). Harlequin Duck.**

Rare winter straggler to Lake Michigan. Dr. Hoy obtained at least four specimens at Racine, and there is an old record, specimen not extant, however, for Milwaukee. Also reported from Lake Koshkonong, but on insufficient evidence, as is also the case with one other record for the state.

[No Wisconsin specimen was located.]

***Somateria dresseri* (Sharpe). American Eider.**

Lake Michigan in winter, rare. Recorded at Racine in winter of 1875, by Hoy. Two specimens were also taken at Milwaukee and were preserved in the Public Museum. The only positive record for the interior that we are aware of, is one specimen, a female, shot on Lake Koshkonong, in November, 1891.

***Somateria spectabilis* (Linn.). King Eider.**

Although this species occurs only as a rare winter resident on Lake Michigan, there are more authentic records than of the preceding. Has been taken at Racine and there is now a specimen in the Milwaukee Public Museum, taken at Milwaukee many years ago. In the collection of Dr. E. Copeland and H. Russel, of Milwaukee, are two specimens taken at that point, a male, January 7, 1900, and a female, December 25, 1899. There was, about 1874, at Madison, a mounted immature plumaged male, said to have been shot on Lake Mendota; and in 1880 we saw in a fisherman's house near Sheboygan, a mounted male of this species in nearly full plumage. This specimen was caught during the winter in a gill net. During our sojourn on the Great Lakes we are positive of having seen king eiders in small flocks several times in late fall. Being very familiar with the bird in the Arctic regions, we think there was no mistake.

[A female was taken in the Milwaukee harbor, November 28, 1903. (H. L. Ward, *Bull. Wis. Nat. Hist. Soc.* 5,1907:136). The Milwaukee Public Museum has a male shot by a hunter at Muskego Lake, November 8, 1933. (O. J. Gromme, *Auk* 51,1934:367).¹

***Oidemia americana* (Swains.) American Scoter.**

Rather common winter resident on Lake Michigan. Less common in the interior, occurring principally as a migrant in late fall. Rarely met in full plumage. The three species of "surf ducks" are apparently becoming more common, especially the next two, in autumn.

[According to Ned Hollister six American Scoters were killed at Lake Delavan between 1892 and 1899. (*Auk* 37,1920:367).¹

***Oidemia deglandi* (Bonap.). White-winged Scoter.**

Much more common in the interior than the preceding. Found on all the larger inland waters from October until the ice makes. At times exceedingly abundant on Lake Michigan, vast flocks being met, at long distances from land. It is often taken in the fishermen's nets in deep water far from shore. Like the other scoters seldom met in full plumage. Called "coot" and "velvet duck" by the gunners, few distinguishing this from the other species.

[This is the only one of the Scoters that approaches being common.¹

***Oidemia perspicillata* (Linn.). Surf Scoter.**

Not rare on Lake Michigan in winter, and usually found on all the larger inland lakes in late fall. Seldom taken in the spring, most of the specimens being young or immature birds. For some unexplainable reason King's list of Wisconsin birds (1) does not even mention one of these three species of scoters as found in the state.

[Net Hollister (*Auk* 37,1920:367) states that three were killed at Lake Delavan between 1892 and 1899. One was shot in Washburn County by Clarence Searles, October 29, 1940. (*Pass. Pigeon* 2,1940:124; 3,1941-12).¹

***Erismatura jamaicensis* (Gmel.). Ruddy Duck.**

Common migrant, but not nearly as abundant as formerly. Until within a few years this duck was considered almost worthless for food by most people, and, as a consequence, escaped systematic hunting, espe-

1. "Geology of Wis.," 1873-1879, Vol. I, p. 441-610.

cially as it seldom decoys or flies past a blind. It has, however, suddenly sprung into favor among sportsmen and will soon be rare. A duck of peculiar habits, it is not well adapted to "hold its own" against the warfare now waged upon it. A rather late arrival in southern Wisconsin, it moves southward again as soon as the ice forms. A few breed in the state, as about Lake Koshkonong, Pewaukee Lake, Lake Monona (Goss), etc., but sparingly of late.

Nomonyx dominicus (Linn.). Masked Duck.

Accidental. A single female was procured by Thure Kumlien on Rock River, near Newville, November, 1870, "and is now preserved in the collection of the Boston Society of Natural History" (2).

[Recorded by T. M. Brewer, *Proc. Boston Soc. Nat. Hist.* 14, 1872: 205.]

Chen hyperborea (Pall.). Lesser Snow Goose.

Migrant. Snow geese were formerly very abundant during the spring and fall migrations in Wisconsin, but of late years have so diminished in numbers that at the present time they are almost rare. Both species occur, in about equal numbers, so that what is said of one, applies equally to the other. More often met along the Mississippi River than in the interior or on Lake Michigan, especially in the fall, of late years. A few flocks still regularly pass up the eastern half of the state in spring, but it is a mere fraction of the former numbers. Nearly always associated with *C. caerulescens* and *A. a. gambeli*.

Chen hyperborea nivalis (Forst.). Greater Snow Goose.

Migrant, formerly abundant, now rather rare. We should say that possibly fifty per cent. of the snow geese taken in Wisconsin are intermediate between this variety and the last. Occasional flocks are seen passing high overhead, but of which form it is of course impossible to determine. Of the specimens examined, taken during the past sixty years and mostly when the birds were abundant, about one-half are typical of either *hyperborea* or *nivalis*, and in about equal numbers, and the balance intermediate. They feed sparingly now about the larger corn fields in southern Wisconsin, especially in spring, where they formerly resorted in large numbers.

[There are no specimens for the state and it is highly improbable that there ever will be.]

Chen caerulescens (Linn.). Blue Goose.

Although by no means rare along the Mississippi, and in spring anywhere on the larger lakes and prairies, this species, as elsewhere, is none too well known in our state. It is of irregular and erratic occurrence in Wisconsin anywhere except along the Mississippi, and is usually found in the eastern counties associated with the snow or white-fronted goose, more often the latter. It is easily decoyed, and does not seem to have the ordinary "goose sense" of other species. We have it, in every stage of plumage, from Koshkonong and Delavan Lakes and the surrounding prairies. The "bald brant," as many sportsmen call the adult of this species, is usually an early spring migrant, sometimes arriving the latter part of February, but commonly in March. One specimen taken on Delavan Lake as late as April 18.

Anser albifrons gambeli (Hartl.). **American White-Fronted Goose.**

Formerly an exceedingly abundant spring and fall migrant, but of late years not at all plenty. Frequents the large prairie corn fields. This species has been credited by some as a summer resident, but it is extremely unlikely that it ever breeds in the state. Specimens have sometimes been taken as late as the middle of May, but there is no evidence that they were breeding, and individuals have been known to remain all summer in the flocks of tame geese on Lake Koshkonong. Commonly known as "brant," or "speckle-belly" among the Wisconsin gunners.

[Rare migrant. Recent sight records are: twenty near Madison, March 27, 1939 (J. S. Main, *Auk* 56,1939:471); single bird on the Delavan Prairie, April 28, 1940, (S. P. Jones, *Pass. Pigeon* 2,1940:67); single bird in Columbia County, April 24, 1941, (E. Bussewitz, *ibid.* 3,1941:43); twelve at Milwaukee, October 16, 1941, (W. J. Mueller, *ibid.* 3,1941:99).]

Branta canadensis (Linn.). **Canada Goose.**

Abundant, increasing rather than diminishing in numbers, during the fall, winter and spring. To such an extent has this species changed its habits that it is no longer looked upon as a sure harbinger of spring, as in most sections of southern and even south-central Wisconsin it remains all winter, flying back and forth from its favorite corn fields to some lake or large marsh for the night. When snow is plenty it even remains in the fields for days at a time. Twenty-five to fifty years ago the flocks which first made their appearance were noted by every one, and spring was not far distant. Now the flocks which return from the north in October are continually added to until they are often several hundred strong, and remain thus until the beginning of spring. Of late years the standing corn is cut with a machine, which not only cuts the corn but the weeds also, and this gives the geese a clear view of the surrounding country, which is one thing they must have in order to feed contented. Fifty years ago a common breeder in almost any swamp or large marsh, or on the "prairie sloughs" (now a feature of the past). At the present time only scattered pairs nest as far south as the southern third of the state. The last nesting record we have for southern Wisconsin was in Jefferson County—from the years 1891-99, inclusive, when a goose deposited her eggs on the edge of a tamarack swamp, on the same mound of rubbish each year. The first set was taken several times, when she moved to another mound farther into the swamp and here hatched her eggs. No mate was ever noticed to have visited her.

Branta canadensis hutchinsii (Rich.). **Hutchin's Goose.**

Typical *hutchinsii* is by no means rare in Wisconsin, especially in late fall and winter. A serious problem, however, confronts us when we attempt to draw the line between this and the foregoing variety, as every stage of difference between the two is represented by the hundreds of intermediates.

