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ECOLOGY OF THE KING RAIL IN CLAY COUNTY, IOWA

By WARD D. TANNER, JR. and GEORGE O. HENDRICKSON

Dept. of Zoology & Entomology Iowa State College AMES, IOWA

The ecology of species of rails inhabiting prairie marshes within Dewey's Pasture Public Shooting Ground, Clay County, Iowa, was studied from April to September 1951, from April to October 1952, and in April, 1953. Found on the area were the Virginia Rail, whose ecology has been reported previously (Tanner and Hendrickson, 1954), the King Rail and the Sora.

The 402-acre research area included 28 marshes lying in the hollows between gently sloping prairie knolls. These marshes ranged in depth from several inches to 4 feet and in area from 0.2 acre to 18.0 acres. Of the total 96.4 acres of marsh, 81.4 acres supported emergent vegetation habitable by rails. The remaining 15.0 acres consisted of open water. The predominant species of emergent vegetation in the shallowest water along the shores were blue-joint grass, prairie cordgrass, tussock sedge and fox sedge. In waters of intermediate depth the most abundant species of emergent plants were river grass, lake sedge, sweet flag and water smartweed. In deeper waters the predominant species were broad-leaved cat-tail, narrow-leaved cat-tail, river bulrush, hard-stemmed bulrush, pale great bulrush and large bur-reed. The plant names follow Hayden (1943), who has described in detail the vegetation of this area.

The methods of study were the same for each of the species under investigation. They included daily counts of rails flushed with the aid of a Labrador retriever during the season of spring migration; systematic search for and weekly inspection of nests; and trapping and banding birds. Since the King Rail was much rarer during both the migration and the breeding season in 1951 than were the Virginia Rail and Sora, and in 1952 and 1953 was not seen at all, data for this species were less plentiful than for the other rails. Only 11 King Rails were seen during the 1951 spring migration and only six nests were discovered. Trapping operations, too, were less rewarding for this species than for the others. Only four adults and no juveniles were captured, and only one banded King Rail was recaptured.

In 1951 the first King Rails appeared on the research area May 2, and the height of the migration was reached during the first week of May. The latest date that a King Rail was seen on the area was September 2, 1951. According to Roberts (1932), the average dates of first arrival and final departure of this species in southern Minnesota are April 21 and September 22, respectively.

Nesting began soon after the arrival of the birds. In 1951 the nesting season extended for a period of 42 days from May 13, the date that the first egg was laid, until June 23, the date that the last egg hatched.

Nests were platform-like rather than cupped like those of the Virginia Rail and Sora. They were nearly twice as large as those of the other rails. The outside depth of four nests, measured to the nearest 0.5 inch from the bottom of the nest to the rim, ranged from 3.0 to 7.0 inches with a mean of 5.3 ± 0.9 inches and a standard deviation of 1.7 inches, while the inside depth ranged from 0.0 to 0.5 inch with a mean of 0.4 ± 0.1 inch and a standard deviation of 0.3 inch. The outside diameter of the nests ranged from 9.0 to 13.0 inches with a mean of 11.5 ± 0.9 inches and a standard deviation of 1.7 inches.

Four of the six nests were found in areas of marsh in which lake sedge was the predominant vegetation, while the others were found in pure stands of river bulrush and were attached to plants of that species. Of the four nests located in the lake sedge cover-type, only one was actually attached to plants of that species. The others were supported by tussocks of blue-joint grass or cordgrass, or clumps of hard-stemmed bulrush which occurred here and there among the lake sedge. Provost (1947), working on the Dewey's Pasture area, stated that of three King Rail nests which he found, two were built in lake sedge and one in dense, heavily-lodged, hard-stemmed bulrush. Beecher (1942) found four nests while studying a marsh bordering Pistakee Lake in northern Illinois. All these were in lake sedge stands.

Nest material consisted of but one or two species of plants. Of the six nests observed, two were composed entirely of lake sedge, one of cordgrass and lake sedge, one of river bulrush and hard-stemmed bulrush, one entirely of blue-joint grass, and one entirely of river bulrush. In each case the nest material consisted of plant species available at the nest site.

The water depth measured to the nearest 0.5 inch at six nests in 1951 ranged from 4.0 to 18.0 inches with a mean of 10.6 ± 2.2 inches and a standard deviation of 5.5 inches. Provost (1947) noted that the water depths at three nests on the research area in 1947 were 11, 13 and 16 inches.

Incubation periods commonly are estimated by noting the time-lapse between the laying of the last egg and the hatching of the last young in those nests in which all the eggs hatch. For the King Rail in the present investigation circumstances did not permit accurate determination of the incubation period. However, some information concerning it was obtained from the history of one nest in which incubation of the complete clutch had begun before the nest was discovered and in which some eggs failed to hatch. When the nest was found June 2, 1951 at 4:50 p.m., it contained a full clutch of 14 warm eggs; June 4, 13 warm eggs; from June 8 until June 21, 13 warm eggs; June 22, 4:14 p.m.; two warm eggs, one of them pipped, and six young; and June 23, 9:45 a.m., one cold, undeveloped egg and no young. Thus, the incubation period was estimated to be at least 21 days. Roberts (1932) wrote that the incubation period of the King Rail is about 21 days.

The number of eggs in four complete clutches in 1951 ranged from eight to 14, with a mean of 12.0 ± 1.4 and a standard deviation of 2.7. Bent (1926) stated that this species lays from six to 15 eggs, most commonly eight to 11.

In the four successful nests observed, hatching occurred during the 15day period between June 9 and June 23. The eggs in individual nests hatched within a 24- to 48-hour period and were pipped from 24 to 48 hours before hatching.

Of the six nests under observation, four (67 per cent) were successful; and of the 60 eggs contained in the six nests 39 (65 per cent) hatched. Thirteen eggs (22 per cent) in one nest were destroyed by an unidentified mammal, probably either a raccoon or a mink; six eggs (10 per cent), three in each of two nests, were deserted in a late stage of incubation; one egg (2 per cent) was infertile and one egg disappeared from a clutch which otherwise remained unharmed. No evidence of renesting following nest destruction was noted.

