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Kentucky Warbler

"To sift the sparkling from the dull, and the true from the false, is the aim of every Ornithologist."

VOL. XVIII SUMMER, 1942 NO. 3

THE NESTING OF THE STARLING IN KENTUCKY

By HARVEY B. LOVELL, University of Louisville

I. Early Nesting Records:

Nearly every hollow tree, old telephone pole, or open attic in Louisville is occupied by one or more pairs of Starlings (**Sternus vulgaris**). Although they have been definitely known to nest in Kentucky only fourteen summers, they have rapidly become one of our most common birds, at least near our larger cities.

Although the Starling was reported from several places in Kentucky in 1920, 1925, and 1926 by various observers, the first nesting record was furnished me by Dr. T. Atchison Frazer, who discovered a pair nesting in a tree cavity in Marion in 1928. Burt Monroe found the first nest near Louisville in the spring of 1929. In the southern part of the state Gordon Wilson reports that he discovered his first Starling nest in Kentucky in a hollow tree on the Davenport farm, three miles west of Bowling Green, on May 3, 1930.

The Kentucky records seem rather late when compared with the Tennessee records of A. F. Ganier, who found a nest in Bristol, in the extreme northeastern part of Tennessee, on May 24, 1925, and ten or more nests in and around Knoxville (**Wilson Bulletin**, Vol. 37 174). Leonard Trenholm saw Starlings carrying nesting materials in May, 1926, near Sparta, Tennesee (**Bird-Lore**, Vol. 29). Even Ganier's Nashville record of April 27, 1928, of Starlings nesting in old Flicker holes in western Tennessee is as early as our first Kentucky record (**Wilson Bulletin**, Vol. 40).

How shall we explain this discontinuity in nesting range? Did the Kentuckians overlook the Starling nest for several years, or did the Starling really nest in Tennessee before it did in Kentucky? Here is a possible explanation for the earlier appearance of the Starlings in the South. Starlings flock with Grackles and other blackbirds, which have large winter roosts in Tennessee but rarely spend the winter in Kentucky. Harry Monk observed 300 Starlings in a Grackle roost in Nashville as early as December, 1921, and on December 8, 1923, Ganier placed the number of Starlings roosting with blackbirds in a cemetery at Nashville at the colossal figure of 60,000. The Starlings were carried clear across Kentucky by the migrating flocks of blackbirds to their winter roost in Tennessee. When spring came, a few pairs remained in holes which they had discovered during the winter, and the rest returned to the vicinity of their birthplaces in Ohio, Pennsylvania, and, possibly, New York State.

II. The Effect of the Starling on the Nesting of Our Native Birds:

When a new species enters a region, its relation to the biota already established immediately becomes a matter of great importance. To what extent has the Starling upset the balance of bird life in Kentucky? Two of the chief ways in which other birds are affected are competition for food and competition for nesting sites. Only the latter point will be considered in this paper. The Starling comes into competition chiefly with the hole-nesting species, such as woodpeckers, bluebirds, wrens, and English sparrows, and, to a lesser extent, with chickadees, nuthatches, titmice, and crested flycatchers. The wrens occupy holes too small for Starlings and do not appear to have suffered to any extent. Bluebirds suffer so severely from the ravages of English sparrows that it is difficult to determine to what extent they are affected by Starlings. Bluebirds can occupy holes too small for Starlings, but indirectly they probably are being affected by the scarcity of proper holes.

Woodpeckers seem to be the bird species upon which the brunt of Starling competition for nesting sites has fallen. A distinct decrease in nearly all our nesting woodpeckers has been noted in Kentucky in recent years. To what extent this is due to the Starling and to what extent to the cutting of the forest, pruning out dead branches in the neighborhood of cities, highway accidents, and other causes is, of course, impossible to determine.

Because of their living near cities, Flickers have often been reported in fights with Starlings. Dr. Frazer, of Marion, observed a pair of Flikers, dispossessed by Starlings, which removed the five eggs. For five days the Flickers hung around while the Starlings occupied their hole. Then the Flickers tackled the Starlings and with feathers flying pulled them from the hole and reoccupied the nest. Burt Monroe reported that a Red-bellied Woodpecker was driven from its hole near Louisville in spite of his attempt to protect it by shooting seven Starlings. Rogers, of Glasgow, killed fifty Starlings in 1940 in a successful effort to protect the nest of a Crested Flycatcher. Similar reports from various parts of the state indicate that woodpeckers have a difficult time nesting until all the Starlings in the vicinity have been supplied with nesting sites. Luckily, woodpeckers can drill new holes and eventually succeed in establishing a nesting place.

The Red-headed Woodpecker has become quite rare both as a breeding bird and as a winter visitant in Kentucky in the last ten years. Starlings are certainly playing some role and perhaps the leading one in this decrease of our most beautiful woodpecker. Red-headed Woodpeckers are killed by fast-speeding cars more frequently in Kentucky than any other large bird, and this may be an important factor in their decrease. If so, the wartime restrictions on speed and tires may help restore the species to its former abundance.