[The Milwaukee Public Museum has two specimens: a female taken in Fond du Lac County by O. J. Gromme, October 30, 1927; a male taken in Waukesha County by Howard Pynn, October 27, 1934. The identifications were verified by Dr. Herbert Friedman.]

Branta canadensis minima (Ridgw.). **Cackling Goose.**

Credited to the fauna of Wisconsin in Ridgway's "Manual of North American Birds," the "A. O. U. Check List," and other works, as a strag-

gling migrant. A small goose with short neck, minimum amount of black, dark underparts and distinct white crescent at the forward lower part of black neck marking is of frequent occurrence in Wisconsin, sometimes in large flocks made up of this kind entirely, and again in company with geese of every varying degree of size and marking. Specimens of this character have been examined of barely six pounds weight, and in the collection of Mr. Skavlem is a specimen weighing five and one-half pounds, which we think could be called typical **minima**. These birds are locally known as "bull-necks" by the sportsmen. As with the case of **hutchinsii**, compared with **canadensis**, there are also intermediates of every varying degree between this form and both the others. There are occasionally large geese with dark underparts, slender necks and a distinct collar of white on lower neck. The white cheek patches appear to be indifferently separated by black on throat, or unbroken, among geese of all sizes, shape and coloration. We have examined carefully many dozens of fresh specimens killed at all times from early fall until late spring, and frankly admit our inability to satisfactorily unravel the "goose question" in Wisconsin. It is very likely that we have in winter these three varieties, and possibly four, with, as stated, every varying degree among the many intermediates.

[No Wisconsin specimens are known.]

***Branta bernicla glaucogastra* (Brehm.). White-Bellied Brant.**

The brant has been listed as a bird of Wisconsin for a great many years, but when all records are sifted, we have left as authentic only the one of Dr. Hoy—a single specimen taken at Racine many years ago. This was one of three from the shore of Lake Michigan. For the past thirty years we have run down "brant" records innumerable—to find that in every case it proved to be something else, varying from the common Canada goose to a female eider duck! So persistently have we followed this up that we have come to the reasonable conclusion that this sole authentic record is merely accidental. We shall have no faith in any Wisconsin brant record unless accompanied by the brant itself. All of the smaller geese are universally called "brant," which makes it impossible to even consider a record except with suspicion. In the "Report of Bird Migration in the Mississippi Valley, 1884 and '85," by W. W. Cooke, we find statements that would indicate that this species, at least in 1883-4, was noted in Illinois, and that in Minnesota it became almost common. Prof. Cooke himself seems to question these records; and if they were obtained from no more reliable sources than **some** of the Wisconsin records were, they are absolutely worthless as proving the occurrence of the brant in the Mississippi Valley. Barry's list of 1854 says, "abundant in all parts of the State, and large numbers breed here." This is, of course, utterly false. Unfortunately the Hoy collection, now in the possession of Mrs. Wm. Henry Miller, of Racine, is left entirely without labels, and the records, or catalogues, have been lost or destroyed. The single brant preserved there is, without question, the specimen taken at Racine and is a perfectly typical ***glaucogastra***.

[No unquestional specimen of the American Brant (***Branta bernicla hroia***) for Wisconsin is known. (Cf. W. L. McAtee, **Auk** 62, 1945:464).]

(Continued in next issue)

1947 In Review

By SAM ROBBINS

During 1947 a total of 277 different birds was reported for Wisconsin. This includes 274 species, one subspecies (prairie horned lark), and two hybrids (Lawrence's and Brewster's warblers). It does not include two species of recently introduced birds (Reeves' pheasant and Chukar partridge), or five species included in a "hypothetical list" because complete evidence for positive identification was lacking. The total represents the combined efforts of 18 "regular" reporters and 54 "irregular" reporters, and includes observations from 63 Wisconsin Conservation Department personnel, 24 University of Wisconsin students and faculty, and approximately 25 others: a total of approximately 185 observers.

The General Picture

The year started off with rather mild weather and little snow; good numbers of some of the less hardy species were to be seen in the state in January. There were unusual numbers of flickers, mourning doves, robins, redwings and song sparrows; also recorded were: turkey vulture (two January records), Cooper's hawk, pigeon hawk (Grant County, Feb. 21, Richards), woodcock (Dane County, Feb. 8, Don Thompson), kingfisher, yellow-bellied sapsucker, brown thrasher, bluebird, meadowlark, rusty blackbird, cowbird, white-throated and swamp sparrows. As far as temperatures were concerned, most of these birds might well have survived the winter, for the cold weather was not particularly severe. Snowfall for the winter as a whole was below normal, also, but a severe blizzard near the end of January undoubtedly took its toll. An outstanding feature of the winter months was the influx of redpolls, pine and evening grosbeaks. Most reporters agree that the flight of pine grosbeaks was the finest in many years, but they had all disappeared by the tenth of March. Redpolls lingered until May 3 (Rhinelander; Lois Almon), while evening grosbeaks remained through May 30 (Neillsville; Robbins).

The spring season was characterized by cool, damp weather throughout, which retarded the migration noticeably. Cool weather in March delayed the general arrival of the earliest migrants; not until mid-April did such birds as flickers and phoebes appear in any numbers in large portions of the state. The phenomenal conditions that brought such a wave of May birds from the southwest to the Toledo and Toronto region on April 6 missed Wisconsin; the only extraordinary report for that day was an extremely heavy robin migration noted at Oshkosh (Evans). The absence of favorable weather conditions throughout the remainder of the spring had the effect of forcing the birds to trickle through in small numbers, rather than in waves that bird-lovers find so exciting. The general arrival of such common species as the wood pewee, Tennessee warbler and indigo bunting did not reach Neillsville until June 1 (Robbins). As would be expected, other migrants remained in the state later than usual. A pigeon hawk remained in Sauk County until May 29 (Kruse); a ruddy turnstone was still in Two Rivers, June 6 (Mrs. Smith); a ruby-crowned kinglet was seen in Milwaukee on June 6 (Mrs. Balsom); pipits were migrating over Neillsville, May 30 (Robbins); Tennessee

warbler in St. Croix Falls, June 14 (Heinsohn); myrtle warbler in Neillsville, June 1 (Robbins); Blackburnian warbler in Madison, June 10 (Em-len); black-poll warbler in Milwaukee, June 15 (Mrs. Balsom); Canada warbler in Milwaukee, June 14 (Bierman); white-throated sparrow in Kenosha, June 3 (Mrs. Higgins). And even in the cold, backward springs, an occasional early straggler is found. There was a pectoral sandpiper in Milwaukee on Mar. 23 (Gordon Orians); the short-billed marsh wren arrived in Madison by Apr. 26 (Doane); a ruby-crowned kinglet was seen in Green Lake County, Mar. 9 (B. W. Talbot).

The nesting season, which had gotten off to a late start, received further setbacks during late May and most of June. A heavy snow fall on May 29 took a big toll of nests in the northern and eastern portions of the state. Continued cool and wet weather in June did not help the nesting birds, and quite a number of nests destroyed by wind and rain storms were reported. Dry weather and record-breaking heat in August and early September, however, saved the nesting season from being a serious failure; a few young birds scarcely able to fly were still to be seen in late September. In spite of a poor season, several interesting nesting records were obtained. Known to have nested in Wisconsin were the American egret, gadwall, green-winged teal, hooded merganser, turkey vulture, goshawk, king rail, winter wren, and lark sparrow. A probable nester was the pine siskin.

The fall migration was much more to the ornithologists' liking than was the spring. The shore bird migration, which had been quite poor in the spring (except for the redbacked sandpiper), was more exciting in fall, with golden and black-bellied plovers, ruddy turnstones, knot, white-rumped, Baird's, stilt and Western sandpipers, and marbled god-wit all being reported, along with more than the usual number of dowitchers. Small land birds did not appear in more than usual numbers, but this was probably due to the lack of pronounced waves. Many of these lingered later than usual, breaking a number of late departure records. The combination of an early duck hunting season and the unusually mild October weather resulted in a serious loss to the breeding duck population, but in little depletion of the more northern migratory ducks. The fall flight was not good, however, and was of short duration. They arrived late and left early, when the lakes in the northern part of the state froze over in November.

After an abnormally warm October, November was cool, but there were no cold snaps, either in November or December, of sufficient intensity to send all the migrants south. A surprising number and variety of birds remained throughout December: Wilson's snipe, mourning dove, kingfisher, flicker, winter wren, robin, hermit thrush, bluebird, meadow-lark, red-wing, rusty blackbird, grackle, cowbird, Savannah, vesper, field, white-crowned, white-throated, fox, swamp, and song sparrows. Winter finches were as conspicuous by their absence, however, as they were by their presence the previous winter.

