

# *The Flicker*

VOLUME 28

MARCH 1956

NUMBER 1



PUBLISHED QUARTERLY BY  
**THE MINNESOTA ORNITHOLOGISTS' UNION**  
MUSEUM OF NATURAL HISTORY  
UNIVERSITY OF MINNESOTA  
MINNEAPOLIS, MINNESOTA

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## THE FLICKER

Organ of the *Minnesota Ornithologists' Union*. Published quarterly in March, June, September, and December. *The Flicker* is sent to all members not in arrears for dues. Dues for members: Active, \$2.00; Sustaining, \$5.00; Life, \$50.00; Patron, \$100 or more. All articles and communications for publications should be addressed to the editor. Subscriptions, memberships, and requests for back numbers should be sent to the treasurer.

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## THE COVER

*Upland Plover Chick*

## THE PRESIDENT'S PAGE

Can you imagine Mankato a western frontier? In April, 1700, it was certainly that as LeSueur and 25 companions arrived by boat from the north near the mouth of the Green river (now the Blue Earth) and established Fort L'Huilier about two miles from the present city of Mankato. Penicault comments: "We killed 400 buffalo which were our provisions for the winter." A report in 1702 stated: "Fox Indians killed three Frenchmen working near Fort L'Huilier."

Yes, Mankato was a western outpost 250 years ago, and in a sense it is a frontier today. Impossible, you think? We wish it were! Take a look at the map in the back of this issue which lists our affiliated societies. See anything west of Mankato? Not a club!

There are interested birders all over our state and we have "memberships at large" to prove it! You are the people I would like to influence to extend the scope of the M.O.U. What does it take to organize a bird club? A few interested individuals, a meeting place and an opportunity to take field trips as a group are the basic requirements. Let's consider these an item at a time.

First, the interested people. YOU'RE ONE — or you wouldn't be reading this. Don't you know a few others? A teacher? A game warden? Some high school students? A game biologist, or other conservation department employee? I'll just bet a number of housewives and business men would find time for a monthly meeting, too. Try the telephone, or a notice in the local paper to call together interested people — five or six are enough to start with — we have no size limit for affiliated groups.

Where to meet? Is the biology room of the local high school available one night a month? How about a church basement? Maybe a private home for the first few meetings is the answer. As to the election of officers, it's not a necessity right off the bat. Perhaps the appointment of a chairman will be sufficient.

The big question is that of program. Don't overlook your own front yard — each city has its share of people interested in the out-of-doors. Maybe the biology teacher has a collection of mounted birds to help you learn classification. Possibly he could provide a program for one meeting. Do you understand the laws relating to migratory and non-migratory birds? Your local game warden will be glad to help out in that respect. Do you know about the films available in bird study? "Bird Migration", "Duck Hunter's Dilemma", "The Wood Thrush", "High Over the Borders", and "Audubon Camp of Wisconsin" are just a few that can be rented from the National Audubon Society, 1130 Fifth Avenue, New York 28, N. Y. Or, closer to home, try "Waterfowl in Action", "Marsh Waters", or "Wood Duck Ways" produced by the University of Minnesota, A-V Service, Wesbrook Hall, Minneapolis 14, Minn.

Other than these there are many "free films" produced by various industrial firms. The teacher in charge of visual aids in your local school will be happy to look over a few catalogues with you to hunt out possibilities. As a matter of fact — not that it would add anything of value— but I'll be happy to drive out to speak to any newly formed bird club west of Mankato (F.O.B., too!)

Now, how does this tie in with the M.O.U.? As soon as the organization is set up, write a letter to Mrs. Mary Lupient, 212 Bedford Street S.E., Minneapolis, and she will send you the information you need to become an affiliated club. We need you and we think that you will enjoy planning M.O.U. activities (through your elected M.O.U. representative) and joining us on our field trips and at our meetings. (We all had a great time at Grand Marais, on Feb. 18 and 19, didn't we?)

Sincerely,  
*Your President*

# Notes on the Succession of Avian Communities At Itasca Park, Minnesota

by  
Joseph J. Hickey

This paper is a preliminary account of the response of breeding birds to successional plant communities in Itasca State Park, Minnesota. As the field work was carried out over only a four-week period during June and July, 1954, a qualitative rather than a quantitative analysis of the successional picture is presented.

*Area Studied.* Itasca Park occupies about 32,000 acres mostly in Clearwater county somewhat northwest of the central part of the state. The topography is characterized by sharp, glacially induced variations in soil and physiography. Mature stands of maple-basswood (*Acer-Tilia*) are found on the fine-textured mineral soils; spruce-fir (*Picea-Abies*), on coarse-textured mineral soils (Kell 1938). During the 1920's and 1930's, this coniferous forest appeared to be replacing the maple-basswood stands in the park (Lee 1924, Buell and Gordon 1945). The more recent effects of climate on this delicate ecological tension zone between two major types of forest are now being studied (Buell, *in litt.*).

Because of many forest fires before the park was established in 1891 and some lumbering which persisted until about 1918, the predominant forest cover today is aspen (*Populus grandidentata* and *P. tremuloides*) and birch (*Betula papyrifera*) with scattered groves of Red, White, and Jack Pines (*Pinus resinosa*, *P. strobus*, and *P. Banksiana*). A somewhat simplified picture of forest succession in the park is summarized in Figure 1.

During the 1930's and early 1940's,

Itasca Park experienced a great overpopulation of White-tailed Deer (*Odocoileus virginianus*). This completely suppressed the regeneration of white pine for more than a decade (C. O. Rosendahl, personal communication) and may have somewhat distorted the picture of plant succession that was put together in this period. The herd was known to exceed 74 per square mile in 1935, and it was finally reduced in 1945 by hunters who took out approximately 40 deer per section (Hansen and Brown, 1950). At the present time, it is difficult to estimate if any nesting songbird populations are still affected by the deer irruption. On a northern Wisconsin area where underbrush had been greatly reduced by deer, I once estimated that the density of nesting songbirds had been depressed about 25 per cent. Following reduction of the deer herd in Itasca, there has been a fine production of White Pine seedlings in many parts of the park (Hansen and Brown 1950).

*Method of Study.* I depended chiefly on transects which I followed by car over the various trails and boundary roads of the park. On each of these, I stopped the automobile every two-tenths of a mile, got out and recorded all singing birds for from three to seven minutes. These transects were run from about 3:30 to 6:30 a.m., June 14 to July 2. They were supplemented by less intensive field work at other hours during this same period, and by further observations up to July 11. I was also able to draw upon the field work of other members of the Lake Itasca Forestry and Biological Station during this per-

iod. Data on some of the nests, found in the area by members of the biological station in 1954 and reported on by Hickey, Hofslund and Borchert (1955), have also been utilized.

*Acknowledgments.* In addition to those named above, I was much indebted during the course of this study to Dr. and Mrs. Murray F. Buell, Dr. S. Charles Kendeigh, Dr. William H. Marshall and Dr. T. Schantz-Hansen of the station staff for many courtesies and much advice.

#### RESPONSE OF BIRDS TO AQUATIC PLANT SUCCESSIONS

Adams (1908) was the first to set forth the succession of bird communities as deep waters gradually fill in with plant debris, acquire emergent vegetation, become bogs and ultimately develop into bog forests. The ecology of Isle Royale on which he worked in Lake Superior appears to be fairly representative of conditions in northeastern Minnesota (Grant 1934). Adams' pioneer bird communities consist of Herring Gulls,<sup>1</sup> American Mergansers, Hooded Mergansers, Common Loons, and Pied-billed Grebes. As marsh lands are built up, American Bitterns, Lesser Yellowlegs, Marsh Hawks, and Swamp Sparrows become the residents. With the growth of alders, Cedar Waxwings, White-throated Sparrows, and Redstarts come in. Later, as the bog forest becomes continuous, Chickadees, Canada Jays, Golden-crowned Kinglets, Yellow-bellied Flycatchers, and White-winged Crossbills take over.

The series of concentric rings formed by the progress of this succession is well known. According to Leisman (1953), the simplest series in the Itasca park region starts with a sedge, *Carex lasiocarpa* var. *americana* which invades the open water, gives way to Tamarack (*Larix laricina*) and then to Black Spruce (*Picea mariana*). Variants of this series commonly involve a zone of

cattail (*Typha latifolia*) and sedge (*Carex comosa*) along the open-water edge once *C. lasiocarpa* is established. Another common variant involves a moss-heath zone in which Bog Birch (*Betula pumila* var. *glandulifera*) is conspicuous; this immediately precedes the invasion by tamarack.

A preliminary picture of the early stages of this succession in Itasca Park is given in Table 1 where a constant gradation of the six types that are recognized proceeds from left to right. The original observations basically consisted of 13 study areas that I visited on early-morning transects, and a large number of canoe transects made on the larger lakes of the park by Warren F. Classen and Nick Zaczkowski of the biological station. Since my own observations of waterbirds in the park were quite casual, I regard the tabulation of these birds as wholly tentative. The nesting and feeding habits of such birds in this area ultimately deserve intensive rechecking. Arbitrary decisions that enter into the tabulation are apparent where the loon is listed as nesting in *sedge*. This is hardly descriptive of the islands and shorelines used by loons.