A Robin built her nest in a cherry tree within fifteen feet of a Starling's nest in my attic this spring and raised her brood successfully. I saw no evidence of any desire on the part of the Starlings to molest the Robins. On numerous occasions, however, I saw the Robins attack the Starlings and drive them from the vicinity of the cherry tree, and the Starlings went without putting up any sort of fight.

III. Life History of a Starling Brood:

On April 7, 1941, a pair of Starlings were discovered entering the side ventilator of my home in Jefferson County. Concealed in

the shadows, I observed the activities of the nest builders on April 10. Both birds aided in the construction, as shown by the fact that they often came together. After placing a piece of straw on the side of the nest, a Starling would sit down in the center and squirm around until the nest was properly shaped. I timed one trip after more material at 49 seconds, but other trips lasted from one to several minutes. Whenever the birds came in through the ventilator, they uttered a special "scrutch" note as if pleased to be back again. The finished nest was a great pile of straw, six inches thick and about a foot wide. It really consisted of a series of nests built one on top of another for several years. There was a hole in the center about three inches deep which was lined with feathers. When the parent sat down, she was hidden almost completely, just the top of the head appearing when she stretched her neck.

I did not observe the exact date of egg-laying of this particular brood, but it probably occurred from the twelfth to the sixteenth of April. The four eggs were pale blue and entirely devoid of spots. One end was considerably larger than the other, so that the eggs tend to roll in a circle. The average weight of the set of four eggs taken soon after laying was 7.5 grams, whereas the weight of egg No. 4 just before hatching was only 6.2 grams. The average size of several eggs was 3.1 mm. long by 2.2 mm. broad.

Hatching occurred on consecutive days; the first egg probably hatched on April 28; the second was observed to hatch on April 29, the third on April 30, and the fourth on May 1. The young are born helpless and naked except for a fine down on the wings, top of head, middle of back, and sides of body. Their eyes are closed, and when disturbed, they stretch their rubber-like necks up and up, and open their tremendous mouths in a typical feeding reaction. They maintained this position for several seconds or even a minute by bracing their feet, and then they would suddenly collapse in a heap. Their yellow bills and orange throats make a brilliant color combination, which probably aids the parents in placing food in the right place in the dark. The young birds showed no signs of fear and snuggled down in my hand or clung to my fingers when I was weighing and measuring them.

As shown in Table I, daily weights were taken until after the birds left the nest. The increase in weight was rapid and fairly regular for the first ten to twelve days, at which time the nestlings weighed as much as adults. One parent was captured and weighed 75 grams, 2 less than the weight of No. 1 when thirteen days old. After twelve days the weights fluctuated. The increased activity and rapid growth of their feathers probably used up some of the stored fat. On May 1, Starling No. 1 weighed nearly three times as much as the newly hatched No. 4. On the next day No. 1 had gained 6.5 grams, now weighing 26.9 grams, whereas No. 4 had gained only 2 grams, to weigh 9.8 grams. It is difficult to see how this backward individual succeeded in getting any food in competition with its ravenous and much larger companions, but two days later it had nearly tripled its weight, and on May 12 it was next to the heaviest of the brood.

As early as May 2 the young Starlings crawled around vigorously, using their wings as well as their legs. Their round, protuberant bellies supported their weight most of the time. The eyes began to open on the fifth day, and by the seventh day the nestlings began to take notice of their surroundings.

On May 8 the oldest bird climbed out of a basket with two-inch sides and crawled around the floor rapidly, but it was not until it was twelve days old that it really showed fear and attempted to escape. When fourteen days old, it jumped out of the basket and took flying hops across the room and hid behind a shelf. For the first time my hand failed to invoke the feeding reflex. No. 2 had climbed out of the nest on May 12 and had evidently not been fed properly, judging by its loss of weight (see Table I).

TABLE I. WEIGHTS OF NESTLING STARLINGS

Date	Apr. 29	30	M'y 1	2	3	4	5	6	7	8	9	10	11	12	13	14	17
No. 1	hat.	14.9	20.5	26.9	35.1	42.4	49.7	57.7	62.3	68.0	71.5	75.5	77.0	75.3	72.9	67.6	55.0
No. 2	hat.	12.7	18.0	24.6	31.4	37.7	42.2	51.2	59.5	65.1	69.0	71.1	75.3	66.2	64.0	64.5	
No. 3	egg	8.5	11.3	16.0	20.5	28.8	36.7	46.3	54.1	59.0	64.2	68.3	71.1	70.7	69.7	64.5	75.3
No. 4	egg	egg	7.8	9.8	16.0	23.2	30.0	37.9	47.1	53.5	61.1	66.5	72.9	70.9	68.0		71.8