The Rarer Records

Part of the unquenchable enthusiasm of the field observer stems from the hope—conscious or unconscious—of coming upon a real rarity. Who will be the lucky ones? What will it be? When will it happen? These are the questions that always remain unanswered—until the moment

comes. The moments are found to come more frequently to those who get out to look at the birds most frequently. Simple percentage. The moments usually seem to come when we least expect them. But they do come. Every year seems to bring its share of rarities, and 1947 was no exception. Here they are:

Red-throated Loon: Milwaukee, Apr. 23 (Mrs. Balsom-Mrs. Schwendener).

Holboell's Grebe: A pair in breeding plumage were present in Black River Falls, Apr. 15-17 (Mr. & Mrs. Roberts).

Eared Grebe: Individuals were seen in Fox Lake, Dodge County, on Apr. 20 (Hopkins), and in Horicon, Apr. 24 (Smith-Hopkins).

Western Grebe: Near the spot where eleven birds were seen in Two Rivers a year previous, seven birds were observed on Nov. 18 (Mrs. Smith).

White Pelican: On Cedar Lake, in St. Croix and Polk Counties, 27 of these birds were seen on Apr. 24 (Jonas). The following day there



WHITE PELICANS IN WISCONSIN

L. D. JOHNSON

were 48 (Hope); and again on June 12 three were still present (Hope). A few were noted on Lake Koshkonong, May 4 (Mrs. Traxler); four were found at the same lake on Sept. 16 (Dallman).

American Egret: The good flight of 1946 was not duplicated. Besides the breeding birds at Horicon, only scattered individuals were seen, the most northerly being one in Iron County, Sept. 1 (Beer), and two in Pierce County, Sept. 9 (Jonas).

Snowy Egret: An individual was discovered in Kenosha County late in August by Carl Buntrock and Miss Phyllis Gorski, and collected by J. L. Diedrich for the Milwaukee Public Museum on August 29.

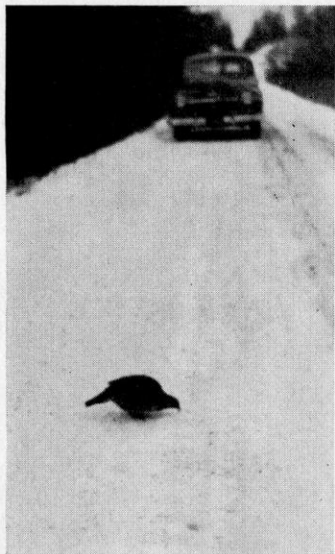
Little Blue Heron: Several birds of this species accompanied the snowy egret.

Turkey Vulture: There were no less than 14 reports of this species, representing all seasons of the year and a wide variety of locale. Most

outstanding were the nesting record in Oconto County (Carl Richter), the concentration of 23 seen together in Crawford County, Sept. 10 (S. A. Apel), and January records in Dane County (Scott) and Jackson County (Radke).

Goshawk: Besides the nesting record in Vilas County (Thompson-Stroebe), there were five other reports during the year from Dane, Green Lake, Milwaukee and Oneida Counties.

Golden Eagle: The only report was an individual in Marinette County, Jan. 17 (Richardson).



SPRUCE GROUSE PICKING UP
GRAVEL
PHOTO BY B. J. BRADLE

Spruce Grouse: This species is beginning to be observed more frequently than in the last few years. Reports come from Oneida County, Oct. 16 (Steven), and Forest County, Dec. 1 (Bradle).

Yellow Rail: Oconto, June 2 (Carl Richter).

Piping Plover: This infrequent visitor was found in Milwaukee on Aug. 25 (Mrs. Larkin-Gordon Orians).

Golden Plover: The only spring record was secured in Oshkosh, May 19 (Evans). In fall a few were seen in Milwaukee from Aug. 28 to Oct. 15 (Gordon Orians et al), and in Dunn County, Oct. 19 (Buss).

Western Willet: The only individual reported for 1947 was in Green Bay, May 18 (Green Bay Bird Club).

Knot: Again noted in Milwaukee, Sept. 10-Oct. 5 (several observers).

White-rumped Sandpiper: Noted on at least four occasions in Milwaukee, Aug. 14-Oct. 9 (Gordon Orians et al.).

Baird's Sandpiper: One in Oshkosh, Aug. 30 (Kaspar); noted off and on in Milwaukee from Aug. 26 to Oct. 2 (many observers).

Stilt Sandpiper: After an absence of five years, this species returns to the state list because of an individual noted in Oshkosh, Sept. 10 (Kaspar).

Western Sandpiper: Even more of a stranger to Wisconsin, a typical specimen of this species permitted careful observation at a distance of ten feet in Oshkosh, Sept. 10 (Kaspar).

Marbled Godwit: An individual in Milwaukee on Sept. 7 provided a treat for Howard and Gordon Orians.

Northern Phalarope: Single birds were seen in Horicon, Sept. 25 (King), and in Oshkosh, Oct. 2 (Kaspar).

Wilson's Phalarope: Milwaukee, May 4 (Gordon Orians-Treichel); Madison, May 5 (Doane); Oshkosh, May 16 (Evans); Marinette County, June 1 (Carl Richter); Oshkosh, Aug. 12 (Kaspar).

Glaucous Gull: An individual first seen in Milwaukee on Jan. 12 (Gordon Orians-Treichel) was seen there again on Mar. 8 by the same observers, and again on Mar. 16 (Mrs. Nunnemacher).

Franklin's Gull: Several birds in Milwaukee provided a treat for many observers from Sept. 28 to Oct. 31. Single birds are also reported from Madison on Apr. 8 (Springer) and Oct. 26 (Schorger).

Ivory Gull: Perhaps the prize bird of the year! On March 8 Carl Richter came upon a bird of this species on the ice fields off the coast from Oconto Harbor. The specimen was collected, and is now in the Milwaukee Public Museum. On the same day, another bird was sighted on the breakwater in Two Rivers harbor, and approached to within thirty feet. As this observation was made in late afternoon, there is no doubt that the two were different birds. Most of the rarities we see in Wisconsin are birds that are not so far from "home" and can be expected to be found again at some later date, but the ivory gull in Wisconsin is an "accidental" straggler from the arctic regions; it is a "once-in-a-lifetime" experience.

Barn Owl: Winnebago County, May 30 (Kaspar); Horicon, June 8 (Mathiak).

Snowy Owl: Only a few scattered reports. Single birds were seen in Columbia, Dodge, Jefferson and Manitowoc Counties, all in January; also noted in Sauk County, Nov. 20 (Mrs. E. M. Cox), and in Dodge County, Dec. 29 (W. H. Field).

Saw-whet Owl: Heard off and on in Sauk County during January and February (Derleth); Milwaukee, Jan. 6 (Dietrich); one found dead in Oconto, Feb. 12 (Carl Richter); another found dead in Sauk County, Feb. 22 (Springer).

Arkansas Kingbird: One seen in Columbia County, May 18 (G. A. Hall et al.).

Acadian Flycatcher: If more people were acquainted with the song of this species, it might be found to occur more frequently than the records indicate. Individuals were noted in Loganville, May 15 (Kruse), in Neillsville, May 23-31 (Robbins), and in Oshkosh, May 30 (Evans).

Olive-sided Flycatcher: Spring reports come from Madison, Milwaukee, Oshkosh and Neillsville; fall birds were seen in Milwaukee and Ripon, the latter at the late date of Oct. 3 (Cors).

Raven: During the fall months there were several reports from Clark, Jackson and Juneau Counties. This species rarely goes so far south. Another possible report from Kenosha County, Dec. 12 (Mrs. Higgins) is more of a hypothetical nature, because the evidence was not entirely conclusive.

Hudsonian Chickadee: Reports from the northern part of the state are too sketchy to indicate the extent of the presence of this species in its normal winter range. Several are known to have moved out of their range into southern Wisconsin, however. From January to March, several birds were seen in different parts of Madison (Doane, Barger, et al.). Another was caught and photographed in Oconomowoc, Feb. 2 (C. P. Fox). One turned up in southern Clark County, Dec. 30 (Robbins).

Carolina Wren: The only report was an individual in Oshkosh, Aug. 24-27 (Kaspar).

Bewick's Wren: At least seven reports in Madison, Milwaukee and Spring Green, from April until August (several observers).

Mockingbird: Milwaukee, Apr. 29 (Gordon Orians) and May 11 (Stolle); Manitowoc, June 4 (Mrs. Elfner); Madison, Nov. 15 (Mrs. Dinsday); Milwaukee, two birds present from Dec. 22 on (Mrs. Schwendener, Treichel, et al.).