The six occupied nests found on the 81.4 acres of nesting cover in 1951 represented a nesting density of a nest per 13.6 acres of habitat. Beecher (1942) found four nests, or a density of a nest per 1.7 acres, on 6.8 acres of lake sedge marsh in northern Illinois. If it be assumed that all the nests on the research area were discovered during the present study, and that no renesting occurred, the estimated number of breeding adults in 1951 was 12, or twice the number of nests, since rails are considered to be monogamous.

This was a much lower figure than those for the breeding populations of the Virginia Rail and Sora, which were 54 and 52 adults, respectively. The four successful nests produced a total of 39 young rails. This represented an average of 9.8 young per successful nest, or one young per 2.1 acres of habitat.

Young King Rails left the nest soon after hatching, and once they had left the vicinity of the nest could not be observed further. Attempts to trap the young birds were fruitless; hence nothing was learned of their rates of growth.

No evidence of predation upon King Rails was noted unless the following incident be regarded as such. During May and June, 1951, the den of a red fox on the research area was visited almost daily and the remains of prey brought to the den by the parent foxes examined. The only rail seen at the den was an adult King Rail found May 12. Since this bird had not been present May 11 and obviously had been dead several days, it seemed likely that it had been found dead by the foxes and brought to the den as carrion. The carcass had not been mutilated.

Although in the present study there was scant opportunity to investigate food habits of the King Rail, this species is considered to be largely insectivorous. Martin, Zim and Nelson (1951) stated that insects such as beetles, grasshoppers, aquatic bugs and dragonfly nymphs are its principal foods and that spiders, snails, crayfishes, amphibians and small fishes are eaten, also. A stomach taken from an adult male killed accidentally by a dog May 4, 1951, on the study area was found to be full of crayfishes. An adult trapped on the area and held captive for a week at the Iowa State Fair, 1951, ate large quantities of crayfishes, the only food item offered it.

In summary, at the 402-acre Dewey's Pasture Public Shooting Ground with 28 small marshes, Clay County, Iowa, four adult King Rails were banded and released in 1951. There were no band returns. May 2, 1951, was the earliest arrival date and the first week of May was the period in which migration reached a peak. The latest sight record was September 2, 1951. On 96.4 acres of marsh searched, six occupied nests were found in 1951. Of 60 eggs in six nests, 39 hatched between June 9 and June 23. The estimated incubation period in one closely watched nest was at least 21 days. Four successful nests produced a total of 39 young, an average of 9.8 per successful nest, or one young to about 2 acres on 81.4 acres of suitable cover.

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YELLOW-CROWNED NIGHT HERON NESTING IN THE CITY OF DES MOINES

By WOODWARD H. BROWN

4815 Ingersoll Ave. DES MOINES, IOWA

The published records of the Yellow-crowned Night Heron (Nyctanassa violacea) in Iowa are comparatively few. These start with Audubon's reference to two of this species near the present site of Council Bluffs on May 10, 1843. Anderson, in "Birds of Iowa," 1907, classifies it as a "rare straggler" and includes these records: Lee County, June, 1883; across from Omaha, May, 1892; Jackson County, September, 1892; Florence Lake, August, 1903; Boone and Sioux counties, no dates. DuMont, in "Birds of Polk County," 1931, adds a Polk County record in May, 1927, and calls it "an accidental wanderer."

Iowa Bird Life contains these records: Elk Run, near Waterloo, May 1, 1936, reported by Harvey Nichols; Hudson, Black Hawk County, April 5, 1940; Shenandoah, between Riverton and Waubonsie, three adults and four immatures on July 24, 1952, and two adults and 11 immatures at the same location on August 2, 1952, reported by Mrs. Robert Bordner. Miss Mary E. Peck saw eight adults and two immatures just north of Des Moines on July 13, 1952, some of which remained in the area until mid-August. Thomas Morrissey saw two adults on May 14, 1953, on the Wapsipinicon River near Highway 67, and one adult there July 5, 1953. One was seen at Ft. Defiance State Park by M. L. Jones on May 9, 1954; and Russell Hays and Mrs. J. Ray King saw one on Black Hawk Creek near Waterloo on May 19, 1954. Wm. Youngworth saw one in flight south of Emmetsburg on July 18, 1954, and Dennis L. Carter identified an adult in Brookside Park, Ames, on April 16, 1955.

Jack Musgrove, in his "Check List of Iowa Birds," April, 1949, calls it a "rare visitor." In the "Iowa Distributional Check List, Iowa Bird Life, XXIV, No. 4, 1954, the species was reported as "casual" from the North-central, Central, East-central, Southwest and Southeast Sections.

The breeding range of the Yellow-crowned Night Heron in the United States is variously given as the south Atlantic and Gulf states, with occasional records from southern Texas, Kansas, southern Illinois, southern Indiana and New Jersey. The range also extends to the Bahamas, West Indies, Brazil and Peru.

It is generally thought that this species, in the same manner as the Little Blue Heron, American Egret and Snowy Egret, often becomes an erratic northern wanderer following its nesting. In the light of the foregoing the successful nesting of two pairs of Yellow-crowned Night Herons in Des Moines, being the first recorded for the State, is of particular interest.

The area known as Crocker Woods lies between Hickman Road and the Des Moines River in Des Moines, extending from 9th St. to Broadlawns Hospital, a distance of one-half mile. It is roughly triangular and is from one-fourth to one-half mile wide. The area is heavily wooded with elms, cotton-woods and maples predominating. Many of the trees are from 1 to 2 feet d.b.h. and there are few openings in the canopy overhead. Across Hickman Road to the south is a deep wooded ravine which, like Crocker Woods, affords good birding. Water from the ravine is carried by a culvert under the road into Crocker Woods and meanders over the floor of the woods.

On April 26, 1956, Mrs. Helen Peasley, while birding in the ravine, espied a heron which she took to be a Yellow-crowned. Although she came upon the bird at a distance of only a few feet, the meeting was so sudden and the cover so dense positive identification was impossible. In addition, the Yellow-crowned is so rarely seen here, particularly at this season, it was hard to believe that the bird was actually this species.