TABLE II. GROWTH OF PRIMARY WING FEATHERS, REMIGES

MAY	4	5	6	7	8	9	10	11	12	13	14	17
No. 1	1.5	8	11	18	26	30	37	42	48	50	58	62
No. 2	....	5	10	16	22	29	34	40	45	48	53	....
No. 3	....	2	6	10	15	22	28	35	42	42	52	58
No. 4	....	....	2.	5	10	16	22	27	36	40	....	57

TABLE III. GROWTH OF TAIL FEATHERS, RECTRICES

MAY	5	6	7	8	9	10	11	12	13	14	17
No. 1	2	3	8	9	15	20	25	28	35	37	40
No. 2	1	2.5	5	9	12	17	23	25	34	36	....
No. 3	....	2	4	7	10	13	18	24	33	35	40
No. 4	....	....	1	4	7	11	15	18	25	....	40

On May 13 all the birds had left the nest and were running around in the attic. This was at an age of twelve to fifteen days. Their loud hunger calls came from various parts of the attic, and they immediately became silent when I flashed a light.

On May 14 all four birds were very active, and their loud hunger calls could easily be heard in the rooms below. After considerable search I succeeded in catching three. The oldest was able to fly ten feet when given a little start.

I made one last attempt to catch the brood on May 17 and at first found only two. A persistent noise in the wall on the second floor was investigated and after a hole had been made in the partition, No. 1 was liberated. Although it had lost 22 grams, it was very lively and able to fly quite well. The birds left the attic the next day, eighteen to twenty-one days after hatching.

The rate of growth of the primary wing feathers is shown in Table II. The feathers first appeared on the fifth day. After that, growth was fairly regular throughout the period of development, the average increase in length being 4.5 mm. per day. After nineteen days their length was 62 mm., which compares very closely with 68 mm. for adults. The vane of the feathers began to emerge from the feather sheath on the eleventh day, at which time the sheath was 22 mm. and the vane only 8 mm. long. By the fourteenth day

the vane had expanded to 33 mm. as compared with 15 mm. for the sheath. On the nineteenth the vane was 46 mm. and the sheath only 12 mm. long.

The development of the larger tail feathers is shown in Table III. They appeared for the first time six to seven days after hatching. Their growth rate was slower than that of the wing feathers, being about 3.3 mm. per day. On the nineteenth day the tail feathers were only 40 mm. long as compared with a length of 62 mm. for the adult. When the juveniles left the attic, their wing-feathers were more nearly developed than their tail feathers.

Changes in the proportions of the bills of the nestlings were very striking. The first measurements made on the fourth day revealed that the bill was as broad as long, namely 23 mm. by 23 mm. It lengthened gradually, and six days later it was 21 mm. wide at the base by 27 mm. long. At the end of the period of observation the bill was 16 mm. by 29 mm. The bill was still not quite mature, as measurements of an adult were 15 mm. by 34 mm. The egg tooth on the tip of the upper mandible persisted through the nestling period.

A set of six eggs was laid in the same nest from May 21 to 26, 1942 (see photograph). Shortly after this there was an extremely

NEST OF STARLINGS IN ATTIC OF HARVEY B. LOVELL

hot period, which apparently was the cause of the death of the embryos. Although the eggs did not hatch, the parents continued to incubate them until June 17, about fifteen days after the first egg should have hatched.

Kalmback states (**Farmers Bulletin** No. 1571) that Starlings have two and sometimes three broods per season. Lawrence Hicks

(in a personal communication) stated positively that Starlings have only one brood per season. I regret that I did not obtain any data on this question. Both seasons a second set of eggs has been laid in the same nest in my attic within ten days to two weeks after the first brood has left. However, I do not know whether they are the same Starlings or another pair which had waited until then for a suitable nesting site.

IV. Summary:

Starlings have nested in Kentucky for the last fourteen years, and an explanation is attempted of the fact that they nested in Tennessee earlier than in Kentucky. They have an injurious effect on many hole-nesting species, especially woodpeckers, but do not ordinarily molest other species. A detailed study of the growth and development of a brood of Starlings is described. A daily record of their increase in weight and the growth of their wing and tail feathers is presented in tabular form. The change in the shape of the bill is described. Observations on the appearance of fear, the first flight, the leaving of the nest, and later the attic, complete the life-history study.

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LIFE ZONES AND THE DISTRIBUTION OF BIRDS

By A. L. PICKENS

Perhaps nowhere else will we find the Louisianian or Austroriparian and the Carolinian or Upper Austral life zones brought together in such contrast as is afforded by the almost sudden uplift of part of the southern Appalachians from the adjacent lowlands. There valley and mountain-height camps afford interesting contrasts in censuses. Such indicate key-birds for the determination of life-zones. A few birds are noted on the heights that do not occur in the valleys. More are stopped by the boundary of the valleys and foothills with the adjacent Piedmont peneplain, indicating gradually fading Carolinian conditions. Incidentally a number found in the Piedmont do not reach the mountains, an indication of the vanishing Louisianian zone. The 96 birds of such a general area may be divided into five groups, as follows:

1. **Mountain-Height Birds:** Black-throated Green Warbler, Scarlet Tanager, Spotted Sandpiper, Wild Turkey, Scissor-tailed Flycatcher, and Raven were reported. The Spotted Sandpiper and the Turkey are scattering, the next accidental, but the last offers possible diagnostic value in biogeography.