Bohemian Waxwing: Noted in Madison, Feb. 9 (Mrs. Miller), and in Hudson, Feb. 26-Mar. 11 (Mrs. Owen). Did not appear again until Dec. 25 in Neenah (Zaumeier), and Dec. 30 in Neillsville (Robbins).

White-eyed Vireo: A bird of this species was carefully studied in Milwaukee on June 1 by Gordon Orians, and his uncle G. H. Orians, who is familiar with the species in Ohio.

Prothonotary Warbler: An unusual number of records. Besides being noted in its normal breeding territory in Grant County, May 11 (several observers); individuals were found in Madison on May 10 (Bill Jackson) and May 13 (Mrs. Walker), in Walworth County on May 11 (Mrs. Higgins-Mrs. Moody), in Milwaukee on May 18 (Mrs. Kelley) and May 27 (Mrs. Larkin), in Appleton on May 21 (Mrs. Rogers), and in Watertown on May 25 (Mallow).

Blue-winged Warbler: Outside of its regular breeding territory, this species was noted in Madison, May 13 (Mrs. Walker); in Green Bay, May 18 (Green Bay Bird Club); in Neillsville, May 13 and June 1 (Robbins).

Lawrence's Warbler: So far as the writer knows, there was neither a specimen nor a sight record for this hybrid in Wisconsin until this year. On June 11, in Loganville, Harold Kruse had such a splendid opportunity to observe a bird of this sort that there seems to be no room for doubt about its veracity. The bird was seen twice on that day; once at a distance of only 15 feet, under excellent conditions of observation. The bird was singing the song of the blue-winged warbler, and resembled that species in appearance, but showed the unmistakable black throat and eye-patch of the Lawrence's. Oddly enough, another bird answering the same description was reported from Oshkosh on May 15 (Mrs. Glen Fisher). The evidence for this report is slightly less convincing than for the Loganville bird, but is still very strong.

Brewster's Warbler: Again there is no specimen for this hybrid of the golden-winged and blue-winged warblers, but there have been several careful sight records in recent years. A bird of this race was observed in Neillsville twice, on May 20 and May 30, on breeding grounds of the golden-wing (Robbins). Hopes that the bird might nest with golden-wings dimmed when several attempts to locate the bird in June were unsuccessful. In Wisconsin, where both golden-wing and blue-wing occur, one might expect to come across this hybrid occasionally.

Audubon's Warbler: A convincing sight record of this straggler from the west was made in southern Juneau County, near Wisconsin Dells, on May 3, by a University of Wisconsin ornithological class. Bill Jackson was among the observers, and the report was substantiated by the instructor, Jim Beer. The last previous sight record was four years before, to the day, when Francis Zirrer saw one in Hayward on May 3, 1943.

Cerulean Warbler: There is increasing evidence that the present range of this species includes considerable areas of central as well as southern Wisconsin. Migrants were noted in Madison, May 18 (Barger); Watertown, May 24 (Mallow); Oshkosh, May 19 (Kaspar); and Two Riv-

ers, May 11 (Lintereur). Neillsville had one or more singing males, noted on June 25, July 3 and July 19 (Robbins), but opportunity to investigate possibilities of nesting were lacking. This species was also reported from Fond du Lac County, July 18 and Aug. 22 (Mallow-Batha).

Prairie Warbler: As far as the writer knows, this species has not been reported from Wisconsin since the Passenger Pigeon began publication, nine years ago. It is therefore remarkable that this species should be recorded four times in 1947! One was seen in Madison on May 16 (Mrs. Walker) and May 17 (Stokes); another was present in Milwaukee, May 19 (Mary Donald); another in Plymouth, May 19 (Koopmann); an autumn report came from Milwaukee, Oct. 8 (Mrs. Balsom-Mrs. Larkin).

Kentucky Warbler: Noted in Wyalusing Park, Grant County, where they probably breed, on May 11 (Bill Jackson et al.); reported also from Dane County, May 18 (Kumlien Club).

Yellow-breasted Chat: Two reports: one in Madison, May 13 (Mrs. Walker); one noted in Green County for ten days in July (Hetzler).

Hooded Warbler: This is another southern visitor that found its way into Wisconsin more frequently than usual. One was seen in Milwaukee, May 15 (Mrs. Larkin); a male was seen at very close range in Lodi, May 22 (Van Ness); one was seen on three occasions in Appleton, May 15-29, (Mrs. Rogers); still another was observed in Madison, June 8 (G. A. Hall).

Orchard Oriole: Seen in mid-May were individuals in Madison, Oconomowoc, Milwaukee, Two Rivers and Green Bay. Another was noted in Viroqua, June 29 (Miss Morse); and a late fall migrant was found in Green Lake, Sept. 19 (Cors).

Pine Grosbeak: After a heavy flight in the winter 1946-1947, the following fall brought only one report, that of a stray female in Milwaukee, Nov. 27 (Treichel).

White-winged Crossbill: Crossbills have a habit of turning up when least expected, or not turning up at all. No red crossbills were reported during 1947. White-winged crossbills were noted in Rhineland on Mar. 8 (Lois Almon), in Neillsville on Apr. 12 (Mrs. Crothers), and in Mercer on June 5 (Mrs. Sell).

LeConte's Sparrow: Found in Milwaukee from Apr. 29 (Gordon Orians) to May 14 (Susan Drake), and again on Oct. 15 (Gordon Orians). Also noted in Oconto, June 2 (Carl Richter).

Nelson's Sparrow: This is another species that has not been reported from Wisconsin in several years. One bird was watched in Sheboygan County, Oct. 1 (Mrs. Balsom, Mrs. Larkin, et al.).

Lark Sparrow: Black River Falls, May 12 (Mr. & Mrs. Roberts); Spring Green, May 17 (Mrs. Balsom); Lone Rock, June 24 (Miss Morse).

Harris's Sparrow: In 1946 both spring records of this species were on May 12; in 1947 there were three spring reports, and two of them were on May 12: one in Milwaukee and one in Ladysmith (Feeney). The other was in Neillsville, May 16 (Robbins). Fall birds, all in immature plumage, were seen in Oshkosh, Appleton, Two Rivers, Neillsville, Milwaukee and DeSoto, Crawford County, between Sept. 25 and Oct. 28.

Hypothetical List

Candidates for the hypothetical list are birds that in all probability were observed in the state, but which are not included in the regular list because there is some room for doubting the observation. Sometimes

positive identification is so difficult that a collected specimen is required. Often, however, it is a case of incomplete observation and reporting. It sometimes happens that a rare bird is seen, and at a later date reported in greater or less detail. Whenever details are lacking, a request is sent for them; but when no notes are written down at the time of the observation, memory is dimmed, and complete evidence is lacking. The alternative to this is for the observer to be equipped with pencil and paper at all times, so that whenever a rare bird is met, the observation can be recorded on the spot, in every detail. It will help, also, if the observer reports a rare find immediately, without waiting for the end of the season. Five birds belong on the hypothetical list for 1947.

Swainson's Hawk: At Cedar Grove in Sheboygan County, a good vantage point for watching the hawk migration, a bird probably of this species was observed on Oct. 4 by Elden Hunter, George Treichel and Gordon Orians. The dark breast and light belly pattern was observed, but further details of a distinctive nature were not recorded and reported, and in their absence, there remains some doubt about the identification.

Ferruginous Rough-legged Hawk: In Columbia County on Nov. 12, Harold Mathiak noted a large, whitish bird in the characteristic hovering motion. Observing the bird with 9X35 binoculars at $\frac{1}{4}$ mile, he noted reddish tail and upper-parts, as well as the general whitish appearance. The hovering actions, whitish color and reddish underparts suggest the Ferruginous rough-leg, but the reddish tail raises the possibility of some race of the red-tailed hawk, and because of such a possibility, it seems best to include this record with the hypothetical list.

Pomarine Jaeger: In Milwaukee on Nov. 19 (Gordon Orians) and Nov. 20 (Orians and Helmuth Mueller) a jaeger was seen in typical behavior: chasing, attacking and robbing Bonaparte's gulls. The question about this bird is not its being a jaeger, but rather what kind of jaeger it was. Its large size (much larger than the Bonaparte's; a little smaller than the herring gull) and short tail feathers (appeared to be quite short and blunt) suggest the strong likelihood of the pomarine jaeger. Jaegers are very confusing in fall, however, even to those who have had wide experience with them. This is one instance when the collected specimen would have been almost necessary, and in its absence there remains some doubt about the record.

Laughing Gull: Birds probably of this species were noted in Milwaukee on two occasions: June 5 (Bill Jackson) and Sept. 27 (Elden Hunter et al.). In each case the evidence that is available is not complete, and is therefore inconclusive.