On May 5, Mrs. Mary Brown, Albert Berkowitz and the writer were in Crocker Woods. We had entered only a little way, following the trickle running from the ravine, when Mrs. Brown spotted a Yellow-crowned in breeding plumage standing under a fallen tree near by. We watched the bird for what seemed several minutes when it took flight in the direction of the river. The following day Dr. and Mrs. Peasley were in the area, hoping to glimpse the bird which had just been seen. At the edge of a small clearing, not far from where the Yellow-crowned had been the day before, they saw two nests in a red maple (Acer rubrum). The nests were approximately 50 feet above ground and about 25 feet apart from east to west. The west nest was completed with an adult sitting in it; the east nest was being constructed by another bird. Each seemed rather loosely constructed of quite substantial branches and rested upon a horizontal branch at a point where smaller branches intersected on either side.

Following the discovery of the nests these observations were made:

May 12, the second nest (east) was finished.

June 6, two young and an adult were in the west nest, and one adult in the east.

June 9, an adult was in each nest but only one young was visible in the west.

June 16, an adult and two young were in the west nest. One young subsequently climbed out several feet on the limb. Two adults were in the east nest. A fourth adult was perched near by. Shells of two eggs were found under the east nest.

June 24, at 1:30 p.m. there was one young perched on the edge of the west nest with the other young 3 feet away. An adult was sitting in the nest. The east nest contained two small young and an adult. At 2:45 two other adults appeared, one going directly to the east nest. The second perched not far away and 30 minutes later went to the west nest. After another 15 minutes the original two adults flew away, leaving the new arrivals in the nests.

June 30, at 2 p.m. both young from the west nest were 6 feet from the nest with the adult nearly half way to the east nest. The east nest contained two young and an adult. At 3 p.m. one adult flew in and a little later went to the east nest, and the original adult left.

July 8, there were two young in each nest with an adult about 10 feet away in each case.

July 14, the east nest contained two young and two adults. One young was flying about the west nest; the other was not seen.

July 22, there were two young in the east nest but no adult was seen. No bird was seen near the west nest.

July 28, the only birds observed were one adult and one young near the east nest.

Although the adults of both families were seen to change places on the nests, there was no feeding observed. Numerous pellets were found under the nests during the time there were young in the nests. These appeared to consist entirely of crayfish remains. On July 22 there was a fresh fish about 3 inches long, but minus the head, under the east nest. On the 28th in the same place there were two fish about an inch in length.

The height of the nests and density of the foliage made observation very difficult almost from the beginning. As the summer wore on, the leaves became thicker and the nests were very effectually concealed. Accidental discovery by passers-by would have been almost impossible. It is also entirely probable that mates of the sitting adults were in the vicinity but were unnoticed.

The Yellow-crowned is not the colonial nester to the extent of most of the other tree-nesting *Ardeidae*. The Great Blue Heron, American and Snowy Egrets, Louisiana and Little Blue Herons, and Black-crowned Night Herons are found in heronries of various sizes and which often include nests of several species. With some of these the presence of a number of pairs is necessary to provide the stimulus for nesting. The Yellow-crowned, according to Bent, may be found in small numbers in a heronry of American Egrets, or a few pairs may nest apart from others of the family. It is usually found with a small number of its own species, and there is a record (Auk, 68:235, 1951) of a single nest in Kansas City, Missouri, in 1950. Florida nests have been found in willows and in mangroves and were from 4 to 20 feet high. A South Carolina nest was 40 feet high in a pine, and the Kansas City nest 70 feet up in a walnut tree.

The number of eggs customarily laid is three, according to Coues; four to six, in "Birds of America" edited by Pearson; three or four, rarely five, according to Bent; and four is the number given in "Florida Bird Life" by Howell. The Kansas City nest produced three young. Bent gives March 25 to May 15 for egg dates in Florida, and April 13 to May 23 for Texas. In Kansas City, the nest was under construction on May 13, and the first nestling visible on June 29. Howell agrees that eggs are laid from March to May.

The local nesting was not unusual with respect to dates, but the number of young, assuming there were no infertile eggs, was small. The number of spring dates previously recorded for the Yellow-crowned Night Heron in Iowa might be indicative of nesting in the state, but this is the first to be placed on record as far as is known.

FACTORS INFLUENCING MOURNING DOVE PRODUCTION AT LEWIS, IOWA, 1955¹

By J. F. JUMBER, E. L. KOZICKY, and D. L. CARTER²

During the spring and summer of 1955, a study of Mourning Dove, Zenaidura macroura (Linn.), production was made at Lewis, Cass County, Iowa, in order to compare data obtained by McClure (1943) from 1938-40. Lewis, Iowa, has a population of about 600 inhabitants and covers an area of 160 acres. Approximately 3400 trees with a trunk diameter of 2 inches or more were found within the town limits, which was more than twice the number found by McClure during his three-year study.

With the increase in the number of trees, it was physically impossible for one biologist to search the entire town of Lewis for dove nests. Consequently, in order to obtain an unbiased estimate of Mourning Dove production within the town by semi-monthly period and for the nesting season a sampling plan was devised (Jumber, et al., in press). The sampling plan developed for estimating total production in Lewis, Iowa, for 1955 also provided an unbiased sample of nesting sites, causes of nest destruction, etc.

The purpose of this paper is to discuss the sites and histories of observed Mourning Dove nestings in Lewis in 1955. A nesting is defined as a Mourning Dove nest which, when observed for the first time, contained one or more eggs or young. A renesting means another nesting attempted in a dove

¹ Journal paper No. J-2977 of the Iowa Agricultural Experiment Station, Ames, Iowa. Project No. 1275. Fish and Wildlife Service (U.S. Department of Interior), Iowa State College, Iowa State Conservation Commission, and the Wildlife Management Institute cooperating. 2 Former Graduate Assistant; Leader, Wildlife Research Unit; and Graduate Assistant, Department of Zoology and Entomology, Iowa State College, respectively.

nest previously used in the same breeding season. An active nest is one that contains either Mourning Dove eggs or young.

During the period April 5 to September 30, 1955, 177 nestings and 26 renestings were observed in Lewis, or a total of 203 active nests. Of the 177 observed nestings, 106 or 59.9 per cent were successful; and of the 26 renestings, 18 or 69.2 per cent were successful. From the total of 203 active nests, 124 or 61.1 per cent, were successful. From the 124 successful nestings, 227 young doves were fledged and left the nest, or an average of 1.83 young per successful nesting. These findings are closely comparable to McClure's (1943).

High winds were responsible for destruction of 39 or 54.9 per cent of the 71 unsuccessful nestings; desertion for 14, 19.7 per cent; house cats for 3, 4.2 per cent; and undetermined causes for 15, 21.2 per cent. Of the 8 unsuccessful renestings, five were destroyed by wind and three by undetermined causes.