As a picture of the birdlife of the aquatic environment, Table 1 omits several species which regularly course over the larger bodies of water in search of flying insects: Bank Swallows, Rough-winged Swallows, Tree Swallows, and Purple Martins. Another conspicuous component of lake shores is the Eastern Kingbird which, like the swallows, nests at the edges of lakes.

Despite the overlapping of plant communities in this succession, a number of sharp breaks seem to occur in the field. Thus, one sees three sparrows replacing each other: Swamp, Song, and White-throated. The same is evident in three warblers: Yellow-throat, Yellow Warbler and Nashville Warbler.

I certainly regret my inability to present quantitative data on the birds of

<sup>1</sup> The vernacular names of birds used in this paper are the standard ones used by Peterson (1947). In the interest of brevity, scientific names of birds have been omitted.

these aquatic habitats. My impression is that their densities are much lower than in aquatic types both in the deciduous forest region and in prairies. Among the conspicuously absent species in Itasca park in 1954 were Wilson's Snipe (my field work might have been a bit late to get its "winnowing"), Least Bittern, Black-crowned Night Heron, and rails other than Sora. The real scarcity of

birds in bogs and marshes in Itasca lies in the low densities of blackbirds, marsh wrens, and rails. Early-morning stops at marsh types yielded only two singing males per stop. This must be only a fraction of the densities of marsh birds (27 to 101 per 10 acres) reported by Beecher (1942) in his fine study of succession in the Fox lake region of Illinois. I believe that the scarcity of these marsh

TABLE 1. BIRD COMMUNITIES IN A PRIMARY AQUATIC SUCCESSION

The black-spruce community following tamaracks is not shown. The upland forest, part of a different succession, is shown because of its importance in furnishing a nesting substrate to species exploiting the food resources of open water.

f = feeding

n = nest found<sup>1</sup>

(n) = nest assumed

Species	Deep water	Shallow water	Cattails	Sedge	Bog birch	Tamaracks	Upland forest
Ring-necked Duck	f	....	(n)	(n)	....	....	....
Common Loon	f	....	....	(n)	....	....	....
Hooded Merganser	f	....	....	....	....	....	(n)
Pied-billed Grebe	f	....	(n)	....	....	....	....
Osprey	f <sup>2</sup>	....	....	....	....	....	n
Bald Eagle	....	f	....	....	....	....	n
Black Tern	f <sup>2</sup>	f	n	(n)	....	(n)	....
Mallard	....	f	....	(n)	(n)	(n)	n
Wood Duck	....	f	....	....	....	....	(n)
Blue-winged Teal	....	f	....	(n)	....	....	....
Great Blue Heron	....	f	....	....	....	....	n
Spotted Sandpiper	....	f(n)	....	....	....	....	....
Redwing	....	....	fn	f(n?)	f(n)	....	....
Swamp Sparrow	....	....	f(n)	f(n)	....	f(n)	....
American Bittern	....	....	f	f(n?)	....	....	....
Long-billed Marsh Wren	....	....	f(n) <sup>3</sup>	....	....	....	....
Sora	....	....	?	f(n)	....	....	....
Yellow-throat	....	....	....	....	fn <sup>4</sup>	fn	....
Song Sparrow	....	....	....	....	f(n) <sup>4</sup>	....	....
Yellow Warbler	....	....	....	....	fn	....	....
Alder Flycatcher	....	....	....	....	f(n)	f(n)	....
Catbird	....	....	....	....	f(n)	....	....
Nashville Warbler	....	....	....	....	....	fn	....

<sup>1</sup> Most of these nests were found by other members of the Lake Itasca Forestry and Biological Station; the data are compiled by Hickey, Hofslund, and Borchert (1955).

<sup>2</sup> Ospreys actually seem to feed only in the upper layer of lakes in the park while Black Terns mostly exploit the surface or air layer immediately above it.

<sup>3</sup> Actually reported as part of a spruce-tamarack community by J. E. Knapp and A. C. Ahlquist (1954).

<sup>4</sup> Brush stage only.

birds at Itasca is primarily due to the acid conditions which generally restrict cattails in the bogs of this region.

In seven stands of tamarack that I visited, I counted 6 Nashville Warblers, 6 White-throated Sparrows (5 of them at one stop), 4 Yellow-throats, 4 Alder Flycatchers, and 3 Parula Warblers. This appears to be quite a distinct community, zoologically as well as botanically. The number of birds per stop was 4.4, double that obtained on bogs and marshes.

In this region, Black Spruce comes in as an understory in stands of tamarack, and may eventually replace it. This relatively mature form of the bog forest is uncommon in the park. According to Roberts (1932) and Swanson (1943), it offers the ornithologist his best opportunities to record species of northern breeding birds that are rare in this region:

- Saw-whet Owl
- Olive-sided Flycatcher
- Brown-capped Chickadee
- Wilson's Warbler
- Cape May Warbler
- Bay-breasted Warbler
- Western Palm Warbler
- Connecticut Warbler

With the exception of the Olive-sided Flycatcher and the chickadee, these species have been found only once or twice in the park.

According to Kell (1938), the climax forest on peat is elm, ash, fir, in which Black Ash (*Fraxinus nigra*) is the most important tree, American Elm (*Ulmus americana*) is second and Balsam Fir (*Abies balsamea*) third. As far as I know, this type is ornithologically unexplored. It was not recognized by Cooper (1913) in his pioneer study of plant successions on Isle Royale nor by Stalard (1929) in his study of secondary successions in northern Minnesota. Conway (1949), who could reach no conclusion about the climax of bogs in central Minnesota, felt that Black Spruce which she studied in the park may be finally replaced by Balsam Fir.

## EFFECT OF FOREST FIRES ON BIRD COMMUNITIES

*Deciduous Forest Successions.* The forests of Itasca Park today reflect the forces of plant succession set into operation by forest fires and some cutting in the past. Much of the park is now covered by aspen stands. The more decadent of these resulted from a fire which burned over most of the park in 1865. Another great fire in 1886 created an environment for thousands of aspen now slightly over 55 years of age in the northeast corner of the park. The interesting sequence of these fires has been worked out by Spurr (1953, 1954). In an effort to trace what changes in birdlife probably accompanied this deciduous forest succession that followed these catastrophes, I checked 68 sites on transect lines in 1954.

Seven unmowed, grassy fields were recorded as having six species and an average of 1.7 singing males per field stop. Totals for all seven fields: 4 Song Sparrows, 2 Yellow-throats, 2 Redwings, 2 Bobolinks, 1 Sora, and 1 Short-billed Marsh Wren. An open field repeatedly surveyed by Knapp and Ahlquist (1954) contained 4 Yellow-throats and 2 Short-billed Marsh Wrens.

Twenty brushy clearings yielded 24 species and an average of 3.0 birds per clearing stop. The commonest birds in this series consisted of 8 Chestnut-sided Warblers, 7 Yellow-throats, 6 Song Sparrows, 6 Yellow Warblers, 5 Mourning Warblers, 5 Golden-winged Warblers, and 3 Catbirds. Represented at 2 each were Indigo Buntings, Redwings, Towhees, and White-throated Sparrows.

Sixteen stands of young aspen with a diameter breast high of about three inches yielded 27 species and an average of 3.7 birds per stop. In this series, the Red-eyed Vireo led the list with eight singing males recorded. It was followed by 7 Yellow-throats, 6 Veeries, 5 Least Flycatchers, 4 Catbirds (like the Yellow-throat possibly attracted to the edge only of the woodland), 4 Chestnut-sided Warblers, and 3 Oven-birds.

Fifteen stops were made in aspen stands of medium size (usually about four inches diameter breast high). The species list (26) was little changed, but the number of birds per stop increased here to 6.6. The Oven-bird dominated this series with 18 records, Red-eyed Vireo and Least Flycatcher following with 11 each. Other commonly occurring species were 7 Veeries, 6 Song Sparrows (nearly always along the roadside edge), 6 Chestnut-sided Warblers, 5 Crested Flycatchers, 4 Yellow-throats, 4 Wood Pewees, 4 Rose-breasted Grosbeaks, and 3 Cowbirds.

In 10 stops in mature aspen (DBH of six inches or more), the species list remained at 26 and the number of birds per stop increased to 7.1. At this stage, aspen has reached its maximum height, openings are frequently present, and other species like birch and basswood are in evidence. The presence of 12 Red-eyed Vireos at the head of the list may be a response to the richness of the forest canopy. Other species present included 5 Oven-birds, 5 Song Sparrows, 4 Veeries, 4 Flickers, 3 House Wrens, 3 Chestnut-sided Warblers, 3 Crows, and 3 Yellow-throats.