Montana Junco: An individual of this or some other western race of the junco was a visitor at the Ned Swigart feeding station near Milwaukee, and was observed there on Jan. 20 by J. L. Diedrich of the Milwaukee Public Museum. The bird was observed under favorable conditions for nearly an hour, during which time the contrast between very dark head and brown back was clearly noticeable. The bird also appeared to be more active than other juncos nearby. Positive identification of this bird would not have been possible without the specimen, and might not have been even with it.

Reports from Persons and Places

The keeping of yearly lists is not of significant scientific value, but is interesting and stimulating for the observers. This being a new devel-

opment in the annual summary, few contributors sent in copies of their 1947 Wisconsin bird list, but here is the record of those who did:

Mrs. Dixie Larkin, Milwaukee	225
Mrs. A. P. Balsom, Milwaukee	210
Mr. George Treichel, Jr., Milwaukee	200
Sam Robbins, Neillsville	200
Jack Kaspar, Oshkosh	196
N. R. Barger, Madison	164
E. W. Strehlow, Green Bay	158
Mr. & Mrs. H. D. Roberts, Black River Falls	140
Harold Kruse, Loganville	137
Paul Cors, Ripon	119
Mrs. Roy Elfner, Manitowoc	100
Mrs. Floyd Traxler, Milton	87
John Heinsohn, St. Croix Falls	85

Those who sent in lists for 1947 will be out to improve them in 1948. It is hoped that many who neglected to send in 1947 lists will contribute in 1948.

In going over all the bird observations for the state in 1947, the writer found that reports had come in from all but three counties (Calumet, Kewaunee, Lafayette). We hope the time will come when an examination of the records by counties will give valuable information about the range and abundance of the various species of birds; right now such an examination serves only to indicate those areas of the state that are best covered by reporting observers. As that is of itself of considerable interest, however, it seems proper here to give recognition to those counties from which reports of 50 or more species were observed.

Milwaukee	233	Door	88
Dane	227	Waushara	85
Winnebago	193	Waupaca	84
Clark	184	Juneau	81
Manitowoc	164	Vernon	71
Brown	158	Taylor	64
Jackson	154	Wood	64
Dodge	152	Shawano	60
Outagamie	149	Jefferson	59
Fond du Lac	145	Kenosha	59
Sauk	142	St. Croix	59
Sheboygan	125	Columbia	58
Oneida	120	Racine	58
Rock	106	Eau Claire	56
Iron	104	Marathon	56
Oconto	101	Trempealeau	56
Waukesha	101	Adams	53
Grant	90	Green Lake	51
Polk	90		

Our hopes for 1948 are to continue to get better coverage of the state as a whole, and to swell the number of "regular" contributors that had to be placed at only 18 for the past year. Only as this is done will we get a good, well-rounded picture of Wisconsin bird life.

BY THE WAYSIDE . . .

Mockingbird Makes a Welcome Guest. On December 22, 1947, as I walked into Washington Park to the top of the hill at the foot of which is the band shell, I heard an unusual call. I could see a bird in the bush at the left of the stage, and as I approached slowly, I wondered if it might be a catbird, for they had been there during the summer. However, I could see no black cap as I approached; then suddenly it flashed the white tail feathers and a bit later I could see the white in the wings. Then I knew I was looking at a mockingbird! I found it again on the 23rd, 27th, 28th and 30th. From then until January 3 I did not see it, but took chopped apples over to the park, as the snow was quite deep. On my return from the park on January 3, it suddenly appeared on the window sill where I feed a pair of cardinals. Since then I have seen it here nearly every day (written, January 8). It remains at times in the high-bush cranberries with the cardinals. It seems to be more interested in the grapes, which I cut in half, rather than in apples, or raisins.—Mrs. Elizabeth H. Schwendener, Milwaukee.

Tame Great Northern Diver At Onalaska. On May 1st last year (1947), we went fishing along the east shore of the Dresbach Pool, also known as Lake Onalaska, above Lock and Dam No. 7, and at once noticed a large water bird some distance up the shore, feeding quite near a railroad embankment. Later, it swam past us and went down the pool.

There were some other folks fishing near us and one said: "Look at the big duck."

"That's not a duck—it's too large," another said. "It must be a goose."

Well, it wasn't a large goose either, but a loon or great northern diver, with black head, snow-white underparts, and conspicuous black and white upperparts.

The bird headed toward shore again when about 30 rods below us, where I surprised it near the foot of the Burlington Railway embankment when we went to the car for lunch. It was about 20 feet away and the black and white upperparts very conspicuous and striking. It dove and I was able to trace its progress by the boiling of the water, which was shallow here. It rose in the water as soon as it came to the surface, spread and beat its wings to rid itself of excess moisture, rolled over on its side, and preened its feathers, giving me an excellent view of its pure-white underparts. Later, I surprised it near the shore a second time, traced its progress by the boiling water, and again it rose, beat its wings, and rolled over on its sides and preened its feathers.—Alvin M. Peterson, Onalaska, Wisconsin.

Close View of Bald Eagle at Perrot State Park. Early in April, 1947, my wife and I were at Perrot State Park near Trempealeau, where I climbed to the top of Brady's Bluff. There was so much ice in the ravine up which the trail runs that I had to abandon the path and steps and go straight up the slope and pull myself along by catching hold of small trees, branches, and shrubs. This made my progress slow, and, as I neared the top, I was screened from the trees on the opposite side of the bluff not only by the hill itself but the shelter-house at the top.

I decided to take a different and easier path down the bluff, walked half-way around the shelter-house, and surprised a bald eagle that was perched in a nearby tree. It took to its wings with much fluttering and considerable noise, looked extremely large, much larger than I expected even an eagle to appear, because only about 50 feet away and on a level with the eyes. The white tail was so conspicuous that I gave scant attention to the head and neck until the bird was farther away, when I noticed that these were white also. The bird it seemed to me was heavy and worked hard to gain altitude, swung southeast and then southwest, until over the Mississippi River, and rose steadily until high in the sky. This is a majestic bird and I feel I was most fortunate in getting so near to it. —Alvin M. Peterson, Onalaska, Wisconsin.

The Winter Season . . .

All field notes for the period of March 1 to May 31 should be sent immediately to Rev. Samuel D. Robbins, 205 Hewett Street, Neillsville, Wisconsin.)

The absence of severe cold snaps during the fall months induced an unusual number and variety of the less hardy species to linger within the state. Most of them remained through December in spite of a moderate amount of snow, and one cold spell; some disappeared early in January after a heavy snow, and those that remained then had to endure six weeks of steady, severe cold. Twenty below was not an occasional instance, as it is some winters; it was a steady diet for central and northern Wisconsin for many days. The memories of "old-timers" were taxed to the limit to recall a comparable prolonged cold spell in former years. Snowfall was negligible most of the time, but the ground was well covered all during the coldest weather. A number of observers reported that winter populations of the more common winter residents were noticeably depleted this year. The surprising thing is that a considerable number of the less hardy species that began the winter were still around when the weather finally moderated in mid-February.

The period February 15-28 was one of welcome and contrasting mildness. The snow melted fast, exposing bare ground in central and southern Wisconsin for the first time this year. A few early migrants put in an appearance in the southern part of the state; they may well have wintered not too far south of us. Particularly noteworthy at this period was the influx of cedar waxwings. Large flocks were noted by many observers in the southern and central portions of the state where usually they are rarely seen until May.

The absence of winter finches was also remarkable. There were but four reports of evening grosbeaks, two of red crossbills, one of redpolls, none of pine grosbeaks and white-winged crossbills. Quite a contrast to the previous winter, when redpolls, pine and evening grosbeaks virtually flooded the state! The only northern visitant to appear in any numbers at all was the Bohemian waxwing, and the records of that species were too few to indicate a real flight.

Pied-billed Grebe: Last reported in Madison, Dec. 13 (Roark).

Great Blue Heron: One was noted in Langlade County, Jan. 22 (Bradle-Miersch); a ragged individual was seen in Milwaukee the same day, flying south (Howard & Gordon Orians).

Black-crowned Night Heron: Remained in Milwaukee through Dec. 6 (Treichel).

American Bittern: One individual, apparently in good health, was seen off and on in a marsh near Two Rivers from Jan. 4 to 29 (Lintereur).

Whistling Swan: Noted in Door County, Dec. 14-15 (Wilson).

Canada Goose: A flock of 75 was noted in Dane County, Dec. 23 (Greeley). The wintering population in Walworth County was estimated at 3500 on Jan. 27 (Rex Tice). Early migrants were reported from Loganville on Feb. 25 (Kruse) and Milwaukee on Feb. 28 (Treichel).

Mallard: In addition to the regular winter population in the southern part of the state, wintering groups were reported from Adams, Brown, Outagamie, Polk and St. Croix Counties.

Black Duck: An individual was found in Mercer, Jan. 14 (Mrs. Sell).

Gadwall: Noted in Dane County on Jan. 1 (Barger et al.) and on Feb. 21 (Roark).