In the 203 active nests, a total of 409 eggs were found; only 8 eggs, less than 2 per cent, were infertile. The average number of eggs in the 203 active nests was 2.01; one nest had one egg and three nests had three eggs. The remaining 199 active nests had two eggs each. Two nests in which both eggs were infertile were found in April. The other three nests containing infertile eggs were found throughout the nesting season, but they were in nests with one or more fertile eggs.

The preference of different trees for nesting sites revealed American elm, box elder, and soft maple as the most important (Tables 1 and 2). The distribution of tree species, diameters at breast height, and heights for the town of Lewis will be made in 1956.

The measurements made on the location of Mourning Dove nestings show a preference for nesting sites about 10 feet or more above the ground. Although a few nestings were found next to the trunk of a tree, the majority were on branches. The 203 Mourning Dove active nests were found in trees with a mean diameter of 20.8 inches, and these nests were found at a mean distance of 189 inches above the ground and 99 inches from the trunk of the tree. Although McClure (1943) did his work in 1939-41, he found that the mean diameter of trees selected for active nests was 19 inches, the mean height of nests in trees was 272.4 inches, and the mean distance from the trunk of the tree was 148 inches.

SUMMARY

1. A Mourning Dove nesting study was conducted in Lewis, Iowa, in 1955. Lewis, Iowa, is 160 acres in size and contains about 600 inhabitants.

2. A statistically designed sampling plan was used to obtain unbiased estimates of semi-monthly and total Mourning Dove production as well as nesting sites, causes of nest destruction, etc.

3. A total of 203 active nests were observed. Sixty-one per cent of these nests were successful and fledged 227 young doves.

4. High winds were responsible for 54.9 per cent of the 71 unsuccessful nestings, with desertion, house cats, and undetermined causes constituting the remaining 45.1 per cent (32 nestings).

5. Infertile eggs amounted to less than 2 per cent among the 48 eggs under observation.

6. The average number of eggs per nesting was 2.01 with a range of one to three eggs.

7. American elm, box elder, and soft maple trees constituted the three most important active nest sites for doves.

Tree Species	Ne	esting	Re	Renesting	
	Number	Percentage	Number	Percentage	
American Elm	71	40.1	8	30.8	
Box Elder	30	17.0	3	11.5	
Soft Maple	11	6.2	1	3.8	
Peach	10	5.6			
Walnut	6	3.2	1	3.9	
Apple	6	3.3	1	3.8	
Scotch Pine	6	3.4	1	3.9	
Ash	5	2.8	1	3.8	
Plum	5	2.8	1	3.9	
Chokeberry	4	2.3	1	3.8	
Mulberry	4	2.3	1	3.9	
Red Pine	3	1.7	1	3.8	
Willow	3	1.7	1	3.9	
White Cedar	3	1.7			
Chinese Elm	2	1.1	1	3.8	
Catalpa	2	1.1			
Chestnut	1	.6	1	3.9	
Scotch Fir	1	.6	1	3.8	
Tamarack	1	.6	1	3.9	
Linden	1	.6			
Hackberry	1	.6			
Buckeye	1	.6			
Mock Orange			1	3.8	
Total	177	100.0	26	100.0	

Table 1. Number and Percentage of Active Mourning Dove Nests Found in Trees, Lewis, Iowa, 1955.

Table 2. Statistics on the Location of Mourning Dove Nestings, Lewis, Iowa, 1955

	American				
	Elm	Box Elder	Soft Maple	Peach	
No. of nestings	71	. 30	11	10	
Mean d.b.h.	20.6"	22.5"	28.6"	8.6"	
Standard deviation	12.0"	9.9"	9.2"	4.0"	
Range	2''-46''	2''-39''	6''-40''	4''-15''	
Mean distance above					
ground	205.2"	181.2"	199.6"	111.4"	
Standard deviation	108.5"	84.0"	90.0"	21.7"	
Range	57"-479"	84''-390''	120''-324''	83''-156''	
Mean distance from					
trunk	100.4"	123.2"	129.8"	70.6"	
Standard deviation	77.2"	67.8"	79.8"	23.0"	
Range	0"-283"	0''-312''	0''-204''	43''-108''	

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*Contemplated date, 1957.

NOTES ON BIRD MIGRATION IN THE IOWA CITY REGION

By FRED W. KENT 302 Richards St. IOWA CITY, IOWA (With photographs by the author)

The spring of 1956 continued dry with insufficient rain to fill any of the shallow ponds and marshes, and the Iowa River did not get much above low-water stage. Conesville Marsh and Amana Lake were at normal levels and so had their usual waterfowl population. Temperatures for April were quite extreme, with the first six days 15° above normal, and a week in the latter part of the month much below, with 18° on the 24th.

We ascribed the marked waves of bird migrants partly to this weather pattern. On April 2 temperature reached 82° F. and there was a big influx of birds such as Fox, Vesper, Field and Song Sparrows, Phoebes, Flickers and Snipe. Early April also brought the peak of the blackbird movement,



GOLDEN PLOVER

with a huge concentration (estimated at 500,000) at a roost area west of the campus. The roost was used for the second year at that place. A check of these birds showed a large number of Rusties (up to 20 per cent).

Mid-April brought the usual number of Myrtle Warblers, often found feeding in plowed fields, perhaps because of lack of foliage in the trees. A tremendous number of Rubycrowned Kinglets were to be found everywhere for two weeks; they were so noticeable the general public was aware of them and asked about them. Following a week of cold weather, April 27 warmed up to 80° and with

it there was the sudden appearance of wrens, swifts, thrashers and others. We had much larger numbers of White-throated Sparrows than in previous years, and they remained in numbers for three weeks. Another cool spell was broken on May 6. It brought a new wave of birds, including many of the early warblers and the Empidonax flycatchers of which several hundred were seen all over the countryside. From then on to May 20, a steady stream of warblers passed through. Perhaps they were more easily seen this year because of the retarded foliage. On May 12 temperature made a record high of 92° and again on the next day. On May 13 we made an all-day count of 125 species, with special success with the warblers. By May 20 practically all the migrants were gone and all the summer residents had arrived—a bit unusual as this situation came at least a week early.