2. **Mountain-Height Birds Occurring Also in Valleys Adjacent:** Ruffed Grouse, Whip-poor-will, Phoebe, Cedar Waxwing, Mountain Vireo, Parula Warbler, Yellow Warbler, Kentucky Warbler, Goldfinch, Song Sparrow. Dr. L. M. Loomis as a youth appears to have seen and recorded Worm-eating Warblers "from top to bottom." (AUK, Vols. VII and VIII).

3. **Generally Distributed Birds, Mountain-Heights through Valleys into the Piedmont:** Great Blue Heron, Turkey Vulture, Black Vulture, Red-tailed Hawk, Golden Eagle (so reported), Bob-white, Yellow-billed Cuckoo, Barn Owl, Chimney Swift, Ruby-throated Hummingbird, Flicker, Hairy Woodpecker, Downy Woodpecker, Crested Flycatcher, Wood Pewee, Acadian Flycatcher, Crow, Carolina Chickadee, Tufted Titmouse, White-breasted Nuthatch, Catbird (about clearings in heights), Robin, Wood Thrush, Bluebird, Red-eyed Vireo, Black and White Warbler, (becoming less common below mountains

and mountain valleys), Oven-bird, Louisiana Water-thrush (these two last rare in Piedmont), Maryland Yellow-throat, Summer Tanager, Cardinal, Indigo Bunting, Towhee, Chipping Sparrow, Field Sparrow.

Mountain Valley Birds not Noted on Heights: Little Blue Heron (as a mid-summer migrant), Pileated Woodpecker, Bewick's Wren*, Brown Thrasher, Mockingbird, Blue-gray Gnatcatcher, White-eyed Vireo, Yellow-throated Vireo, Sycamore Warbler*, Pine Warbler, Prairie Warbler*, Yellow-breasted Chat, Hooded Warbler*, Redstart*. (Species starred seem to favor mountain bases and valleys for breeding.)

Piedmont Peneplain Birds not Recorded in Mountain Valleys or on Heights: Killdeer, Nighthawk, Chuck-will's-widow, Red-headed Woodpecker, Purple Martin, Brown-headed Nuthatch, Carolina Wren, Loggerhead Shrike, Starling, English Sparrow, Red-winged Blackbird, Blue Grosbeak, Dickcissel.

A. H. Howell, of the United States Biological Survey, some years since gave me as Carolina or Upper Austral Zone indicators: Ruffed Grouse, Whip-poor-will, Phoebe, Scarlet Tanager, Oven-bird. All occur in the highest South Carolina mountain ranges, the first, third, and fifth either now or formerly spilling through the valleys into the Piedmont peneplain. Of the last group given above the Chuck-will's-widow, the Blue Grosbeak, and the Brown-headed Nuthatch are Louisianian or Austroriparian indicators.

Pied-billed Grebes reported from the mountain heights and not from the valleys were probably under some local influence, as were Green Heron, Broad-winged Hawk, Sparrow Hawk, Mourning Dove, Screech Owl, Great Horned Owl, Belted Kingfisher, Kingbird, Bank Swallow, Rough-winged Swallow, all found in the valleys but not on the heights. From our valley camp the Blue Jay was conspicuous by its absence, which, according to an inhabitant's theory, may have been due to the absence of a small acorned oak that seems to supply much of the Blue Jay's food. Loomis, too, apparently noted that the Rough-winged Swallow, the Bewick's Wren, the Brown Thrasher, the White-eyed Vireo, the Yellow-throated Vireo, and the Sycamore Warbler did not favor the heights. From 2500 feet he noted Chestnut-sided, Golden-winged, and Blackburnian Warblers, all sometimes regarded as indicators of the Alleghenian or Transition Zone. The Mountain Vireo he found chiefly above 2000 feet, and it may be that my valley examples were under the influence of a somewhat later date and just beginning the first stages of migration immediately after nesting. The Duck Hawk of his day seems extinct in that area; the Nighthawk he apparently found in the "lower part of the country," that is, in the Piedmont peneplain; the Phoebe ranged well into the Piedmont, perhaps along more cliffy streams; the Red-bellied Woodpecker seems to have been a bird of lower areas. At times where it once appeared at least locally migrant on Piedmont farms it may now be found nesting, while Robins in recent years have spread out of the mountains almost to the seashore, and where they were once regarded only as winter visitors they now successfully rear their young.