Baldpate: Last reported from Madison, Dec. 6 (Roark).

Pintail: A few wintered in Milwaukee and Madison.

Green-winged Teal: Wintering birds in Milwaukee and Madison.

Shoveller: Wintered in Milwaukee (several observers).

Redhead: Still in Milwaukee, Dec. 22 (Gordon Orians); an early spring arrival was noted in Appleton, Feb. 26 (Bradford).

Ring-necked Duck: Milwaukee, Dec. 31 (Mrs. Balsom).

Canvas-back: Wintered in Milwaukee (many observers).

Lesser Scaup Duck: Six in Adams County, Jan. 28 (Fritz-Steinke).

American Golden-eye: Fewer than usual wintering in Pierce County (Hope); more than usual on Lake Michigan south of Milwaukee (A. J. Peterson).

Oldsquaw: First arrivals in Two Rivers, not wintering; Feb. 8 (Lintereur).

Ruddy Duck: Present in Milwaukee until Jan. 11 (Gordon Orians).

Hooded Merganser: Few wintered in Milwaukee.

Goshawk: Milwaukee, Dec. 27 (Bill Jackson et al.); Dane County, Jan. 10 (Don Thompson).

Sharp-shinned Hawk: One in Jackson County was found in poor condition and destroyed on Jan. 20 (Radke).

Cooper's Hawk: Wintered in Milwaukee (Mrs. Balsom); one seen in Black River Falls, Dec. 17 (Mr. & Mrs. Roberts).

Red-shouldered Hawk: Wintered in Milwaukee (several observers); one in Madison, Dec. 1 (Roberts-McIntosh).

Rough-legged Hawk: Winter records from Dane, Dodge, Fond du Lac, Jefferson, Kenosha, Milwaukee, Waukesha and Winnebago Counties.

Golden-Eagle: An individual was seen in the town of Burkhardt, St. Croix County, Jan. 7 (Lawrence Hope).

Bald Eagle: Fourteen were counted at Lake Pepin, Dec. 27 (Roberts); other records include: an adult in Grant County, Dec. 20 (Miss Morse); Sauk City, Jan. 3 (Pepper Jackson) and Feb. 22 (Kruse); an adult in Jackson County, Jan. 6 (Roberts); one in Oconto County, Jan. 16 (Carl Richter); one in Hudson, Feb. 4 (Mabelle Johnson and P. S. Peterson).

Marsh Hawk: Waukesha, Dec. 21 (Jones et al.); Milwaukee, Dec. 27 (Mrs. Larkin); Columbia County, Jan. 4 (Roark); Milwaukee, Feb. 22 (Mary Donald).

Sparrow Hawk: Wintering birds noted at various points in southern Wisconsin. Also wintered in Appleton (Mrs. Rogers); an individual was noted in Jackson County, Jan. 22 (Hartman).

Canada Spruce Grouse: Several in Forest County, Dec. 1 (Bradle).

Prairie Chicken: 200 in Portage County, Jan. 30 (Palek); one was seen in Burnett County the same day (Stone).



RUFFED GROUSE NEST AT BASE OF TREE
PHOTO BY B. J. BRADLE

Sharp-tailed Grouse: 30 in Clark County, Feb. 19 (Clumpner-Robbins); 40 in Oneida County, Feb. 25 (A. N. Knudtson).

Chukar Partridge: 14 counted in Dane County, Jan. 28 (Benkert).

Bob-white: The severe winter occasioned a 25 per cent loss in Dunn County (Buss). Two seen in Sheboygan County, Dec. 3 (Popple).

Reeves' Pheasant: Two seen in Sheboygan County, Dec. 20 (Popple).

Virginia Rail: An outstanding winter record is an individual seen in Dane County, Jan. 11 (Leon Edmunds).

Coot: An injured bird was present in Madison through December and early January (several observers); a few remained

in Milwaukee through Jan. 10 (Orians-Treichel); also reported in Port Washington, Jan. 28 (Treichel).

Woodcock: A late straggler was seen in Milwaukee, Dec. 13 (Mueller-Orians).

Wilson's Snipe: One found dead in Two Rivers, Jan. 31 (fide Mrs. Smith); several wintered near Madison (many observers).

Bonaparte's Gull: Last noted in Milwaukee, Jan. 11 (Orians-Treichel).

Mourning Dove: December records came from Milton (Mrs. Maxson), Green Bay (Cleary), Jackson County (Roberts), and Marquette County (Kaspar). Later winter records were also secured in Dane County, Jan. 28 (McIntosh); Dunn County, Jan. 25 (H. B. Apel); Juneau County, Feb. 2 (Little); Kenosha, Feb. 10 (Mrs. Higgins); Two Rivers, Jan. 7 (Mrs. Smith); Sauk County, Jan. 3 (Barger) and Jan. 30 (Kruse); Milwaukee, throughout (several observers); Racine, throughout (Von Jarchow). The largest concentration was one of 60 in Manitowoc from Jan. 31 indefinitely (Helene Dietrich).

Screech Owl: One in Horicon, Dec. 22; was banded on May 15, 1946 (Mathiak). One in red phase was present in Milton, Jan. 15 (Mrs. Maxson).

Snowy Owl: Dodge County, Dec. 29 (W. C. Field); Dane County, Jan. 27 (Koppenhaver); Jefferson County, Feb. 6 (Paul Kennedy).

Long-eared Owl: Wintered in Milwaukee (several observers); noted also in Waukesha, Dec. 21 (Jones et al.).

Short-eared Owl: Three were present for several days in mid-January near Two Rivers (Mrs. Smith); seen occasionally in Milwaukee all winter (Mrs. Larkin et al.).

Saw-whet Owl: One found dead in Manitowoc, Jan. 5 (Merle Pickett).

Belted Kingfisher: Milwaukee, Dec. 21 and 26 (Gordon Orians); Neillsville, Dec. 30 (Robbins); Madison, Jan. 1 (Mrs. Walker); Sauk County, Jan. 3 (Barger); Crawford County, Jan. 4 (S. A. Apel). The only individual noted after the cold spell had gotten under way was one in Adams County, Jan. 28 (Fritz-Steinke).

Flicker: Not as many reported as might be expected under the weather conditions that prevailed. Before the cold weather: one in Wau-paca, Dec. 15 (Mrs. Peterson); seven in Waukesha, Dec. 21 (Jones et al.); two in Marquette County, Dec. 29 (Kaspar). In addition individuals spent the entire winter in Milwaukee (Mrs. Balsom) and Madison (Barger et al.); one was noted in Appleton, Jan. 19 (Bradford).

Pileated Woodpecker: Winter records supplied from Burnett, Clark, Eau Claire, Pierce, Polk, Shawano, St. Croix and Waupaca Counties.

Red-bellied Woodpecker: A fall visitor at Hudson was seen last on Dec. 6 (Mrs. Owen). Other records: Waupaca, Dec. 25 (Mrs. Peterson); Viroqua, Dec. 28 (Miss Morse); Neillsville, Dec. 30 (Robbins); all winter, in Ephraim, first ever known there (Wilson); all winter in St. Croix Falls (Glen Riegel) and in Loganville (Kruse).

Red-headed Woodpecker: A remarkable concentration of 100 or more was found wintering near St. Croix Falls (Glen Riegel). Others wintered in Neillsville, (Robbins et al.), Madison (Taber et al.), and Viroqua (Miss Morse). An immature was noted in Loganville, Jan. 2 (Kruse); one was seen in Black River Falls, Feb. 29 (Mrs. Roberts).

Yellow-bellied Sapsucker: Madison, Jan. 21 (Springer) and Jan. 31 (Barger).

Phoebe: An unusual record is this individual, seen in southern Kenosha County, near the Illinois line, on Dec. 26 (Treichel).

Crow: A concentration estimated at 3000 was reported from Waukesha County, Dec. 31 (Hoffman). The migration was under way by Feb. 15 in Columbia County (Roark), and Polk County (Heinsohn).

Hudsonian Chickadee: One in southern Clark County, Dec. 30 (Robbins).

Tufted Titmouse: Present in Hudson, Dec. 10-17 (Mrs. Owen), and in Viroqua, Dec. 21-28 (Miss Morse). Also wintered in Waukesha (Jones et al.) and in Lake Geneva (fide Mrs. Walker).

Red-breasted Nuthatch: Continues to be scarce. One in Green Bay, Dec. 28 (Bird Count); several in Two Rivers, Jan. 29 (Lintereur); one in Milwaukee, Feb. 15 (Treichel et al.); wintered in Mercer (Mrs. Sell).

Winter Wren: Madison, Jan. 1 (Mrs. Walker); Racine, Feb. 1 (Von Jarchow).

Prairie Marsh Wren: One was carefully observed in Horicon, Jan. 12 (Mathiak).