The principal changes in bird populations apparently brought about by this aspen succession are summarized in Table 2. It was not possible for me to trace these changes satisfactorily past the aspen series into maple-basswood forests. Lee (1948), who studied the birds using a climax maple-basswood stand in the park, reported the following six species to be the most abundant and consistently observed from June 24 to July 2:

Red-eyed Vireo	Wood Pewee
Oven-bird	Crested Flycatcher
Least Flycatcher	Scarlet Tanager

On June 24, 1954, I traversed a small stand of virgin maple-basswood on the south boundary of the park, about six miles west of State Highway No. 71. Counts taken there from 3:50 to 4:00 a.m. gave the following totals:

- 3 Red-eyed Vireos
- 1 Oven-bird
- 4 Least Flycatchers
- 1 Veery
- 1 Brown Creeper
- 1 Wood Pewee
- 2 Crested Flycatchers
- 2 Scarlet Tanagers
- 1 Blackburnian Warbler
- 1 Yellow-throated Vireo

When this was replicated later the same morning, I recorded 2 Crested Flycatchers, 2 Oven-birds, and 2 Blackburnian Warblers. The latter species was presumably present because of some

TABLE 2. PRINCIPAL BREEDING BIRDS IN THE ASPEN SUCCESSION  
(The number recorded per ten early-morning stops)

Species	Fields	Brush Clearings	Young Aspen	Medium-Aged Aspen	Mature Aspen
Bobolink	2.8	....	....	....	....
Red-wing	2.8	1	....	....	....
Yellow-throat	2.8	3.5	4.4	2.7	3
Song Sparrow	5.7	3	0.6	4	5
Mourning Warbler	....	2.5	....	....	....
Catbird	....	1.5	2.5	....	....
Golden-winged Warbler	....	2.5	0.6	....	....
Yellow Warbler	....	3	1.3	1.3	....
Chestnut-sided Warbler	....	4	2.5	4	3
Cowbird	....	0.5	1.9	2	1
Crested Fly-catcher	....	0.5	0.6	3.3	4
Veery	....	0.5	3.8	4.7	4
Red-eyed Vireo	....	0.5	5	7.2	12
Rose-breasted Grosbeak	....	....	0.6	2.7	1
Wood Pewee	....	....	0.6	2.7	1
House Wren	....	....	1.3	1.3	3
Oven-bird	....	....	1.9	12	5
Least Flycatcher	....	....	3.1	7.2	2
Flicker	....	....	....	0.7	4
Crow	....	....	....	2.0	3
Number of stops	7	20	16	15	10
Birds per stop	1.7	3.0	3.7	6.6	7.1

Balsam Firs at this site. Two other visits to this area failed to change these figures appreciably.

In 1954, J. H. Shutts carried out a census of 23.5 acres of mature maple-basswood which contained some White Pine. Here the main breeding species consisted of at least the following:

- 14 Least Flycatchers
- 12 Red-eyed Vireos
- 6 Oven-birds
- 4 Scarlet Tanagers
- 4 Wood Pewees

The available evidence thus seems to be that, with the exception of the Scarlet Tanager, the six predominant avian species of mature maple-basswood in the park are present throughout the deciduous forest succession once young stands of aspen have taken over a site. I take these six species to be the 3 flycatchers (Crested, Least, and Pewee), the Red-eyed Vireo, Oven-bird, and Scarlet Tanager.

This is about as far west as one can find mature stands of the eastern deciduous forest. Kendeigh (1944), who reviewed census data on the breeding birds of eight examples of this forest community, set forth the following order of abundance: Oven-bird 38.4 birds per 100 acres; Red-eyed Vireo 35.0, Redstart 23.8, Wood Thrush 15.8, Wood Pewee 11.7, and Hooded Warbler 9.7. The Crested Flycatcher and Scarlet Tanager tied for ninth place in Kendeigh's list. At Itasca, the Redstart and Wood Thrush were extremely uncommon. Hooded Warbler is, of course, absent this far north. I certainly was surprised to see the Redstart so generally absent in this successional series. According to the *Check-List* of the American Ornithologists' Union, it breeds as far west as British Columbia. The apparent abundance of the Least Flycatcher is, I think, equally unusual. Compared botanically to the mixed mesophytic stands of the southern Appalachians and the climax forests of the Carolina Piedmont, the hardwood forests of the Itasca Park area show the influence of the drier,

more continental climate (Buell and Wilbur 1948).

The principal operative force that is today eliminating the field and brushy clearing birds of the park is, of course, the effective forest fire protection service. For all practical purposes, fire will no longer be setting back plant successions. Birds like the Bobolink and Catbird are on their way out. Mourning and Golden-winged Warblers will gradually lose in numbers until wind storms open up parts of the forest. Winds and great "blowdowns" will henceforth take on increasingly greater ecological importance in the history of this forest and its birdlife.

*Coniferous Forest Successions.* The magnificent pine groves of Itasca Park today are relatively temporary stands which owe their origin to forest fires of the eighteenth and nineteenth centuries. Seven important fires in the park have been determined by Spurr (1953, 1954): An extremely severe fire or series of fires swept through the park about 1714. Of the stands that followed this fire (presumably Jack Pines), only the long-lived Red and White Pines still persist. These stands are now about 215-235 years old. In 1772, a less severe fire resulted in pineries now 148-170 years old in the park. Major fires also occurred in 1803, 1811 and 1820 to produce Red Pine groves that are still extant. A fire in 1865 gave rise to extensive stands of Jack Pine and aspen that are now largely decadent. Another fire in 1886 produced the thousands of Jack Pines and aspens now slightly over 55 years old in the northeast corner of the park.

In this coniferous forest succession, the great Red Pine groves now in the park were once mixtures of Red and Jack Pine in which the short-lived jacks ultimately lost out to the reds (Spurr and Allison 1952). So far as I know, no ornithologist has ever attempted to trace the ornithological communities which probably accompany such a succession. Itasca park no longer contains any pioneering stands of Jack Pines which would

enable one to observe the initial response of birds to such a forest, and I did not do enough field work outside the park to observe the whole phenomenon. On an old burn covered with blueberries on the north boundary of the park, I noticed scattered Jack Pines at a height of 10 feet and scattered Red and White Pines having a height of about 20 feet. The birds here were quite typical of some of the species one would expect in a young Jack Pine forest just beginning to succeed brush: 2 Clay-colored Sparrows, a Vesper Sparrow, a Chipping Sparrow, and Nashville Warbler. Only a Yellow-bellied Sapsucker on this tract seemed out of place. I did compare the birdlife of 50- to 75-year stands of jacks with that of a Red and White Pine series having a heterogeneous array of under cover. In terms of their more common species of birds (Table 3), the two series show only moderate differences.

TABLE 3. COMMON BIRDS IN PINE-FOREST TRANSECTS

Species	Number observed per 10 stops	
	Jack Pine	Red or White Pine
Least Flycatcher	12.0	7.1
Red-eyed Vireo	5.3	8.6
Oven-bird	5.3	5.7
Chipping Sparrow	5.3	....
Wood Pewee	4.7	11.4
Pine Warbler	4.0	7.1
Scarlet Tanager	3.3	....
Blackburnian Warbler	2.7	1.4
No. of stops	15	7
Birds per stop	6.2	6.6

It is rather curious that a Flycatcher in each series heads the list as the predominant species. The presence of so many Chipping Sparrows in a habitat where one expected Pine Warblers was another interesting element in the bird communities of the Jack Pine forest. This sparrow was also present on a Red Pine study area where I carried out repeated observations.

As far as I could see, some of the pine groves in Itasca Park will ultimately revert to maple-basswood forests al-

ready mentioned in this paper, while others seem destined to be replaced by spruce-fir. Due to "blow-down" conditions at the time, I carried out relatively little field work on the latter type in 1954. Lee (1948) reported these seven species to be the most abundant and consistent in a climax spruce-fir forest that he studied in the park during the nesting season:

- Red-eyed Vireo
- Oven-bird
- Crested Flycatcher
- Scarlet Tanager
- Hermit Thrush
- Black-throated Green Warbler
- Blue Jay

The following birds that I counted on the Nicollet cabin trail on June 27 may be regarded as indicative of the bird community that is associated with the spruce-fir forest of the park:

- 9 Blackburnian Warblers
- 7 Red-eyed Vireos
- 6 Pine Warblers
- 5 Black-throated Green Warblers
- 5 Crested Flycatchers
- 4 Oven-birds
- 3 Hermit Thrushes
- 2 Red-breasted Nuthatches
- 2 Blue-headed Vireos
- 2 House Wrens
- 2 Brown Creepers
- 2 Scarlet Tanagers
- 2 Nashville Warblers
- 2 Mourning Warblers
- 2 White-throated Sparrows
- 1 Golden-crowned Kinglet
- 1 Chipping Sparrow
- 1 Wood Pewee
- 1 Yellow-bellied Sapsucker

At least two of these (Mourning Warbler and White-throated Sparrow) would, of course, be associated with clearings rather than the forest itself. I do not, at this writing, have an explanation for the presence of Red-eyed Vireos, a species which I associate with deciduous forest more than with conifers. On the whole, any reversion of Itasca's forests to spruce-fir will involve a considerably different community of

birds than the ones now found there in stands of pine. On this transect taken by foot of the Nicollet trail, I averaged 4.6 birds each time I paced off 75 yards and counted the singing birds. Compared to the counts of 6.2 and 6.6 for stops in pine forests, this would imply that the density of the park's birdlife may drop in those pine areas which revert to the spruce-fir type. Further sampling of the birds of the spruce-fir forest in the park will have to be carried out before this point can be finally settled.