A quick run-down on some of my records may prove of interest. These are listed below in abbreviated form.

Western Grebe. One seen on Amana Lake May 4 and watched for an hour. This was our first record for this area.

MIGRATION IN IOWA CITY REGION



YELLOW-HEADED BLACKBIRD AT MUSKRAT SLOUGH, JUNE 6, 1956

White Pelican. Two seen on April 30 and one on May 7 at Amana Lake. Blue and Snow Geese. Seen in numbers up to 100 from March 17 to April 19.

Swainson's Hawk. April 2 and 12.

Bob-white. A marked increase all over the county.

Golden Plover. Flocks of 26 were seen on May 6 and 57 on May 7.

Western Sandpiper. A bird which was not positively identified as this species was photographed at Amana Lake on May 17. The shape of the bill



WESTERN (?) SANDPIPER PHOTOGRAPHED AT AMANA LAKE (SEE TEXT)

seems to agree perfectly with Peterson's detailed drawing of bills on page 100 of the Eastern "Field Guide" (note the downward curve in the accompanying photograph). In my opinion the bird resembled the Western more closely than any other sandpiper.

Buff-breasted Sandpiper. Three seen on May 6. They were observed for an hour (while we ate our lunch) in a plowed field with 26 Golden Plovers.

Wilson's Phalarope. On May 4 we saw 100 at Amana Lake.

Franklin's Gull. Beginning on March 30, we saw from two to 20 at Amana Lake for a period of three weeks.

Warblers. Black and White was more numerous this year and was seen from April 29 to May 20. Also more numerous this year were Magnolia, Nashville, Wilson's, Parula and Golden-winged. A new one for me was the Cape May, which was seen on three occasions in small numbers. Most common in other years, the Tennessee was less numerous in the spring of 1956.

Yellow-headed Blackbird. Five were seen at Amana Lake on May 17. This was our first sight of them in many years. During the first week in June, on a trip with Tom Morrissey I found there were 20 to 30 pairs nesting at Muskrat Slough.

Clay-colored Sparrows. Seen in increased numbers in the spring of 1956.



GOLDEN PLOVERS

Two from a flock of 57 near Swan Lake on May 7, 1956 (photograph taken through telescope).

WARBLER MIGRATION IN THE SIOUX CITY REGION IN SPRING OF 1956: AN UNUSUALLY HEAVY 'WAVE'

By WILLIAM YOUNGWORTH 3119 East Second St. SIOUX CITY, IOWA

We who live in the extreme western fringe of Iowa observe our birds in an area where eastern and western bird life actually meet. The big Missouri River is our dividing line. Originally the long-grass prairie extended from the east, with the vast, short-grass country probing in from the west to the very western bank of the river. It always has been a land of violent wind and hail storms in the growing season and bitter, smothering blizzards during the winter. As we study bird life in this area we always hope the next spring will bring a better and more varied migration of the rarer, more easterly traveling warblers.

The late Dr. T. C. Stephens found a flight of this sort back in 1913. Since that time we have had average to fair warbler flights, but nothing to compare to the flight during the spring of 1956. Forty-three years after the historic flight observed by Dr. Stephens, the spring weather was so dry and sunny we wondered if there ever would be a warbler flight. In mid-May, however, the weather suddenly turned cool, with the barest minimum of rain, but it was enough to hold the warblers for just those few precious days when we could observe them.

This carries no excitement for an eastern bird observer, who regularly sees the rarer ones, but in this fringe area out here along the Missouri River it gives us a good, solid list. Below are a few notes to give numbers and other interesting facts about the various species.

Black and White Warbler. Seen twice in the woods at the Felton Ranch on the Missouri River west of Jefferson, South Dakota. It is possible that a pair or two might stay to nest in this area.

Prothonotary Warbler. A male was seen at the Felton Ranch on May 17 as it flew in and out of the henhouse, each time coming out with a moth. This is the breeding grounds of this species, and Wm. R. Felton, Jr., nailed up a tin can in the henhouse for a possible nesting site.

Golden-winged Warbler. A singing male was seen in the Felton woods at intervals during most of the day, May 18.

Tennessee Warbler. This common warbler first appeared this year on May 10, with the heavy flight from that date to May 20. This bird is a noted straggler in migration, with May 28 as our last date for this year. My latest date is June 16, 1941.

Orange-crowned Warbler. A common migrant often overlooked. It can be expected in Sioux City the last week of April. This year the first one arrived on May 3. The heavy flight was on May 14 and 15, when dozens were seen.

Nashville Warbler. This small warbler seems to be unknown to many of our observers, although it is not rare and should be reported much more often than it is. This year they arrived in our yard on May 13. The flight hit a peak in the next few days and on May 14 I counted at least 20, with 10 seen on May 15 and several on the following days until May 19, when the last one was seen.

Yellow Warbler. Our common migrant and regular summer resident, although I would change the abundant status given it by Dr. Stephens in 1913. Man-made hazards of migration and the increase of Blue Jays, Starlings and Grackles have greatly reduced the nesting population of this species—at least that is my observation in this immediate region.

Magnolia Warbler. A few were observed in the yard on May 3, but the main flight did not come until mid-May. When not in full spring plumage this species can be very confusing to identify at a distance.

Myrtle Warbler. While often arriving in mid-April, I did not find the species until May 3 this year. There was a heavy flight from May 3 to 6 and then another heavy flight from May 14 to 17.

Black-throated Green Warbler. A rather uncommon warbler, it was found only once—on May 16 along the Big Sioux River.

Blackburnian Warbler. This beautiful warbler arrived on May 14, when two were seen. Three were seen on May 15, three on May 16, one on May 17 at the Felton Ranch, and one on May 19.

Chestnut-sided Warbler. Rather uncommon, this warbler seems to come to our yard, where most of my records for it have been made. This year we had it in the yard on May 13.

Bay-breasted Warbler. Certainly a very uncommon migrant at Sioux City. On May 15 I saw two as they were working in low growth; they were so unafraid I watched them for a long time.

Black-poll Warbler. A regular migrant, with the first one seen on May 14 and the main flight on May 16 when I counted 25.

Oven-bird. This species, which is becoming more uncommon as a summer resident due to loss of habitat, was first listed on May 6 when we found one at our home. The second flight seemed to come on May 13 when we saw several.