Careful analysis of bird censuses and related observations in South Carolina and Georgia over a period of years indicates that the Austroriparian Zone, instead of following the Fall Line or boundary between the Coastal Plain and Piedmont as its upper limit, really reaches upward to the immediate foothills of the mountains. This would seem to indicate that the same zone may reach much further up the valleys of the Cumberland and Tennessee than older maps

show. Such a boundary cannot, of course, be lined out like the limits of a county, but as a beginning accurate information on the northern breeding range of the Blue Grosbeak and the Chuck-will's-widow and of the southern breeding range of the Scarlet Tanager and Whip-poor-will would seem highly desirable.

Stationed observations for the above were chiefly made at Lake Rotary, east of, and Pioneer Park, beneath, Caesar's Head, near the North Carolina-South Carolina boundary. Extended observations in northern Georgia, with supplementary tours north to Pennsylvania and Missouri, have been made, but the findings are so far to be regarded as in a provisional rather than final form.

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ACADIAN FLYCATCHERS' NESTS

On Sunday, June 14, 1942, I discovered an Acadian Flycatcher's nest in an elm twenty feet above Pond Creek. The parents were feeding the young. On Tuesday, June 16, I discovered (with Dr. W. M. Clay) a second nest of this species in Iroquois Park twenty feet up in an oak. The tiny brook near the nest had dried up completely. Both nests were well built and suspended between two branches away out near the end of the branch in a limb too fragile to support a person's weight. The mother bird was incubating the eggs in the second nest.

—HARVEY B. LOVELL, Louisville.

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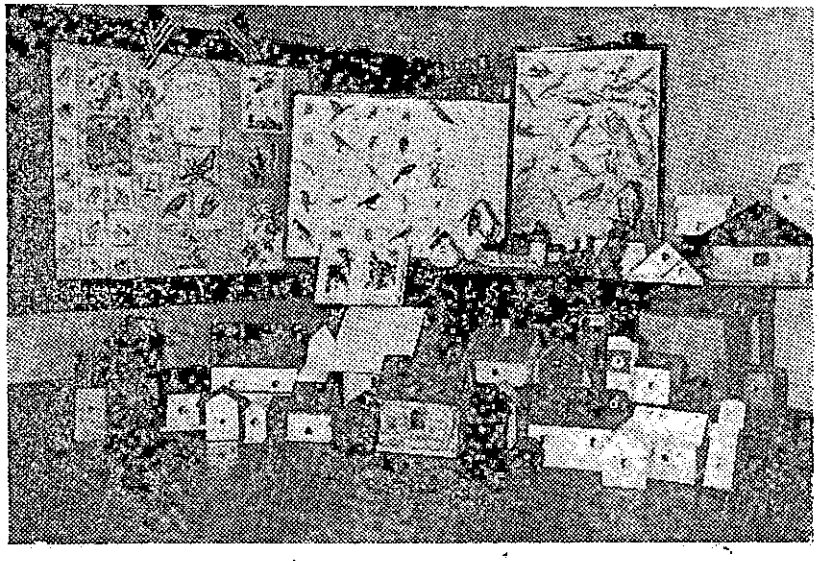
METHOD USED IN THE PROJECT OF THE STUDY OF BIRDS

By MINNIE LEE CHURCHILL, Murray High School

(Article and cut reprinted by permission of JUNIOR ACADEMY BULLETIN).

The Nathan B. Stubblefield Science Club of the Murray High School has been studying bird houses, which will be put out in time for the birds to build in them.



BIRD-STUDY EXHIBIT AT MURRAY HIGH SCHOOL

In our room we have several bird charts which show many kinds of birds in their natural habitat. We have possession of an electric map that will light when the bird corresponds with its name. We also have two bulletin boards of birds.

We have a model of the Audubon Museum at the Audubon Memorial State Park, Henderson County, Kentucky. We have access to several mounted birds which we have been studying; also such magazines as the OUTDOOR LIFE, FIELD AND STREAM, NATIONAL SPORTSMAN, OUTDOORS, SPORTS AND FISHING, and two books on birds of America by John James Audubon.

Our purpose for studying birds is to learn identification and conservation.

Our club has taken several field trips to learn the natural habitat and the characteristics of birds. A number of themes have been written on "Our State Bird, the Cardinal," "Conservation of Birds," "The Life of John James Audubon," and others. Some of the reports have been read to the club and were very interesting.

I think I will be speaking for myself and the whole club when I say that we have thoroughly enjoyed and profited by our study of birds.

* * * * * *

GLAUCOUS GULL IN LOUISVILLE

By FLOYD S. CARPENTER

It is usual for a number—at times over three hundred—of Herring and Ring-billed Gulls to spend the winter vacation in the delightful winter resort on the Ohio River known as the Falls and Louisville Harbor. In the spring and fall a few Bonaparte's Gulls may make a visit.

For a number of years bird students have watched these gulls in the hope that some rare species may drop in. The young Ringbills and Herrings are mottled gray, brown, and white, while the adults are white with gray mantles and black wing-tips. On several occasions during the winter of 1941-42 I have seen a gull which seemed to be white all over. If this were true, this would certainly be a newcomer. Unfortunately, it was always too far away to be identified for certain. Other observers had had the same experience.