#### SUMMARY

1. Seven bird communities are described in the succession in which deep lakes fill up and become bogs in northwestern Minnesota. A number of differences occur between this and one described by Adams (1908) on Isle Royale off the northeastern corner of the state. Blackbirds, marsh wrens and rails were relatively scarce in the succession observed at Itasca park.

2. The succession of birdlife as fields revert to brush and proceed through an aspen series evidently involves progressively higher densities of birds as well as an increase in the number of species.

3. Mature stands of maple-basswood in this region have a surprisingly high number of flycatchers (Crested, Least, and Wood Pewee); Redstarts and Wood Thrushes were surprisingly uncommon.

4. A preliminary analysis of succession in pine forests discloses Least Flycatchers and Wood Pewees to be the most common birds in pineries in the park.

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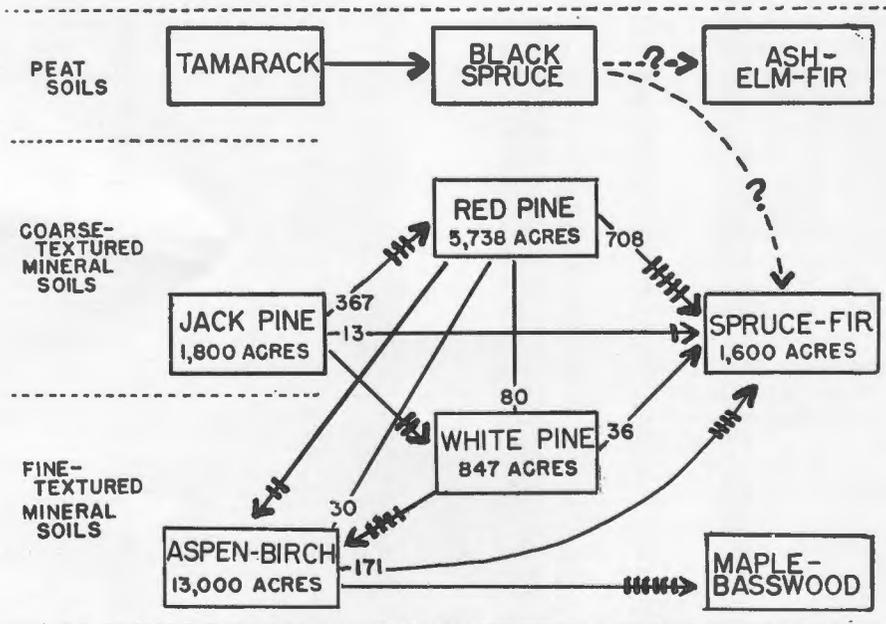


Figure 1. Some lines of forest succession in Itasca park (after Kell 1938, Conway 1949, and Leisman 1953). Cross bars on the arrows denote the number of study areas investigated by Kell (1938). Acreages have been taken from Hansen and Duncan (1954), the total

acres for a major type of forest being within a given block, acres involving a component type lying outside the block. Thus, of 13,000 acres of aspen-birch in the park, 30 acres are reported by foresters to have Red Pine as a component, 171 have spruce-fir as a component.



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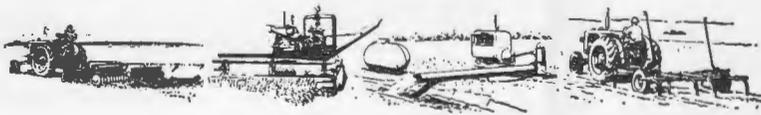
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## In Memoriam Dorothy Beard

Mrs. Dorothy Beard, 41, passed away April 29, 1955 at Austin, Minnesota, after an illness of four months. At the time, Mrs. Beard was executive director of the Austin Girl Scouts.

Mrs. Beard is well known for her interest and work in natural history. She was a member of the Minnesota Ornithologists' Union and the Minnesota Bird club and a past member of the St. Paul Bird club, St. Paul, the Range Naturalists' club, Virginia, Minnesota, and the Linnean society, New York. Together with Kenneth Morrison, then representative of the National Audubon Society, she founded the Range Naturalists' club, which was a branch of the National Audubon Society and was affiliated with the M.O.U. She was president of this group from 1948 to 1950. She was active in Girl Scout work and served as a leader for many years in St. Paul and Eveleth, Minnesota and Tenafly, New Jersey. She did a great deal of work assisting the editors of the *Flicker* and contributed one article, "Wilderness Besieged", *Flicker* 23:169-174.

The late Dr. T. S. Roberts had long ago recognized her intense interest in ornithology and presented her with a copy of his monumental work, *Birds of Minnesota*. Stimulated by Dr. Roberts she directed her efforts first to Girl Scout work and later to natural history organizations. While living on the Minnesota Iron Range she contributed her time and efforts to natural history groups and was in great demand for talks on natural history subjects in Eveleth, Virginia, Hibbing and the surrounding territories.

Anxious to devote full time to the teaching and directing of natural history activities, she decided to return to school and get a degree. In 1949 she enrolled in the University of Minnesota, and in her junior year, her eldest daughter,

Valerie Beard, enrolled as a freshman. Despite many difficulties, her accomplishments at school were tremendous. She succeeded in hopping inter-departmental barriers and graduated in 1953 with a B.A. degree in zoology and the classics. The vitality she displayed while she attended the University was unmatched by many of her younger classmates and no matter how routine her part-time jobs were, she did them with a zest and enthusiasm, which was a delight to her employers and co-workers. Although classes, studies, part-time employment, participation in various organizations, and her family taxed heavily her time, she managed to organize and direct the Island Park Nature club in 1952. The organization was a great success and its young members, ages 7 to 15, were invited to give demonstrations of natural history hobbies to groups in the Lake Minnetonka area. On one occasion, they presented a demonstration at the University of Minnesota for a group of practice teachers.

Although she worked in Austin, as executive director of the Girl Scouts, only 11 months before she became ill, she had already accomplished a great deal of work and after some struggles had won the cooperation and respect of everyone.

Her direct, projecting, and generous personality aided her in making innumerable friends. Although she had controversial ideas and did break down conventional barriers, she usually gained the friendship and confidence of those who had originally opposed her ideals. I had the opportunity to travel with her on the West Coast for a month in 1952, and I was amazed at the number of people she knew and the friends she had everywhere. Her interest in children and young people and her ability to sell natural history to the beginner will continue to amaze many people. Her energy, leadership, and fine personal qualities which made her so many friends, will be greatly missed. *Joyce H. LeFebvre.*

# The Upland Plover on Our Farm

by

Charles Flugum

It is heartening for a bird enthusiast to witness the coming back of a species that has been as seriously threatened with complete extinction as the Upland Plover. I do not know if my experience with the bird is a true indication of its status in general but, if so, there is hope that the Upland Plover will survive as a species even though, with habitat limitations and other adverse factors, we can never expect to see it in such great numbers as used to populate this area in pre-market hunting days.

Every year for the past 15 years it has been my pleasure to have at least one pair of Upland Plovers spend the summer on our farm here in Freeborn county. I remember vividly the first pair that came here. On April 28, 1940, as I was putting the cows into the barn for the evening milking, I paused abruptly to listen to a bird call that I had not heard for at least 25 years. From dizzy heights over the pasture to the west came the prolonger two-syllable song, starting with a bubbling, liquid-like sound and changing to a clear, mellow whistle, first rising and then falling in pitch and intensity. In modern lingo I suppose one might call it a long-drawn wolf whistle. The long-lost bird song, so mysterious in my boyhood days on our prairie farm in Winnebago county, Iowa, turned out to be the mating call of the Upland Plover.

Those first birds were very shy, invariably flushing before I came within 60 rods. Perhaps it was my fault for trying to approach them on foot while fetching the cows, my dog usually following me or running on ahead. During the early part of the season they always flushed from the same area in my sweet-clover pasture so I assumed that they

were nesting there although I never found their nest. The next spring I learned to my amazement that Upland Plovers have little fear of the tractor or other farm machinery. Often they merely step aside far enough to avoid being covered with dirt by the disc. From the tractor seat I have had no trouble observing them at close range and enjoying their winsome ways.

Unlike the mechanical running of the Killdeer, the Upland Plover walks with dainty grace bobbing its head forward with every step. The enchanting call is given while flying with quivering wings several hundred feet up. When alighting, the bird lifts its wings holding them outstretched over its back a moment before folding them carefully. This habit flashes the lighter-colored underwing plumage often calling my attention to the bird's presence in a field. Several times the plovers have surprised me by remaining confidently perched on a fence post while my tractor thundered past, taking the first disc swath along the fence.

In 1941 the Upland Plovers' activities had moved to the next field which was then my pasture. They have quite faithfully followed the crop rotation, always presumably nesting in the field that was being pastured that season. In 1943, while planting a late field of silage corn, I had the good fortune to see two parent plovers with their brood of newly-hatched chicks, the first definite proof that the birds were actually nesting here. I caught one of the young, much to the consternation of the parent birds who hovered about feigning charges at me and uttering their discordant cries. The captive chick made my eardrums ring with its fretful cries,

a masterful voice for such a delicate creature. Having satisfied my curiosity I released the chick and watched it hurry clumsily away. Although I have caught young Upland Plovers on several later occasions I have not encountered such a storm of protest from either parents or young.