Water-Thrush. It seemed that 1956 was the year for water-thrushes as spring migrants. I broke all my arrival records by finding one in Sioux City on April 15. We next had them here at our home on May 3; several stayed until May 6, often giving their loud, ringing song.

Mourning Warbler. This warbler is not seen every year. It is always a delight to see one and to sometimes hear its song. We saw the first one on May 15 and two at the Felton Ranch on May 18.

Yellow-throat. A regular summer resident and migrant. It was seen on May 14 and last seen as a migrant at our home on May 20.

Yellow-breasted Chat. Another species which is being evicted as a summer resident from year to year. Each year in patches of brush where I formerly found this comic, the chat is gone, usually due to road improvement or pasture clearing. Each year I have to go farther afield to find this interesting bird. This year the chat was first observed giving its flight song on May 15. Chats were observed in other areas on May 16 and 19.

Wilson's Warbler. First observed at our home on May 10. The main flight seemed to be about May 14. A lone straggler seen at our home on May 20.

American Redstart. The dainty sprite of our local woodlands came in some numbers on May 15, when I saw more than 25. Some of them stay to nest but most are migrants.

Correction.—Our printer dropped a line of type when paging the June issue. On page 45, in the article entitled "Records from the Vicinity of Jewell, Hamilton County, during 1955," by Dennis Carter, this line should be added just above the bottom line on the page:

Hudsonian Godwit. One was seen at the pond north of Goose Lake on

DENVER AOU MEETING



KENT, PETERSEN AND PIERCE ON THE STEPS OF DENVER MUSEUM OF NATURAL HISTORY, SEPTEMBER 7, 1956

IOWA REPRESENTED AT DENVER AOU MEETING

The 47th annual meeting of the American Ornithologists' Union was held at Denver and Boulder, Colorado, September 4-9, 1956. Attendance reached a high mark with more than 200 persons registered from all parts of United States and Canada. This international gathering of ornithologists included several Iowa members. They were: Lang Baily, Davenport; Peter Petersen, Jr., Davenport; Mr. and Mrs. Fred Kent, Iowa City; Fred J. Pierce, Winthrop.

When Dr. Alfred M. Bailey, Director of the Denver Museum of Natural History, took the accompanying photograph, the three Iowa-born members were having a friendly chat. (Lang Baily, though an Iowa member, is a rather recent transplant from Colorado).

The various sessions of the meeting were unusually interesting. Old friends were met and new acquaintances made in a congenial atmosphere of good fellowship. A "high spot" of the meeting was the field trip to the summit of Mount Evans (14,259 alt.), where the White-tailed Ptarmigan, Alpine Three-toed Woodpecker and other typical mountain birds were seen.

IOWA BIRD LIFE-XXVI, 1956

GENERAL NOTES

Bird-banding Returns in Iowa.—On April 21, 1956, Dale Birkenholz found a dead male Canvasback at Little Wall Lake, Jewell, Iowa. It had been banded January 13, 1956, at Dunkirk, Chautauqua County, New York (on Lake Erie) by the New York State Conservation Department.

On May 27, 1956, I found a dead Herring Gull at Lake Manawa, Lewis Township, Pottawattamie County, Iowa. It had been banded June 11, 1955, at Knife Island, Knife River, Lake County, Minnesota (on Lake Superior) by P. B. Hofslund.—DENNIS L. CARTER, Webster City, Iowa.

Spring Birås in Grundy County.—On May 13, 1956, my husband and I took a field trip in this locality, visiting the woods along Black Hawk Creek north of Reinbeck and Union Lake at Gladbrook, 55 miles by car and 2 miles on foot. We were in the field 9:30-11 a. m. and 1:30-4 p. m It was a cloudy day, wind 45 m. p. h. with higher gusts, temp. 80°-92°. Our bird list was 54 species. We listed these water and shore birds: Green Heron, 2; Blue-winged Teal, 50; Shoveller, 20; Sora, 3; Coot, 150; Upland Plover, 1; Black Tern, 150-200. Our warbler list included these: Golden-winged, 2; Tennessee, 1; Nashville, 2; Yellow, 5; Magnolia, 1; Myrtle, 30; Black-poll, 1; Grinnell's Water-thrush, 1; Northern Yellow-throat, 4; Wilson's, 2.—MRS. JOHN EHLERS, Reinbeck, Iowa.

Birds Observed at Little Wall and Goose Lakes, Hamilton County.—Below are a few notes I made during the spring migration of 1956.

May 22, Little Wall Lake: Loon, 1; White Pelican 1 (dead); Eared Grebe, 1; Golden Plover, 1; Black-bellied Plover, 9; Ruddy Turnstone, 17; Whiterumped Sandpiper, 8; Red-backed Sandpiper, 3; Stilt Sandpiper, 4; Hudsonian Godwit, 3; Sanderling, 2.

May 22, Goose Lake: Red-backed Sandpiper, 2; Hudsonian Godwit, 17; Wilson's Phalarope, 15.

May 25, Little Wall Lake: Eared Grebe, 1; Black-bellied Plover, 2; Redbacked Sandpiper, 3.

May 25, Goose Lake: Red-backed Sandpiper, 15; Hudsonian Godwit, 4; Wilson's Phalarope, 3; Northern Phalarope, 1 (a female in full plumage, white throat and reddish neck very obvious; seen in good light; in company with 3 Wilson's; observed at 150 feet with 20-power 'scope).

May 27, Little Wall Lake: Upland Plover, 1; Red-backed Sandpiper, 2.

May 27, Goose Lake: Stilt Sandpiper, 1; Hudsonian Godwit ,1; Wilson's Phalarope, 2. (Dale Birkenholz was with me on the May 27 trips).—PETER C. PETERSEN, Jr., Davenport, Iowa.

A Great Blue Heron Nesting Colony in Southeast Iowa.—Late in April, 1956, Bob Savage took me to see a nesting colony of Great Blue Herons on their farm. The site is in the triangle formed by the junction of Little and Big Cedar creeks some 4 miles west of Salem. From the Savage home we drove nearly a mile through their fields and finally left the car only 100 yards from the nests. As soon as we got out the birds began rising from the trees and either circled slowly overhead or flew off to the northeast in the direction of the Skunk River. The best estimate we could make was that there were 12 to 15 birds there at the time.