On February 21, 1942, about noon I saw this white gull near the Coast Guard station and went to get my field glasses, but when I returned with them, it was gone. On February 24 I happened to look out of the window of my office, which has only a railroad trestle between it and the river front. Again I thought I saw a white gull, but just then the C. and O. train the GEORGE WASHINGTON, backed leisurely into the station and obscured my vision. When the train was gone, so was my bird.

About three o'clock on the afternoon of February 26 about twenty gulls were wheeling around near the Green Line steamer, searching for food scraps that had been dumped overboard. On looking out, I saw an all-white gull plainly. With my glasses I watched it for fully five minutes at a distance of 200 to 400 feet. As it was diving and climbing, it could be seen from both above and below from my second-story lookout. Its plumage was white all over, its bill was yellow and large, and its feet and legs flesh color. It was a big gull, noticeably larger than the Herring Gulls it was with. These characteristics all indicated that it was a Glaucous Gull.

To check my observations, I asked Messrs. Fred W. Schneider, Jr., and Earl Hamilton to look at it and check its color. They used

my binoculars and agreed with me that it was all white. Mr. Hamilton remarked on the comparatively large bill and the large size of the bird as compared with the Herring Gulls. He saw it again the next day, but since then until today, March 10, it has not been recorded.

From these observations there can be no question but that it was an adult Glaucous Gull, the first I have heard of as being definitely identified here. Many of the gulls here for the winter are in the first-year or second-year plumage, which is in various degrees of brown, grays, and whites. I have seen only two young gulls that are different from the usual. Both were large in size, one a rather dary gray uniformly colored all over, the other a rich brown all over. On no occasion have I been able to get a good look at either, but since their markings and color were so different from the usual young Herring and Ring-billed Gulls, I think that they may be of some other species. I regret to say that I cannot identify them.

* * * * * *

A SPRING WEEK-END OUTING

Beginning in 1937, when Dr. Gordon Wilson's wet-weather lake on the McElroy Farm was very large, many K. O. S. people have spent a week-end at Bowling Green or near by. The 1937, 1938, and 1939 meetings centered at the McElroy Farm; in 1940 and 1941, since no lake appeared, the crowd assembled at Mammoth Cave National Park. This year, 1942, on April 25 and 26 nineteen bird enthusiastis studied birds in the area at the mouth of Gasper River, fifteen miles north of Bowling Green. Dr. L. Y. Lancaster entertained the whole group by putting at its disposal his two rebuilt log cabins. Each small group brought its own food and prepared it on the open cooking place between the cabins. Field trips were made in several directions on Saturday afternoon and again on Sunday morning. Since the time was the height of the migration season, birds were very pentiful, in spite of somewhat unfavorable weather. The following species were recorded: Bluebird, Bobwhite, Red-winged Blackbird, Indigo Bunting, Catbird, Cardinal, Carolina Chickadee, Cowbird, Crow, Yellow-billed Cuckoo, Dove, Flicker, Crested Flycatcher, Goldfinch, Blue-gray Gnatcatcher, Bronzed Grackle, Rose-breasted Grosebeak, Green Heron, Red-tailed Hawk, Red-shouldered Hawk, Blue Jay, Killdeer, Kingfisher, Meadowlark, Prairie Horned Lark, Purple Martin, Mockingbird, White-breasted Nuthatch, Orchard Oriole, Barred Owl, Great Horned Owl, Phoebe, Wood Pewee, Robin, Spotted Sandpiper, Solitary Sandpiper, Chipping Sparrow, Field Sparrow, Song Sparrow, White-throated Sparrow, English Sparrow, Starling, Barn Swallow, Rough-winged Swallow, Chimney Swift, Summer Tanager, Tufted Titmouse, Brown Thrasher, Wood Thrush, Louisiana Water-thrush, Towhee, Red-eyed Vireo, White-eyed Vireo, Warbling Vireo, Yellow-throated Vireo, Black and White Warbler, Cerulean Warbler, Kentucky Warbler, Northern Yellowthroat, Myrtle Warbler, Western Palm Warbler, Redstart, Sycamore Warbler, Yellow Warbler, Prairie Warbler, Prothonotary Warbler, Blue-winged Teal, Baldpate, Cedar Waxwing, Whip-poor-will, Downy Woodpecker, Hairy Woodpecker, Pileated Woodpecker, Red-bellied Woodpecker, Bewick's Wren, Carolina Wren, Black Vulture, Turkey Vulture, Greater Yellowlegs, Lesser Yellowlegs. Total 80 species, and one doubtful, which some of us thought to be Bell's Vireo.

Participating in this week-end camp were Mr. and Mrs. S. Charles Thacher, Dr. and Mrs. Harvey Lovell, Misses Mabel Slack, Esther Mason, Evelyn J. Schneider, Dorothy Peil, Helen Peil, Amy

Deane, Alice Horneman, Audrey Wright, Thelma Gentry, and Dr. P. A. Davies, all of Louisville; Messrs. Albert F. Ganier and Conrad Jamison, Nashville, Tennessee; Dr. Gordon Wilson, Dr. L. Y. Lancaster and Jack Coppersmith of Bowling Green.