In 1944 three pairs of Upland Plovers nested here, each pair holding forth on a separate area, one in the pasture and one in each of two small, grassy waste areas. After this bonanza year, however, there has been only one nesting pair each season although during the spring migration I have seen as many as six birds walking about my fields.

Early in June 1948 I was plowing a field of pastured rye in preparation for planting it to soybeans, when suddenly an Upland Plover charged toward the tractor with half-raised wings, then veered off and took flight. Stopping the tractor, I went forward to the spot,

directly ahead, from which I saw the plover start. A tractor wheel had gone within four feet of the nest on the previous round without disturbing the brooding plover. The rye about the nest was grazed just as closely as that in the rest of the field and I wondered how the bird had permitted this and yet prevented the stock from trampling on the nest. To spare the nest I left a small patch of rye unplowed. Having discovered the nest I went back often to check it in order, if possible, to be on hand when the eggs were hatching. The brooding plover proved unbelievably tame, never seemingly disturbed when I stopped the tractor near by or even when I stood or squatted within two feet of the nest. Lest the eggs should hatch and the young leave the nest unobserved on Sunday, I also checked the nest then. Curiosity prompted me to see how near I could get to the bird without flushing it. When my fingers were within six inches of the bird its eyes started shifting. I spoke a few reassuring words whereupon my dog, that had followed me unobserved despite my order that he stay home, evidently thought I was talking to him for he bounced up to me almost trampling on the nest. The plover left in such haste as to knock one egg against another cracking the shell badly. The membrane, however, was not ruptured so the egg did not leak. The next day the plover was on her nest and all seemed well.

After dinner on the second day after the accident the brooding plover seemed more nervous and sat in a half-raised position. She left the nest a little way as I approached and found two of the eggs, including the damaged one, hatched and third shell pipped. We immediately called Evan Wulff, a member of the Albert Lea Audubon society and a camera enthusiast with a flare for nature pictures. Evan drove out at once and took some still pictures of the nest, eggs and young plovers. A little later as I watched from the tractor, the mother plover returned and Mr. Wulff,



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lying down on he plowing, took, at close range, about 50 feet of film showing the bird parading protectively between him and the nest. The following day the nest was vacated and I saw the parent plovers escorting their three young in the sweetclover pasture which was in the next field. I cracked the deserted egg and found it to be infertile. This is the only nest I have actually located although I often encounter the plover family as they go about their insect-hunting in my fields during corn cultivating and haying time.

The most common date of spring arrival has been April 28 although they have shown up as early as April 19 and as late as May 5. This year they came on April 25.

On a field trip to Upper Twin lake

about 20 members of the Minneapolis Bird club and six guests from Worthington together with three local birders stopped at my farm to see some field and woodland birds. The Upland Plovers put on a fine serenading demonstration for the group. Apparently they were not frightened by the presence of seven cars and 30 enthusiastic bird watchers in my cow lane.

Every year during the Upland Plovers' absence, from early August until the latter part of April, I keep my fingers crossed hoping that my plovers will not fall victims of some trigger-happy Argentine gaucho or meet with disaster enroute to or from their winter home. Each spring, however, I am reassured as I was this year on April 25 when again I heard their welcome call. *Albert Lea*

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#### LAKE ITASCA SUMMER SESSION

The Lake Itasca Forestry and Biological station will be in session this year from June 11 to July 13. Of particular interest to M.O.U. members is the appointment of Dr. John Emlen of the University of Wisconsin to conduct the advanced ornithology course and research work. Itasca's superlative birding opportunities make it an ideal area for this course.

Other courses of general interest to biologists are the introduction to the study of Fungi given by Dr. Clyde W. Christensen and the natural history of invertebrates and fishes with Dr. Samuel Eddy. These (as well as nearly a dozen others in various aspects of botany, entomology, and economic zoology) courses meet for two full days a week emphasizing both field and laboratory work.

The facilities at the station have been further improved under the direction of Dr. T. Schantz-Hansen. Chief of these changes will be the addition of a research laboratory providing facilities for individual workers. Also many changes have been made in the student cabins and bunks.

Persons interested in the station and its opportunities should write Dean E. W. Ziebarth, 135 Johnston Hall, University of Minnesota, Minneapolis 14, Minnesota for further information.

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#### ERRATUM

Unfortunately, the last part of the first sentence, the first half of the third sentence, and a whole sentence from the last paragraph of Page 162 of Volume 27, Number 4 of *The Flicker* were omitted. The omission drastically changes the summation of Dr. Beer's article *Zoogeographic Relationships of Minnesota's Mammals*. Please correct your copy to read:

"Thirty-one species representing seven families came from Eurasian stock while 30 species representing five families are difficult to allocate but most certainly developed in the northern hemisphere. *It is difficult to even suggest an area of development for our one family of bats with its seven species. However, it seems likely that it developed in the tropical areas of the world.*"

The italicised words is the portion left out.

# A Marsh Bird Study — Spring 1955<sup>1</sup>

by

John M. Gates<sup>2</sup> and James R. Beer<sup>3</sup>

This paper describes the waterfowl and marsh bird migration, nesting use, and production of a small marsh north of St. Paul, Minnesota. The study reported was undertaken to record the biological phenology of a pothole, special reference being given to bird migration and nesting. In its original form the report included data collected on other vertebrate and invertebrate groups from the marsh as well as a nearby wooded area.

Field work was initiated on April 1 and continued through June 7. After May 15 field observations were confined to nesting studies whereas prior to that date migration phenologies were studied more intensively.

During the study a list of 65 bird species, both terrestrial and aquatic, was accumulated. Of these 65, a sufficient amount of nesting data for discussion was collected for four species. Migration patterns discussed herein include only those species observed within the perimeter of emergent vegetation. Dr. W. H. Marshall assisted in the preparation of this paper.

## DESCRIPTION OF AREA

The study area consisted of a shallow pothole approximately 3.5 acres in extent. It was located three miles north of the University of Minnesota, St. Paul campus, at the intersection of Cleveland Avenue with county road C-2. The intersecting roads divided the area into three smaller ponds, each quite homogen-

ous in regards to cover types (see figure). The study area was Pond V of Pospichal and Marshall (1954) who reported on certain Sora (*Porzana carolina*) and Virginia (*Rallus limicola*) Rail studies.

The small amount of existant emergent cover consisted of four stands of cattail (*Typha latifolia* and *T. angustifolia*) and river bulrush (*Scirpus fluviatilis*). Immediately in back of the emergents as well as along most of the shore was a dense growth of wetland grasses and forbs. A wooded ridge formed the eastern boundary of the study area and a pasture the western boundary.

Water depths as reported by Pospichal and Marshall (op. cit.) ranged up to four feet. Water levels remained nearly constant throughout the study except for a gradual recession in late May and a sharp rise to normal in early June.

## WEATHER

The weather in the vicinity during the study period was excessively warm and dry, (Climatological Data, Minnesota, April 1955.) April, 1955 was the warmest in the past 40 years, above normal means occurring on 25 days. The average April daily mean was 54° F and for the first two weeks of May the average daily mean was 62° F.

Since 1930, only April, 1946 and 1952 were dryer, a deficiency from normal of one inch of total precipitation being recorded. Up to May 15 a deficiency in precipitation of 1.1 inches had been recorded for the first half of that month.

<sup>1</sup> Paper No. 903 Miscellaneous Journal Series, Minnesota Agricultural Experiment Station, St. Paul 1, Minnesota.

<sup>2</sup> Cooperative Wildlife Research Unit, Utah State College, Logan, Utah.

<sup>3</sup> Department of Entomology and Economic Zoology, University of Minnesota, St. Paul 1, Minnesota.

## ARRIVAL AND DEPARTURE DATES

The first waterfowl to appear were Mallards (*Anas platyrhynchos*) noted on April 1. They remained throughout the study. On April 6, two pairs of Ring-necked (*Aythya collaris*) and two pairs of Lesser Scaup (*A. affinis*) were observed. By April 8 their numbers had increased to four and three pairs respectively. They departed from the ponds on April 22. One pair of Red-heads (*A. americana*) frequented the

study area from April 7 to 11. The first pair of Blue-winged Teal (*Anas discors*) were observed on April 18. Together with the Mallards this species constituted the only breeding ducks of the area.