There were at least 10 nests in the colony and some of these showed signs of recent repair. As it was early and the weather had been unseasonably cold, we doubted there were eggs in any of them yet. All the nests we could see were high up in sycamore trees although there were several other kinds of trees near by.

GENERAL NOTES

During this time five Turkey Vultures had been soaring overhead as if watching us. Bob's sister and brother told us later they had found a vulture's nest containing young birds in an old, rotten stump in the same area the year before.

I next visited the colony on May 19, in company with Dr. Jaques, Mr. Millspaugh and my niece, Martha. This time we left the car along a gravel road and approached the nests from the west, across a cornfield. As we got near the squawks of young could be plainly heard, accompanied by the deeper grunts of the adults. We hid in the brush on the west side of Big Cedar and for two hours watched the frequent coming and going of the old birds as they fed the young. We were only 50 yards away and got some pictures of the birds in flight as they came in low over the trees.

I last visited the colony on June 9 and 10, with my brothers, Arthur and Frank. We found only four or five nests still occupied but again saw several adults and got more pictures. Under the nests we found the remains of a few egg shells which we brought home. On the last trip I found another nest, again in a sycamore, but more in the open where the birds could be watched for a longer distance as they came in. We did not have time to stay longer, but I hope to visit the colony again next spring and go better prepared to take pictures.—ROY OLLIVIER, Mount Pleasant, Iowa.

Storm-driven Birds at Fort Defiance State Park.—While at the breakfast table on Memorial Day morning, 1956, I was attracted by a movement of color among the poppies just outside the window. My wife thought I was not yet awake when I told her there was a Painted Bunting out there. A rush for bird books made short work of verifying the identification for it was an adult in all its glorious plumage. The bird was not over 6 feet from our heads, perching on a dandelion not 3 feet from the house. All its activity was directed toward getting dandelion seeds, which it ate constantly while we watched it for the next half hour.

As soon as we recovered from the shock of seeing a bird we certainly had never expected to see in Iowa, much less in Minnesota (we are only 10 miles from the Minnesota line), we 'phoned Mr. and Mrs. B. O. Wolden, Estherville, and Doctors Everett and Eunice Christensen of Spencer. The Woldens got into a Memorial Day traffic delay, but the Painted Bunting returned to our lawn and gave them every opportunity for observation. For the Christensens to fly to Estherville and be driven to the park from the airport took longer, however. The Bunting had apparently become filled with dandelion seeds for it was not again seen on the ground. When we flushed it from the shrubs and low trees where we had found it twice, it flew into the higher trees. That fleeting glance was our last. We had hoped that Dr. Christensen might get a photographic record of the bird, but while it had been patient and allowed us to watch it for over two hours, it would not oblige by posing for a portrait.

A week after the Painted Bunting observation we added another bird to our life list. We were going by car toward the west gate of the park when we saw a bird which looked like a young shrike at first glance. I knew the shrikes were nesting a half mile away but had never seen them in the park. And this bird seemed to have too much of a tail. As we drove back the bird flew toward the house but farther from us. I rushed for the binoculars and bird book while Mrs. Jones kept watch of the bird. We were fortunate enough to have it stay around for half an hour while we watched it make many a flight into the grass and the air in the manner of a flycatcher.

We had never seen a Scissor-tailed Flycatcher but this seemed nearest like one. We thought at first of the Arkansas Kingbird, but the breast and underparts were not yellow. Then, too, the tail didn't seem right. Finally, after by-passing all the colored pictures and referring to black and white sketches and descriptions, we found that the sketch and description of the immature Scissor-tailed Flycatcher fit our bird exactly. It had a deeply forked tail but not as long as most pictures show it.

Referring back to weather conditions, both of these observations followed a day of terrific scuth winds preceded by storms of tornadic force in the South and Southwest. Surely these were storm-driven birds.

Seeing that gorgeous Painted Bunting at the edge of the poppy bed deliberately eating dandelion seeds still seems like a dream, but what a pleasant one!—M. L. JONES, Fort Defiance State Park, Estherville, Iowa.

A Strange Feeding Habit of the Hermit Thrush.—Fishermen try various schemes to bring angleworms from the earth—such as jabbing a pitchfork into the soil and shaking it back and forth rapidly, beating on the ground in a vigorous manner with a large club, or pouring a chemical mixture on the ground to expel the worms. They even use electrical prods that send impulses into the soil to chase out the worms. Basically they may be getting back to Nature's method of bringing worms to the surface

During the latter part of April, 1956, we had several Hermit Thrushes in our yard. We had been watering the parched earth heavily, using not only the tap water, but pumping out cistern water to help the struggling lawn. The result was a bountiful crop of angleworms and the appreciative Hermit Thrushes lived on angleworms during the several days they were with us. Then came the enigma. Do Hermit Thrushes beat the ground like our ambitious Izaak Waltons to get the worms to surface? Often from distances of 6 to 10 feet, I watched these thrushes with binoculars as they fed on the freshlywatered lawn. They invariably beat the ground very rapidly with one foot, then suddenly reached down and pulled up an angleworm. They would then move on to another spot and repeat the process and usually get another worm. The leg action was very rapid, sometimes so fast it seemed almost a blur. It seemed to me that some of the birds beat the ground with their right foot more often than with the left. I cannot decide whether the beating actually produced the worm or the worm was available without this special attention. -WM. YOUNGWORTH, Sioux City, Iowa.

Noteworthy Birds in the Cedar Rapids Region.—I have had some interesting bird experiences other than those reported previously in Iowa Bird Life by other Cedar Rapids Bird Club members.

On June 3, 1955, I saw a Least Tern at Amana Lake. It was leisurely flying and dipping for food as I watched it for about one-half hour. This is the first record of this small tern in the Cedar Rapids area. Then on June 9, 1956, I observed two Least Terns which remained at Amana Lake until June 27. Dr. and Mrs. P. P. Laude and Fred Kent of Iowa City saw them too. I thought perhaps the terns might nest in the area since they stayed nearly three weeks but I did not see them after the last date.

Two other firsts for Amana Lake were the presence of eight to ten Black Terns all summer in 1956 and the nesting of Rough-winged and Bank Swallows in two separate places in the steep banks of the lake. However, their numbers were small.

As I walked along the dike at Amana Lake, April 8, 1956, I flushed a Marbled Godwit from a small pond. It called as it flew to an adjoining field. When I returned to the pond a little later, the Godwit was back and did not fly, so I had better observations.