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TWENTY ACRES—THIRTY BIRDS

Not since 1939 has there been enough water at the McElroy farm at the right time to attract any number of water and wading birds. It was a treat, then, to have under almost constant observation this spring a twenty-acre wet-weather lake some five miles southeast of Bowling Green on the Willis and Evans Farms. Some years ago the part on Mr. Evans's farm was bedded, that is, ridged up for cultivation, with drainage furrows between the beds. This enabled me to walk right out into the pond and observe the birds at close range. The number of species astonished me, though the number of individuals was never large as compared with even poor years at the McElroy Farm. On April 4, I recorded fourteen species within a half hour; on May 16, the last big day, I saw twelve. Besides the ever-present killdeer I found thirty species of water and wading birds, one of them, the Sanderling, being new for my life list at Bowling Green, though I have often seen it on the Gulf Coast in Mississippi. Other rarities were the Golden and Black-bellied Plovers and the Western Willet. All told, I visited the place fourteen times, usually walking the full length of the overflowed area or entirely around it.

Here are the thirty, with their first and last dates, in addition to their abundance: Pied-billed Grebe, April 4-29, 1 or 2 each time; Little Blue Heron (very rare in spring migration), 1 on May 9; Eastern Green Heron, 1 to 10 each time from April 25 to May 16, two nests on May 31; Yellow-crowned Night Heron, 1 on May 12, 3 on May 23, 1 on May 31, (Dr. Lovell photographed one on June 3 on this pond); American Bittern, 1 on April 28; Mallard, 2 to 6 each time in early April; Baldpate, 2 to 6 each time in early April; American Pintail, as many as 35 on March 6, 6 to 10 each time from April 4 to the end of the month, 2 pairs until May 16; Shoveller, 2 or 3 on April 4 and 15; Wood Duck, 1 on March 14; Lesser Scaup, 4 on April 4 and 15; American Golden-eye, 1 on April 28; Hooded Merganser, pair on April 28; Coot, 1 on April 15; Semipalmated Plover, 3 to 10 from April 20 to May 16; Golden Plover, 1 on May 16 in company with the 2 Black-bellied Plovers; Wilson's Snipe, 2 to 4 each time from March 14 to May 9 at the springy place where the pond has its source; Spotted Sandpiper, 2 to 4 each time from April 15 to May 16; Solitary Sandpiper, 3 on April 4, 6 to 10 each time thereafter to May 16; Western Willet, 1 on May 12 and May 16; Greater Yellow-legs, 2 to 8 from March 14 to May 12, 1 on May 23; Lesser Yellow-legs, 2 to 20 from April 4 to May 16, often very noisy in May; Pectoral Sandpiper, 6 to 12 on March 14 and April 4; Least Sandpiper, 2 to 10 from April 28 to May 16; Semipalmated Sandpiper, 1 on May 12 and May 16; Sanderling, 1 on May 9; Herring Gull, 1 through early April.

The only other water birds I have recorded this spring were the Egret, at the Wilson Farm, across the road from the McElroy Farm, on May 9; the Great Blue Heron, 2 in the Chaney Marsh on May 9; and the Holboell's Grebe, 1 on a small hog pond near the Chaney barn, on March 14.

—GORDON WILSON, Bowling Green.

OUR FALL MEETING

Be on the lookout for a card later in the summer announcing our fall meeting. The Executive Committee has not yet determined on the place.

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THE OTTER CREEK NATURE CAMP ON BIRDS

By EVELYN J. SCHNEIDER

The first of the Kentucky Natural History Camps, May 1-3, 1942, at the Otter Creek Recreational Area, was devoted to the study of birds. Harvey B. Lovell and Evelyn J. Schneider, the instructors, were assisted by Mr. and Mrs. F. H. Bunce, of the Area.

These week-end field schools for nature teachers, leaders, and nature lovers were the outgrowth of the Kentucky Natural History Institute, held for the first time for a full two-week period in June, 1941. For various reasons it seemed more feasible to hold the Institute this year over a series of week-ends, devoting each one to a different subject. The series was under the direction of Dr. Harlow Bishop, president of the Louisville Natural History Club.

The first camp in the series proved a highly successful one and set a challenge for those to follow. The twenty-nine participants spent a profitable and enjoyable week-end; a number of them returned for later periods in the series. The camp began officially at supper on Friday evening. After supper Dr. Lovell showed kodachrome bird slides, many of which were procured through the courtesy of Colonel Lucien Beckner, of the Louisville Public Library Museum, and discussed bird habits and the identification of confusing species. The group then listened to the new bird song records from the Laboratory of Ornithology of Cornell University. That night, after every one was tucked into bed, came the thrill of a nocturnal concert, a veritable battle of music between Whip-poor-wills and Chuck-will's widows.