One pair of Coots (*Fulica americana*) were found on April 11 but none were observed thereafter. The first Sora Rails were noted on May 12 and they remained evident until May 28. However, all records were of single individuals and there was no evidence of

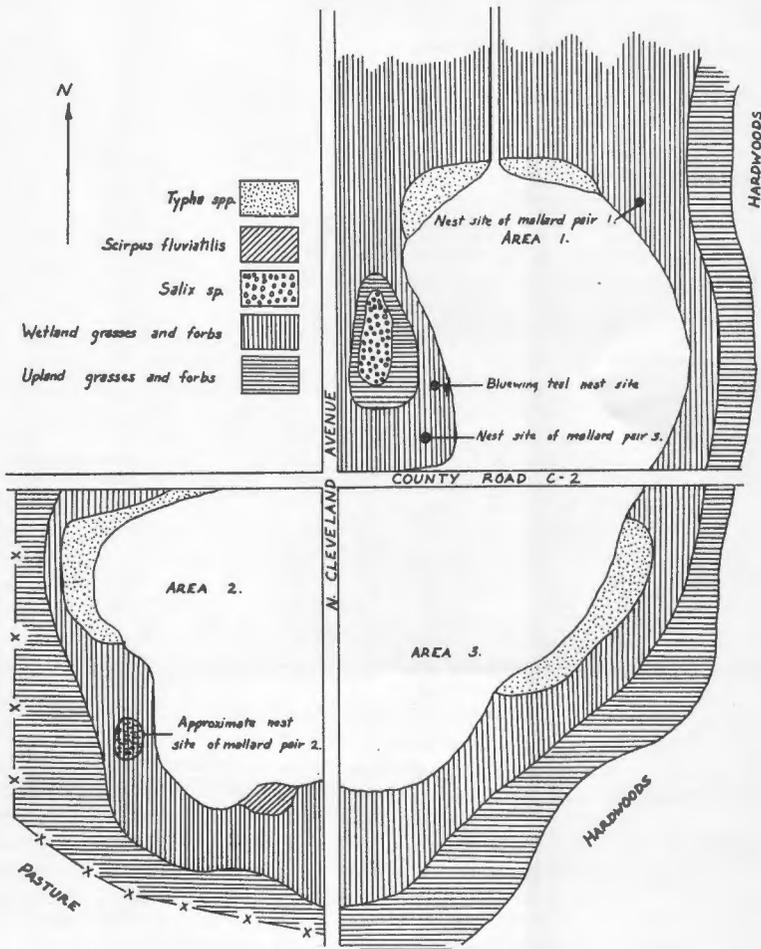


Fig. 1. Waterfowl nest sites in relation to cover types.

their nesting. Pospichal and Marshall (1954) reported rails nesting on the area in 1951 when there had been a more extensive and denser stand of emergent aquatics.

Great Blue Herons (*Ardea herodias*) were uncommon on the pond itself although numerous individuals in flight were observed throughout the study period. Green Herons (*Butorides virescens*) were very common, the first being noted on May 7. One American Bittern (*Botaurus lentiginosus*) was found on April 28 but this species was not discovered thereafter.

Killdeer (*Charadrius vociferous*) were very common during the entire study. They probably nested in some of the nearby fields. Wilson's Snipe (*Capella galinago*) were observed from April 8 to the end of the month although none of their breeding activities were noted. A flock of Lesser Yellowlegs (*Totanus flavipes*) was noted on April 21 and on later dates an occasional individual of this species was found. Solitary Sandpipers (*Tringa solitaria*) were initially found on April 23 and they remained quite common thereafter. Black Terns (*Chlidonias niger*) first arrived on May 7 and became very common although they did not nest on the study area.

The first Kingfisher (*Megaceryle alcyon*) was found on April 18 and the first Short-billed Marsh Wren (*Astothorus platensis*) on May 12. The former species was uncommon and the latter was observed only twice.

Red-winged Blackbirds (*Agelaius phoeniceus*) were present when the study began. Yellow-headed Blackbirds (*Xanthocephalus xanthocephalus*) were first found on April 12. Though the latter nested on nearby water areas, all records were of occasional individuals.

#### MATING AND NESTING ACTIVITIES

*Mallards* — The first breeding pair of Mallards arrived on April 3 and by April 5 an additional two pairs had joined them. No courtship activities

were noted and it was assumed that the pairs had mated prior to their arrival.

Territories were immediately established, one on each third of the pothole. Each of the defended territories included cattail growths and one or more muskrat houses. At this early date, however, little animosity was noted when one pair encroached upon another's territory. It appeared that territories were not as vigorously defended soon after their establishment as they were to be later.

Loafing sites, in all three cases muskrat houses, had been selected and were being utilized by the respective pairs by April 8. The same sites were occupied by the drakes for a considerable period of time after they had ceased to defend their territories.

Evidence of intensive territorial defense was first noted on April 10. On this occasion the pair from Area 2 was flushed by the observer onto the territory of Pair 3. The resident drake immediately directed a vigorous attack on the intruding drake, pursuing him on the water. After a series of short, quick flights they both took to the air. Until then the hens showed no special activity but the intruding hen then joined the flight. The resident hen began quacking loudly while the pursuit covered a wide circle. When the three airborne ducks were off the defended territory the resident drake gave up the chase. The hen finally gave up her noise making as her mate splashed in beside her. The whole exhibition of defense and flight lasted three minutes. On April 11 the same general pattern of defense was noted when Pair 3 was flushed onto the territory of Pair 1. By April 13 the pairs had become more attached to their territories as they were very difficult to flush from the water.

Territorial occupancy remained static until April 20 when two drakes were found feeding together on the established territory of Pair 1. The female of this pair was not evident. After this date the females of Pairs 2 and 3 were likewise not seen. Though the drakes con-

tinued to utilize the loafing sites, it appeared that they ceased to defend their territories about April 20. By June 1 all Mallard drakes had deserted the study area though a nearby marsh held a high population of them.

On April 21 a nest, containing five eggs, was discovered on Area 1 and by April 28 it held ten eggs. It was assumed that this hen began laying and incubation on April 16 and 26 respectively. The nest was well concealed in a clump of Reed Canary Grass (*Phalaris arundinacea*) located 20 feet from water. The nest hatched successfully between May 20 and 22 and by June 7 nine young had survived.

No nest was discovered on Area 2 although a hen was flushed from the uplands adjoining Area 2 on two occasions. On May 17 a brood of 11 newly hatched ducklings, which were taken to represent this nest, was found on Area 2.

On May 12 a nest containing a complete clutch of eleven eggs plus one pheasant egg (infertile) was found on Area 1. This was thought to be the nest of Pair 3 as the hen, when flushed, joined the male in Area 3. It was poorly concealed in low grass, and was about 35 feet from water. This hen probably began laying April 21 and incubating May 3. The nest hatched successfully on May 30 and on June 7 all 11 still survived.

On June 7 a total of 36 Mallard ducklings were present on the study area. One brood of five had evidently moved in from a nearby area. On June 22 a total of 33 ducklings was counted.

*Blue-winged Teal* — The first breeding pair of this species was noted on April 12. Although they frequented the study area they did seem to have an established territory. By April 23 six pairs of teal were regularly found on the pothole.

It was extremely difficult to delineate the territories of this species as two pairs were often observed in close as-

sociation. In no instance was territorial display as vigorous as that exhibited by the mallards. Often when one pair approached another too closely the only response observed was a series of head bobs accompanied by a high pitched whistle. Loafing sites included the shoreline, mud bars, and muskrat houses.

One teal nest with a sparse lining of down was discovered on May 17 when it contained five eggs. It was located on Area 1 in a clump of Reed Canary Grass about 25 feet from water. On May 22 the clutch was complete at nine eggs which were still being incubated on June 7. This hen probably began laying and incubation on May 12 and 21 respectively.

By June 7, broods of eight and ten teal ducklings were present. On June 22 a total of 38 teal ducklings were counted in four broods of eight, nine, ten, and 11.

*Pied-billed Grebe* — The first Pied-billed Grebe was heard calling on April

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13 and by April 15 pairs were located on Areas 1 and 3.

Two nests were discovered. Both were placed about ten feet from emergent cattail cover over eight to ten inches of water. The nest on Area 1 contained seven eggs, one of which hatched on May 31. By June 2, however, no young were noted and examination of the nest showed that it had been badly torn up, the possibility existing that the chicks had been destroyed before they left the nest. The nest on Area 3 held eight eggs which had remained unhatched up to June 7. On June 22, four young grebes were counted on Area 3 and none on Area 1.

*Red-winged Blackbird* — Males of this species were noted singing from old cattail stalks when the study began on April 1. By April 11 their singing had increased in intensity, indicating that territories had been established by that date.

The females arrived on April 18 and

after April 21 were seldom observed without the company of a male. At that time territorial displays were very frequent and often involved both sexes. On April 21, flocks of females were noted in the uplands and along the roads but since they seemed to take no interest in the activities going on in the marsh they were taken to represent migrant individuals.

The first two nests were found on May 7, both of which were in the process of construction and contained no eggs. The first complete clutch of four eggs was discovered on May 12. By May 15 11 nests had been located, four of which held complete clutches. One of these nests contained two Cowbird (*Molothrus ater*) eggs.

All nests were located in cattail stands except one which was in a stand of River Bulrush. In six of the nests new cattail shoots were utilized as a supportive element, the growth of which often caused a partial tipping of the nests. The height of the nests above water averaged two feet while the distances between them were quite variable.

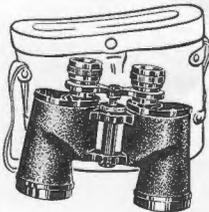
We believed that some marauding individuals had visited the area sometime between May 17 and 24 as on the latter date eggs from all five of the nests on Area 3 were missing. Two nests on Area 2 and one on Area 1 were likewise devoid of eggs.

On June 2 the first fledged young of this species were noted, two of which were found dead along the road. It was not possible to ascertain which nest these individuals were from.