In 1955, four American Egrets stayed in the Amana Lake area all summer. They were joined by about 100 more in August and it was interesting to see them fly and circle about to another part of the lake or back to the same part or to perch in trees. Several Golden Plovers stopped to feed at the lake in September.

On June 25, 1956, the Laudes and I saw 12 Upland Plovers in a field west of North Liberty. Some were young birds; Upland Plovers have nested in this area for several years. I always thrill to the call of this species and to the characteristic lifting of the wings while perched on a post. One bird obligingly performed this act for us as others called in the field.

Our small city lake, Cedar Lake, bordered by railroads and freight cars, industrial plants, homes and streets, offers good birding in spite of its adverse surroundings, particularly the last two winters. As many as 500 ducks, mostly Mallards, but including 15 other species as well as Coots and Pied-billed Grebes, have spent all or part of the winters on the lake which never freezes over completely. Spring brings more water-bird migrants, including Loons, and even the summer months are not altogether birdless on the lake. In 1955 a Ruddy Duck and in 1956 a Coot and two Ring-necked Ducks summered here. An immature Franklin's Gull stopped at the lake November 11-20, 1955.

For the past two winters, four or five Killdeers spent that season on a rocky flat of the Cedar River about 2 miles south of Cedar Rapids. They must have found adequate food and shelter to withstand the cold—sometimes below zero. They remained until spring when melting snows raised the water level and covered their wintering grounds.

An additional note about the singing of the Willow Thrush reported by Esther Copp in the June issue of Iowa Bird Life—I heard its song for the last time on June 15. So this Veery sang in the Shaver Park woods for about four weeks; the first we noted was on May 23. Neither of us had previously heard these thrushes sing in Iowa.

The program for the May meeting of the Cedar Rapids Bird Club was the presentation of projects. For my project I used the analysis of the pellets of Long-eared Owls to learn the content of their food. These birds roosted in a red cedar tree under which I collected 67 pellets in early April. Examining them, I found skulls of 106 small rodents (mice), four shrews, and three birds (or about 94% were mice, $3\frac{1}{2}$ % shrews, and $2\frac{1}{2}$ % birds). I noted too that some pellets had sizable parts of the cedar stems, foxtail and other vegetation incorporated in their contents; two even had sand burs.—LILLIAN SERBOUSEK, Cedar Rapids, Iowa.

RECENT BIRD BOOKS

THE TECHNIQUE OF PHOTOGRAPHING BIRDS, by John Warham (Focal Press, London & New York, 1956; cloth, 12mo size, pp. 1-199, with 77 photographs & about 100 drawings; price, \$4.95).

This book was received from London by the Editor in the last days of August, just as work on this issue of Iowa Bird Life was being finished. There was only time to skim through the pages in a very superficial way, but we would like to call attention to the book at this time.

In scanning the book one is immediately impressed by the fine collection of bird photographs. Many varieties of birds (mostly European) are represented, and they are shown in unusual, striking poses, nearly every one an outstanding example of the bird photographer's art—sharp, distinct and finely printed. Although most of the work is by English photographers, a few of Allan Cruickshank's are included. The written text seems to cover every angle of the broad subject of bird photography. The chapter headings are: The Choice of Equipment, Birds and Their Nests, More Difficult Sites, Birds—Wild and Free, Birds and Flash, In the Tropics, A Guide to British Birds. A good deal of space is devoted to the "hide" in all its aspects. In America we call it the "blind." The newest developments in using the electronic flash are covered in considerable detail. There are many pen drawings in the book. These show various techniques in placing and using equipment, how to construct the "hide" both on the ground and in trees, how to work in the tropics, and various other things that are more easily explained by a working drawing.

The chapters go into detailed instructions for photographing birds by the latest and well-tried methods in any situation—at the nest, on the ground, in flight, in temperate regions or in the tropics. In short, we believe it will prove to be a most useful tool in a field that, as yet, has only a few good, practical handbooks.—F. J. P.

MEMBERSHIP NEWS

Dr. and Mrs. F. L. R. Roberts of Corona, Calif., spent about six weeks at their former home of Spirit Lake, Iowa, during July and August. Dr. Roberts returned to his "old home town" of Jackson, Minnesota, for the centennial celebration which was held there during the past summer, but the greater part of their stay in Iowa was at Spirit Lake. The health of our former IOU President, Dr. Roberts, has not been good during the past few years, but Mrs. Roberts writes that he has continued to improve and gain in strength during recent months. The best wishes of this organization are extended to these two members who were formerly very active in Iowa bird study.

As usual at this time of the year, our members are either on vacation or have just recently returned. Most of them have failed to tell us anything about their travels, and the information we have from this source is rather meager. Mr. and Mrs. Earnest Steffen enjoyed a month's vacation. They went to Colorado for the last two weeks of August, then visited the Black Hills and northern Minnesota and Wisconsin. Miss Lillian Serbousek visited the Horicon Marsh in Wisconsin, where she identified three new species for the marsh area-Snowy Egret, Dowitcher and Glossy Ibis. She said: "One morning we were at the Marsh at 5:15 and saw 129 American Egrets, a few Snowy Egrets, young Gallinules, Coots, ducks and Marsh Wrens-all of them seemed to be calling and herons were everywhere." O. P. Allert had a fine vacation in Wyoming. He did some exploring in the south end of the Big Horns, including a trip to the famous Medicine Wheel on top of Medicine Mountain. Due to snow-choked roads, part of the trip was on foot, climbing slowly to the site of the Medicine Wheel. He visited Moose and Jackson Hole, and stayed at a "dude ranch" about 20 miles south of Moran "in the shadows of the Tetons." He saw four Trumpeter Swans and added six new birds to his life list. Allert's interest in history led him to Fort Washakie and to a number of the old Indian cemeteries. He said that he "came up through the old cow town of Meeteetse and saw big colonies of Cliff Swallows near there."

THE CHRISTMAS BIRD CENSUS

will be taken as usual between December 20 and January 5. Please follow the form of previously published censuses as closely as possible, with birds given in A. O. U. order, and full data on numbers seen, hours, weather and ground conditions. Censuses of at least five hours or longer are preferred. Send your census to the Editor of Iowa Bird Life not later than January 20, 1957.