Saturday began with a six-o'clock bird walk to Lover's Leap, where a Worm-eating Warbler was proudly singing its insect-like song from a low tree part way down the cliffs. After breakfast a four-hour field trip started through the Tall Trees area, continued down to Blue Hole, and along Otter Creek, to the steep trail back to Camp Piomingo. After lunch a round-table discussion was held in the lodge. Various phases of bird life, including habitats at Otter Creek and the adaptation of birds to a life in the air, were discussed; a pigeon skeleton was used for demonstration. Many bird books and journals were on display; these were discussed and examined for their relative values. Several short field trips followed in the late afternoon to different parts of the area, including the region above and below Morgan's Cave and the Big Bend Camps. In this latter area the group discovered a Sora Rail, a new record for Otter Creek. Saturday evening every one met again in the recreation hall. Following the playing of more bird song records, Dr. Lovell showed color slides in connection with his discussion of bird food, particularly berries and other fruits. The evening closed with a songfest led by Mr. and Mrs. Bunce.

Sunday morning those who got up early enough for a before-breakfast walk, chiefly the late arrivals, were rewarded by finding a Least Flycatcher singing, the first record in the area of this hard-to-find species. The group was divided into several units for the longer trip after breakfast. Those who went down along the bluffs to the point where Otter Creek enters the Ohio River found several Spotted Sandpipers and a Little Blue Heron. The Chestnut-sided

Warbler singing merrily from the trees on the bluffs came out into view of the group watching close by; the flock of Cedar Waxwings near the dining hall thrilled the beginners with their sleek dress; the Rose-breasted Grosbeak displayed his bright color to a favored few as they rested a moment in their climb up a steep wooded slope; the Prothonotary Warbler called loudly for the benefit of those along the creek; over in Tall Trees the thrushes vied with the tanagers and woodpeckers for recognition. When the list was compiled after dinner, it was found that 89 species had been recorded during the week-end period. The group disbanded with the sincere hope that next year the Natural History Club would be able to continue such camps.

Those attending were the following: Mr. and Mrs. F. H. Bunce, Otter Creek Reservation Area; Mr. and Mrs. F. Everett Frei, Glasgow; Allen Craig, Frederick T. Heyliger, Roderick Huff, Fort Knox; Mrs. Mame Boulware, Mr. and Mrs. Leonard Brecher, Ruth Brecher, Helen Browning, Mr. and Mrs. Carl Cornett, Amy Deane, Laura Draper, Harvey Lovell, Helen and Dorothy Peil, Esther Mason, Virginia Rose, Evelyn Schneider, Mr. and Mrs. F. W. Stamm, Dorothy Sternberg, Olga Tafel, Mr. and Mrs. S. Charles Thacher, Audrey Wright, Louisville.

The species recorded were Little Blue Heron, Turkey Vulture, Black Vulture, Cooper's Hawk, Sparrow Hawk, Bob-white, Sora Rail, Killdeer, Spotted Sandpiper, Mourning Dove, Yellow-billed Cuckoo, Whip-poor-will, Chuck-will's-widow, Chimney Swift, Ruby-throated Hummingbird, Belted Kingfisher, Flicker, Pileated Woodpecker, Red-bellied Woodpecker, Downy Woodpecker, Kingbird, Crested Flycatcher, Phoebe, Acadian Flycatcher, Least Flycatcher, Wood Pewee, Barn Swallow, Purple Martin, Blue Jay, Crow, Carolina Chickadee, Tufted Titmouse, White-breasted Nuthatch, Bewick's Wren, Carolina Wren, Mockingbird, Catbird, Brown Thrasher, Robin, Wood Thrush, Olive-backed Thrush, Gray-cheeked Thrush, Bluebird, Blue-gray Gnatcatcher, Cedar Waxwing, Starling, White-eyed Vireo, Yellow-throated Vireo, Red-eyed Vireo, Black and White Warbler, Prothonotary Warbler, Worm-eating Warbler, Tennessee Warbler, Yellow Warbler, Magnolia Warbler, Myrtle Warbler, Black-throated Green Warbler, Cerulean Warbler, Blackbunian Warbler, Chestnut-sided Warbler, Prairie Warbler, Western Palm Warbler, Oven-bird, Louisiana Water-thrush, Kentucky Warbler, Maryland Yellow-throat, Yellow-breasted Chat, Hooded Warbler, Canada Warbler, English Sparrow, Meadowlark, Red-winged Blackbird, Orchard Oriole, Baltimore Oriole, Bronzed Grackle, Cowbird, Scarlet Tanager, Summer Tanager, Cardinal, Rose-breasted Grosbeak, Indigo Bunting, Eastern Goldfinch, Red-eyed Towhee, Savannah Sparrow, Shipping Sparrow, Field Sparrow, White-crowned Sparrow, White-throated Sparrow, Song Sparrow.

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