#### DISCUSSION

There being few means available, a direct comparison with previous years of migration and nesting dates presented herein is not possible. It might be surmised, however, that due to the excessively warm spring weather both phenologies were somewhat advanced.

The patterns of spring arrival and resumption of nesting activities for the Red-wing Blackbirds presented, compare favorably to those described by Beer and



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Tibbitts (1950) reporting on their study of certain cattail marshes in the vicinity of Madison, Wisconsin.

A more objective comparison can be drawn as regards between the study area's 1955 productivity with the productivity of other years and other areas.

Sora Rails, Coots, and Yellow-headed Blackbirds did not utilize the area for nesting during the past season. The scant emergent cover was undoubtedly a factor contributing to the absence of these species, all of which had been previously reported nesting on the area. (Pospichal and Marshall, 1954). This situation may also have rendered the Red-winged Blackbird nests more obvious and facilitated the subsequent removal of eggs.

Surface feeding waterfowl, which do not require such extensive stands of emergent aquatics, appeared to have a high degree of nesting success particularly in view of the pothole being located within a suburban area. All three mallard territorial pairs were known to have brought off a brood. The teal did not present such a clear cut picture of production although the ponds supported four broods at the study's termination. Since one brood of mallards had almost

surely moved in from another area, the probability that such movements might have occurred among teal broods was quite high.

A total of 60 ducklings of both species in varying age classes was counted on June 22. Since the pothole consisted of 3.5 acres of open water, its productivity becomes immediately evident. This figure compares favorably with the 63 young per five acres cited by Marshall (1952) as the 1947 production of three prairie potholes located in the vicinity. The possibility, however, exists that both these two figures represent production in years when conditions were near optimum for waterfowl nesting on these particular areas. Nevertheless, the significance of such small marshes in waterfowl production is clearly demonstrated by these data.

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## M. O. U. SPRING MEETING - 1956

On May 19 and 20, 1956 the Albert Lea Audubon Society extends a cordial invitation to all members and friends of the Minnesota Ornithologists' Union to meet with them at Albert Lea, Minn. for a week end of birding.

There are several excellent birding areas in and around Albert Lea, with a variety of habitats. Lakes, streams, marsh, woodland, open farming country and Bluebird trails. Upper Twin Lake and Albert Lea Lake Area are included in the second edition of "Where to Find Birds in Minnesota". Our record to date is 107 species in four hours.

Registration will begin at 10 a.m. Saturday, May 19, 1956 at the warming house in Morin Park, corner of Highway 16 and St. Mary Ave., two blocks west of the traffic light up town.

There will be a dinner for the group at Westminster Hall in the First Presbyterian church, corner of Water St. and St. Mary Ave. at 6 p.m. Saturday, May 19, 1956. Cost \$1.50 per plate. A check or draft made to the order of the Albert Lea Audubon Society should be sent to Mrs. Charles Flugum, R.R. No. 1, Albert Lea, not later than May 5, 1956.

Lodging may be arranged for at Hotel Albert, 337 S. Broadway; Hotel Majestic, 138 E. Main; Bel-Aire Motel, Highway 69, S.; Central Motel, 503 E. Clark; Kozy Rest Motel, Highway 65 N.; or Motel 65, Highway 65 S.

# ACO

## An Important

By Orwin



### WHITE OAK (*Quercus alba*)

A large acorn, considered sweet and edible, and was eaten by the early settlers and Indians. Forms a large part of the Red Squirrel diet. Also eaten by the Cottontail Rabbit, White-tailed Deer, Ruffed Grouse, Bob-white and the Ring-necked Pheasant.

### COMMON RED OAK (*Quercus borealis* var. *maxima*)

A large acorn with a very bitter taste. This variety has a flat, shallow cup that covers only its base. It is used very little as food by the Fox Squirrel, but forms a large portion of the Red Squirrel diet and is considered second choice food of the White-tailed Deer. Also eaten by the Cottontail Rabbit, Ruffed Grouse and the Bob-white.



# RNS Wildlife Food

A. Rustad

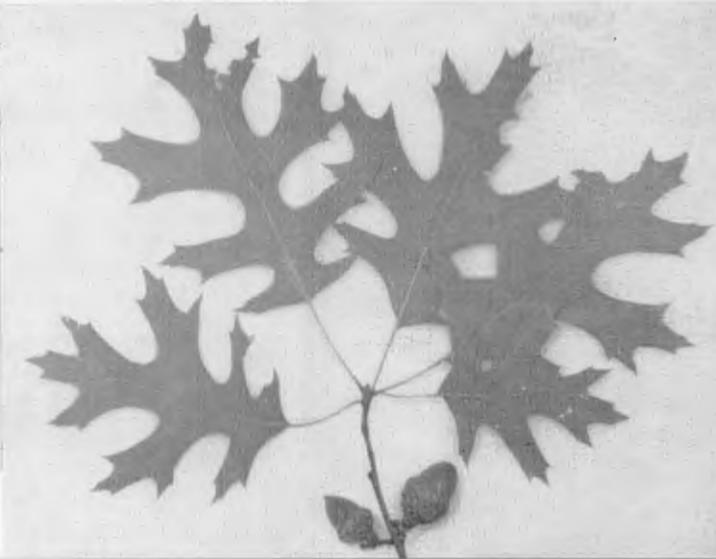


## NORTHERN BUR OAK (*Quercus macrocarpa* var. *olivaeformis*)

A medium-sized acorn with a fringed edge and a somewhat bitter taste. It is a preferred food of the Red Squirrel but second choice food of the White-tailed Deer. Also eaten by the Wood Duck.

## NORTHERN PIN OAK (*Quercus ellipsoidalis*)

Ellipsoidal refers to the shape of the acorn which is medium sized and often striated. Not fully known how much its acorns are used by the Fox Squirrel.



# Potholes of Mahnomen County

by

Robert E. Farnes<sup>1</sup>

## INTRODUCTION

In an attempt to better evaluate their usefulness to waterfowl, a study area of 11 potholes in the prairie portion of Mahnomen county was selected in June 1950. In 1951 four more potholes, two of which are in the transition zone between prairie and coniferous forest, were added to the study area. One of these is located in southeastern Polk county. Mahnomen county, containing thousands of small water areas, most of which are under five acres, has some of the best natural waterfowl breeding habitat remaining in the state. In an inventory of water areas in the prairie region of Minnesota in May 1951, Lee, Zorichak and Bue (Minnesota P-R Quarterly Progress Report, April 1952) recorded 6.22 Class B and C water areas per square mile in Mahnomen county. A Class B water area is one that normally contains water, but will go dry in exceptionally dry years or periods of drought and a Class C area is one that can be expected to go dry in late summer in most years. Both contain aquatic vegetation.

The study area is open in aspect and is gently to moderately rolling. The soil (Winger-McIntosh association) is glacial in origin consisting of silty clay and silty clay loam on the higher areas with some peat in the depressions. It is deep and fairly fertile, but is lacking in phosphate and potash, and is poorly drained.

Land use in the immediate vicinity of most of the potholes was very moderate. A few cattle and in one year horses grazed some of the area. The wild prairie grasses adjacent to many of the

potholes are usually cut once a year. The numerous potholes and general wetness of the area prevent extensive growing of grain except in the northern part where oats, wheat and barley are raised.

## WEATHER

The summer of 1950 was considerably colder and wetter than normal (U.S. Weather Bureau records from Fosston). A very late spring break up and excessive moisture in the winter and spring caused the potholes to be considerably higher than normal during most of the summer. Roads were in such bad condition from frost boils and moisture that the selection of a study area was delayed until mid-June. The average temperature from May through September was 3.1 degrees below normal. Precipitation during this period was 3.63 inches above normal. Most of the excess rain fell in May and June. On June 25, the heaviest rainfall of the year was recorded — six inches. Because of this adverse weather, waterfowl activities were greatly retarded and reproduction was considerably below normal. Ducks remained paired much later than usual and there were many late hatched broods.

In 1951, the temperatures from May through September averaged near normal. Precipitation during this period was 1.3 inches above normal. On July 15, 1.75 inches of rain fell for the heaviest rainfall of the year. There were three days on which more than one inch of rain fell.

The winter and spring of 1952 were extremely dry. However, summer precipitation was somewhat above average. The heaviest rainfall was 2.05 inches on July 20. There were five days when

<sup>1</sup> Robert E. Farnes is area game biologist for the Minnesota Department of Conservation at Thief River Falls. Work accomplished on Minnesota Pittman-Robertson Project W-11-R.

more than one inch of rain fell from June through September. Temperatures in May, June and September were considerably above normal.

#### WATER LEVELS

Water gauges were established in Potholes 1 through 11 on June 14, 1950 and in Potholes 12 through 15 on June 13, 1951. In 1950, water levels rose to a high point on June 28, then gradually dropped through the summer and fall, but were considerably higher than normal all summer. Water levels in 1951 showed a gradual drop from June to the third week in August when many potholes were dry. Then rains, the last week in August, brought levels up considerably. The summer of 1952 started out very dry and water levels were below normal. In spite of normal precipitation during the summer, many potholes were dry by mid-July.