Mockingbird: This visitor from the south seems to turn up most frequently in winter. Four birds were seen in Wisconsin this winter: two in Milwaukee, one discovered on Dec. 22 by Mrs. Schwendener, the other discovered on Dec. 24 by Treichel et al., both subsequently seen by many observers; one in Oshkosh, first noted on Jan. 17 by Esther Raeder, seen later on by others; another was seen at close range for about fifteen minutes in Manitowoc, Feb. 25 (Mrs. Elfner).

Catbird: One in Milton, Dec. 26 (Mrs. Maxson).

Brown Thrasher: One in Madison throughout January and February (Mr. & Mrs. Bordner); one in Milwaukee from Feb. 7 on (Orians-Treichel).

Robin: Many reports. Individuals survived the winter in Clark, Dunn and St. Croix Counties, as well as various more southern locations.

Hermit Thrush: One spent the entire winter in Milwaukee, at a feeding tray (Mrs. Balsom).

Bluebird: Three in Sauk County, Dec. 14 (Leopold); two in St. Croix Falls, Feb. 7-8 (W. D. Barnard); an early migrant in Milwaukee, Feb. 29 (Mrs. Larkin).

Ruby-crowned Kinglet: One lingered in Madison until Dec. 9 (Emlen).

Bohemian Waxwing: Neenah, Dec. 25 (Zaumeyer); five in Neillsville, Dec. 30 (Robbins); 12 in St. Croix Falls, Jan. 12 (Mrs. Heinsohn); 1 in Milton, Jan. 13-14 (Mrs. Maxson); 55 in Waupaca, Jan. 27 (Mrs. Peterson); six in Neillsville, Feb. 21 (Robbins).

Cedar Waxwing: Present in Eau Claire all winter (Lois Almon); the first instance of the heavy February influx was a flock of 40 in Plymouth, Feb. 15 (Mrs. Nutt); other flocks, some much larger, were subsequently noted in Milwaukee, Loganville, Neillsville, and Door County later in the month.

Northern Shrike: Two present in the Milwaukee area all winter; two in Green Bay, Dec. 28 (Bird Count); one in Dane County, Jan. 29 (Edmunds).

Myrtle Warbler: Another remarkable winter record: two birds had evidently found adequate food and shelter from the severe cold near Sauk City, where they were seen on Feb. 6 (Edmunds).

Eastern Meadowlark: In addition to a few wintering birds in southern Wisconsin: Columbia, Dane, Dodge and Waukesha Counties, one was seen in Outagamie County, Dec. 28 (Bradford); one spent the winter near Waupaca (Mrs. Peterson); and one wintered in the town of Deronda, Polk County (Ray McKinney).

Yellow-headed Blackbird: Wisconsin is far out of the normal winter range of this species, but one individual was reported from New Glarus, Feb. 15 (S. H. Richards).

Red-wing: Not many winter records, considering the mild autumn weather. One in Horicon, Dec. 22 (Mathiak); one in Milwaukee, Dec. 27 (Bill Jackson et al.); a flock in Waukesha County, Jan. 5 (Mary Donald); noted also in Madison, Jan. 8 (Emlen et al.).

Rusty Blackbird: Two wintered in Dane County (many observers).

Bronzed Grackle: Late departures were noted in Madison, Dec. 7 (Mrs. Walker), and in Oshkosh, Dec. 13 (Kaspar); an individual was

seen flying west over Neillsville, Jan. 8 (Robbins); another was noted in Oconto, Jan. 23 (Carl Richter).

Cowbird: One in Milwaukee, Jan. 3 (Gordon Orians et al.); one in Dane County, Jan. 8 (Emlen et al.); one female spent the winter in Racine (Mrs. Pierce).

Cardinal: 16 birds were regular customers at a feeding tray in St. Croix Falls all winter (Heinsohn).

Evening Grosbeak: Oconto County, Dec. 15 (Wicks); 50 in Waupaca, Jan. 28 (Mrs. Peterson); 12 in Clintonville, Feb. 5 (Becker); noted also in Sturgeon Bay, Feb. 20 (Wilson).

Redpoll: The only report for the entire winter season is a flock of 200 in Waupaca, Dec. 7 (Mrs. Peterson).

Pine Siskin: One in Neillsville, Dec. 8 (Robbins); Milton, Dec. 10 (Mrs. Maxson); two in Mercer, Jan. 31 (Mrs. Sell; wintered in Door County (Wilson).

Red Crossbill: Present in Mercer from Jan. 2 into February (Mrs. Sell); a flock of seven was seen in Neillsville, Jan. 8 (Robbins).

Savannah Sparrow: Late stragglers were still in Horicon, Dec. 22 (Mathiak), and in Milwaukee, Jan. 11 (Treichel et al.).

Vesper Sparrow: Several different individuals were seen near Madison off and on in December and January by the Scotts, Schorger and Doane. One was reported on Feb. 11 (Richards-Rausch).

Tree Sparrow: Spring migrants turned up in Jackson County, Feb. 29 (Mr. & Mrs. Roberts).

Field Sparrow: One in Milwaukee, Dec. 27 (Frister).

White-crowned Sparrow: Two immatures were still in Milwaukee on Jan. 3 (Mrs. Larkin et al.), but disappeared thereafter.

White-throated Sparrow: Lingered in Milton until Dec. 4 (Mrs. Maxson), in Oshkosh until Dec. 12 (Kaspar), in Milwaukee until Jan. 3 (Gordon Orians et al.); also wintered in Appleton (Mrs. Rogers) and in Horicon (Mathiak).

Fox Sparrow: Remained in Milwaukee through Jan. 3 (Mrs. Larkin et al.).

Swamp Sparrow: Wintered in Madison and Milwaukee (many observers).

Song Sparrow: Waukesha, Dec. 21 (Jones et al.); Viroqua, Dec. 21 (Miss Morse); Green Bay, Dec. 28 (Cleary); four in Janesville, Feb. 23 (Mrs. Skuldt); wintered also in Madison and Milwaukee (many observers), in Appleton (Mrs. Rogers), and in Milton (Mrs. Traxler).

Lapland Longspur: Only one report for the winter months: Dane County, Feb. 5 (Edmunds).

Snow Bunting: December records in Brown, Clark, Dane, Iron and Langlade Counties; January dates in Dodge, Jefferson, Polk, Sheboygan and Winnebago Counties; 100 were noted in Polk County, Feb. 10 (Heinsohn); seen in Door County all winter (Wilson). The largest concentration reported was a flock of 2000 in Green Bay, Dec. 28 (Bird Count).

Observers are urged to assemble and send in nesting data on all birds this summer, so that we may begin plotting the present nesting range of all species on individual maps. The more specific the data is (dates, number of eggs, young birds, location of nest, etc.) the more useful it will be. The plan is to combine all nesting data this year into a separate article on the nesting season, as was done last year.

Contributions of Ludwig Kumlien to the Milwaukee State Teachers Bird Collection

By WILLIAM HENRY ATWOOD

My many years of teaching will soon come to an end, and I am writing this paper to set forth some Kumlien history and to record the sources of some of the more than 300 mounted birds in the museum of the department of biology of the Milwaukee State Teachers College before it is too late.

According to the best information which I have, based on labels and other considerations, Aaron Ludwig Kumlien sold more than 100 mounted birds to the department of biology of the Milwaukee State Teachers College. When I came to the school in 1917 I found the bird collection in good condition, but numerous labels had been removed and others, intended to be of more teaching value, had been attached in their stead; however many of the original labels were saved, and I was able with certainty to re-attach them to their specimens.

Our collection was originally built up by Prof. I. N. Mitchel. It was added to by Prof. C. F. Curtis Riley, and was taken over by myself in 1917. During the early twenties Dr. R. H. Bullis worked many hours on the labeling and arranging of the birds. During the middle thirties Miss Margaret Fitzgerald and Mrs. Carolyn Hansen Tuke supervised the complete revision of our collection as it is today. During this time I secured by purchase and donation about 30 additional birds. Our collection has always been planned to feature Wisconsin birds. It is nearly complete, and those which we do not have are going to be very difficult to secure.

I believe that nearly all of the birds listed in this paper were taken by Ludwig Kumlien; but some may have been taken by his father, Thure Kumlien; and a few from distant places seem to have been taken by unknown persons. Because George Schrosbree sold birds to the school at the same time that specimens were being bought from Kumlien, it is possible that some of the birds listed herein were mounted by him, but because he used different wooden bases, wrote in a different hand, and for other considerations, it is not likely that I have failed to differentiate their work.

According to the labels, the following of our birds were taken on the dates given at Lake Koshkonong and mounted by Ludwig Kumlien:

Common Loon (M)	Apr. 15, 1891	Ruddy Ducks (M) and (F)	Apr. 11, 1894
Pied-billed Grebe (M)	Apr. 19, 1900	Green-winged Teal (M)	Nov. (?), 1893
White Pelican (F)	Apr. 26, 1893	Redhead Juvenile (M)	Oct. 17, 1893
E. Green Heron (M)	May 14, 1893	American Golden-eyes (M)	Apr. 4, 1892 and (F) Nov. 11, 1893
Black-crowned Night Heron (M)	June 1, 1893	American Merganser (F)	Apr. 8, 1893
E. Least Bitterns (M) & (F)	June 8, 1895	American Rough-legged Hawk (M)	Oct. 28, 1894
Greater Snow Goose (M)	Nov. 14, 1890	W. Red-tailed Hawk (F)	Nov. 27, 1894
Wood Ducks (M)	Oct. 9, 1893 and (F) Apr. 8, 1896	E. Sparrow Hawks (M) and (F)	no date
Blue-winged Teals (M)	May 2, 1894 and (F) May 28, 1894	E. Ruffed Grouse (F)	Nov. 3, 1893
Shovellers (M) and (F)	Apr. 17, 1894	Bobwhites (M) and (F)	Nov. 22, 1894
and Juvenile (M)	Nov. 1, 1893	Prairie Chicken (M)	no date
		Sora Rail (M)	Sept. 10, 1893

Florida Gallinule (F) and Juvenile (F)	Aug. 9, 1893	Mockingbird Juvenile (F)	Aug. (?), 1871
Black-bellied Plover Juvenile (F)	Nov. 7, 1894	Loggerhead Shrikes (M) and (F)	Apr. 6, 1893
Ruddy Turnstone (M)	June 3, 1894	Red-eyed Vireo (F)	June 27, 1895
Wilson's Snipe (M)	Oct. 25, 1895	E. Yellow Warblers (M)	May 11, 1895
Spotted Sandpiper (F)	June 10, 1893	and (F)	July 10, 1895
Greater Yellow-legs (M)	Aug. 9, 1893	Cape May Warblers (M) and (F)	May 11, 1895
Pectoral Sandpiper (F)	Sept. 19, 1893	Blackburnian Warblers (M)	May 11, 1895
Red-backed Sandpiper (F)	May 27, 1894	and (F)	Sept. 7, 1894
Semi-palmated Sandpiper (F)	May 27, 1894	Maryland Yellow-throats (M) and (F)	May (?), 1894
Franklin's Gull (F)	May 18, 1889	Yellow-headed Blackbirds (M) and (F)	June 10, 1895
Forster's Tern (M)	Apr. 28, 1890	Rose-breasted Grosbeaks (M)	May 19, 1895
Black Tern (M)	June 10, 1894	and (F)	May 14, 1895
E. Mourning Dove (M)	Apr. 19, 1893	Swamp Sparrow (M)	June 16, 1895
Short-eared Owl (M)	Nov. 7, 1893		
N. Barred Owl (F)	Oct. 25, 1894		
Long-billed Marsh Wren (F)	Sept. 2, 1894		

The following birds are labeled as having been taken at Milton on the dates given and mounted by Ludwig Kumlien:

Pigeon Hawk (F)	Nov. 1, 1897	Blackpoll Warblers (M)	May 19, 1895
E. Wood Pewee (Sex(?))	July 31, 1895	and (F)	May 11, 1895
Olive-sided Flycatcher (M)	Sept. 1, 1895	Indigo Buntings (M) and (F)	May 22, 1895
Parula Warbler (F)	May 10, 1893	Dickcissel (M)	June 1, 1893
Myrtle Warbler (M)	Apr. 23, 1898		

The following birds are labeled as having been taken by Ludwig Kumlien on the dates given at various places:

N. Redshouldered Hawk (F)	Jefferson County, Dec. (?), 1889	Snow Bunting Juvenile (F)	Whitewater Dec. 13, 1893
Nashville Warbler (F)	Lima Swamp, June 10, 1895	Catbird (M)	Warsaw, Ill. June 1, 1895
E. Purple Finches	Sumner (M) May 10, 1885	American Magpies (M) and (F)	Boulder, Colo., Nov. 25, 1895
	and (F) Apr. 14, 1891	Carolina Wren (M)	Washington, D. C. Dec. 4, 1893
Yellow-bill Cuckoo	Sumner (Sex (?)) June (?), 1891	California Partridge (M) and (F)	San Geronimo, Cal., Feb. 20, 1895
Upland Plover (M)	Emerald Grove Aug. 24, 1895		

The following birds are labeled as having been taken at Lake Koshonong on the dates given. Because of the method of mounting, the dates, and other indications on the labeling which we have, it is probable that they were taken and mounted by Ludwig Kumlien; but his name is not on the label.

Whistling Swan (M)	Nov. 10, 1893	American Redstarts (M) and (F)	May 20, 1897
Red-eyed Vireo (F)	June 27, 1895		

The following birds are labeled as having been taken at Milton on the dates given, but the name of the taxidermist is not on the label. Because of the dates and other characteristics of the mounts, it is probable that they were taken and mounted by Ludwig Kumlien.

N. Cliff Swallow (M)	May 14, 1900	Bronzed Grackles (M) and (F)	Oct. 31, 1894
Yellow-throated Vireo (M)	Sept. 11, 1898	LeConte's Sparrow (M)	May 4, 1900
Philadelphia Vireo (M)	Sept. (?), 1898	Swamp Sparrow (M)	Apr. 29, 1898
N. Water Thrushes (M) and (F)	May 2, 1900		

Both Ludwig and his father were always interested in birds' eggs and nests, and they made many collections. The following birds which have been listed in the preceding paragraphs are mounted with the nests:

Blue-winged Teals
E. Wood Pewee
Catbird
Loggerhead Shrikes
Red-eyed Vireo

Nashville Warbler
E. Yellow Warblers
Maryland Yellow-throats
Yellow-headed Blackbirds
Swamp Sparrow

Milwaukee State Teachers College
January, 1948

NEWS . . .

(Continued from page 42)

Pigeon. Of course everyone knows this, but the editors sometimes begin to think that our members have forgotten it. Photographs also can be used freely.

The W. S. O. Supply Department reports that business was good during our last convention, and has been since. Many members have written for things they saw while at the convention. You are invited to write for anything you need in bird work—it is our policy to give complete service. At present the supply department is in the charge of the editor.

Miss Elizabeth Oehlenschlaeger has sent us a book titled "Where to Hunt American Game," published in 1898 by the United States Cartridge Company. It discusses game populations in America by states. Since it will be interesting to compare their story of the birds of Wisconsin with conditions as we find them today, we furnish the following quotation:

"The feathered game consists of wild turkey, ruffed grouse, Canadian grouse or spruce-partridge, pinnated grouse, prairie-hen, plover, canvasback, mallard, teal, red-head, wood-duck, and butterball duck, several varieties of the goose family, and ruffed grouse are quite plentiful in all northwestern counties, though not as abundant as formerly. Prairie-hen and other varieties of grouse are fairly plentiful in central and southwestern counties.

A few bevies of quail may be found in the central and southern counties. Duck frequent all lakes and marshes. Northern duck are quite abundant in the fall on Chain lakes and the marshes near the city of Madison. Duck are decreasing rapidly. Geese are found in the fall on Chain lakes and other inland waters. Snipe are quite plentiful in spring and fall, especially near the Mississippi river bottoms and on the marshes near Eau Claire and Madison. Woodcock are found on Chippewa river bottoms. The best shooting may be had near Alma and on the Mississippi river bottoms. Many of the good duck-shooting grounds in this state are now controlled by clubs or individuals. The famous Horicon marshes are excellent places for wild fowl, but are controlled by clubs."

Oddly enough, many of the things said above apply pretty well today. It is probable that most of our grouse species have declined during the past fifty years, and possibly waterfowl; but a close study of our historical records reveals that many of the larger birds were at a low ebb toward the close of the nineteenth century, the reason being that all wildlife was exploited during the days when the country was first settled.

Some of the species mentioned are more plentiful today than they were then, and the plover is completely protected. The wild turkey was by no means plentiful in Wisconsin when the book was written. Of course it is now extinct in the state.



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Manuscript for The Passenger Pigeon

Articles of general interest on Wisconsin birds are published in **The Passenger Pigeon**. They should be based on original studies, that is, they should present some new angle of the subject treated. There is no limit to the number of aspects that may be treated, and there is probably no bird student in Wisconsin who could not write an article of interest.

Manuals, such as Hickey's "Guide to Bird Watching" and Pettingill's "Field and Laboratory Manual" may be consulted for suggestions on how to organize the material, as well as how to attack chosen problems.

Manuscript should be typed on one side of letter-size paper, double-spaced. Photographs should be included if possible, but they should be of excellent quality, clear, and of good contrast.