#### POTHOLE CHARACTERISTICS

Table 1 gives the following information for each pothole:

Size (in acres). )  
 Acres of open water. )  
 Acres of emergent ) Visual estimates  
 vegetation. )

Permancy rating (originally based on the depth of water and type of vegetation present). These ratings later proved correct on all but one of the 15 potholes. Pothole No. 10 was originally given a Class B rating and later observations indicated it was a Class C pothole.

Average depth (estimated after becoming thoroughly familiar with the area).

Maximum depth (estimated when the potholes reached their highest point during the study period).

Dominant emergent vegetation (determined after mapping each area in 1950).

Dominant submerged or free-floating vegetation (determined after mapping each area in 1950).

Rating of over-water nesting cover (based on the species and amount of emer-

gent vegetation and its value as nesting cover).

Rating of upland nesting cover (based on the species and amount of upland vegetation and its value as nesting cover and land use practices adjacent to the pothole).

Adjacent land use (determined by visual inspection on each visit).

#### WATER ANALYSIS DATA

A water sample taken from each pothole, was analyzed by the fisheries research unit of the Minnesota Division of Game and Fish. Analyses showed that all of the potholes are alkaline, very fertile and capable of supporting a good growth of aquatic vegetation.

#### INTENSITY OF STUDY

Observations were made on 11 potholes in 1950 and 15 potholes in 1951 and 1952. There were six visits made in 1950, 13 in 1951 and ten in 1952 as follows:

1950	1951		1952	
6-14	5-21	9-14	4-25	7-10
6-28	6-13	9-24	5-12	9-3
7-13	7-11	10-3	6-4	10-16
8-8	8-6	10-19	6-17	11-10
8-10	8-24	10-26	6-26	
10-31	9-1	11-1	7-2	
	9-7			

#### WATERFOWL UTILIZATION

The extent of use during spring migration was not determined because not enough visits were made to the areas during that period. However, it is known from observations in Mahanomen county in general that ducks do utilize these areas quite extensively on their way north.

The study, along with observations from other years, indicated that the following waterfowl species are common breeding birds of the area: Mallard, Pintail, Blue-winged Teal, Canvasback, Redhead, Ringneck, Ruddy Duck, and Coot. The Green-winged Teal, Baldpate, and Lesser Scaup are occasional breeders in the area while the Gadwall,

TABLE 1 – Vital statistics of fifteen potholes in Mahnomen and Polk Counties, Minnesota

Pothole No.	Size in Acres	Acres of Open Water	Acres Emergent Vegetation	Py. Rtg.	(Inches) Depth Av. Max.	Dominant Emergent Vegetation	Dominant Submerged or Free-floating Vegetation	Rating of Over-water Nesting Cover	Rating of Upland Nesting Cover	Adjacent Land Use
1	4.0	.5	3.5	C	6 11	Cattail, hardstem bulrush.	Muskgrass	Very good	Fair	Moderate to heavy grazing on most of the adjacent upland.
2	.4	.3	.1	C	12 30	Cattail, hardstem bulrush.	Water milfoil, muskgrass.	Fair	Good	Some cultivation, very light grazing.
3	.5	.3	.2	C	12 30	Cattail, hardstem bulrush	Water milfoil, muskgrass.	Good	Good	Some cultivation, very light grazing.
4	.8	.4	.4	C	10 22	Hardstem bulrush, cattail.	Muskgrass.	Fair	Good	Moderate to heavy grazing on most of the adjacent upland.
5	.3	None	.3	C	6 25	Cattail	Muskgrass.	Fair	Fair	All adjacent upland grazed moderately to heavily
6	.2	.2	Tr.	C	6 23	Hardstem bulrush.	Muskgrass.	Very poor	Excellent	Hay meadow mowed once a year.
7	.5	.4	.1	C	4 21	Carex spp.	Muskgrass.	Poor	Excellent	Hay meadow mowed once a year.
8	2.5	2.0	.5	B	30 84	Hardstem bulrush, cane	None	Fair	Excellent	Some cultivation.
9	2.5	2.0	.5	B	30 87	Cattail, cane	None	Fair	Excellent	Hay meadow usually mowed once a year.

10	1.5	.1	1.4	C	14	31	Cattail, hardstem bulrush.	Muskgrass, sago pondweed.	Excellent	Excellent	None
11	2.0	.8	1.2	B	20	37	Hardstem bulrush, cattail.	Water milfoil, bladderwort.	Excellent	Excellent	Some cultivation.
12	.4	.4	Tr.	C	12	30	Hardstem bulrush, spikebrush.	Water milfoil, sago pondweed, muskgrass.	Very poor.	Excellent	None
13	2.0	1.2	.8	B	18	36	Carex spp., cattail.	Star duckweed, lesser duckweed	Poor	Fair	Some cultivation.
14	.5	.5	Tr.	C	12	30	Smartweed, arrowhead.	Star duckweed, flatstem pondweed.	None	Fair	Cultivation on most of adjacent upland.
15	4.0	3.5	.5	B	36	60	Hardstem bulrush, Carex spp.	Star duckweed, lesser duckweed.	Fair	Very poor.	Heavy grazing, cultivation.

Black Duck, Shoveler and Goldeneye probably rarely breed in the area.

In 1950, an estimated 25 breeding pairs used the 11 potholes. This decreased to 17 in 1951 and increased to 32 in 1952. Since considerably more visits were made during the territorial period in 1952, the increase may have resulted in part from better coverage, although breeding pair counts over most of the northwestern part of the state were down in 1951. The four potholes visited the last two years only, had 11 breeding pairs in 1951 and 23 in 1952. Thus, a minimum of 108 breeding pairs was estimated to have used 15 potholes during the study period. This is an average of 2.6 breeding pairs per pothole per year; or on an acreage basis, the 22.1 acre study area supported an average duck breeding population of 1.6 pairs per acre. Table 2 gives the number of breeding pairs by species seen on the area.

Twenty-six duck broods were actually seen on the potholes; seven in 1950, 11 in 1951 and eight in 1952. The average brood size was 8.1. Due to the rather infrequent visits during the brood season and the dense emergent vegetation on many of the potholes, it is believed that many broods were missed and the figure of 26 could easily be doubled. Thus, it is estimated that the 15 potholes contributed to the production of 52 duck broods totaling 422 young. This is reasonable in view of the fact that 108 breeding pairs used the area. This is an average production of approximately seven ducks per acre per year. Table 3 gives the number of broods and average brood size of the various species seen.

Fourteen Coot broods were seen on the 15 potholes during the study; eight in 1950, one in 1951 and five in 1952. A decrease of Coots in 1951 was recorded over all of northwestern Minnesota.

Utilization of the potholes by waterfowl dropped considerably after the mid-

dle of August. Most broods move to larger water areas by the time they are a-wing; and it is believed that many broods, especially among the divers, are moved by the hen to larger areas before they are awing. This is necessary in many cases when the potholes dry up, but it is believed that broods are moved even when the potholes contain water. The almost total lack of broods on many of the small water areas, after the middle of the brood season where earlier broods had been seen, and the extremely large number of broods on some of the larger bodies of water, has led to this belief.

It appears from observations in Mahnomen county that water areas about ten acres or more in size and three feet or more in depth are an essential part of good diving duck breeding habitat. Two good sized water areas, a 40-acre marsh one-eighth mile northwest of Pothole No. 12 and a 100-acre lake one-quarter mile northeast of Pothole No. 12 have had large numbers of diving duck broods in the last three years. For example, in July 1951 there were 36 broods totaling 270 young counted on the 40-acre marsh. Most of these were Canvasbacks, Redheads, Ringnecks and Ruddy Ducks not yet awing. It is believed that most of these broods were moved from smaller water areas after hatching.

Table 4 shows the total number of waterfowl seen and the average number seen per visit for each month from April through November. It is evident that waterfowl make very little use of these small potholes in late summer and during fall migration. Freeze up normally occurs by November 1 each year.

Table 5 gives the number of waterfowl, by species, seen on each pothole. Canvasbacks appeared to be more specific in their requirements than any other species. They were seen only on three of the 15 potholes, yet they were the third most abundant duck recorded.

Blue-winged Teal were seen on every area.

The study points out the intense use given potholes in Mahnomen county and southeastern Polk county, especially by breeding waterfowl. Eight of the 15 potholes are less than an acre in size, yet all but one were used quite extensively during the breeding season, if not by broods, then perhaps as a territorial water, a feeding area, or a nesting site. *This is the type of area that has been and is being drained at an alarming rate.* It is believed that one of the main reasons the potholes in this area are so productive is that not only does each individual pothole usually offer excellent habitat, but the large number of areas in close proximity makes each pothole much more valuable than if it were isolated. Of course the breeding population has held up much better in this area than farther south in Minnesota partly because the hunting pressure has not been nearly as great. However, just in the past five years there has been a great increase in hunting pressure in the northwestern part of Minnesota, and it is believed that this has been reflected in fewer breeding birds than in former years.

One way of protecting our local birds from overshooting is to open the hunting season at a later date. This would allow local breeding stock to disperse and mix with birds that have come in from Canada before the season begins and prevent the complete or almost complete "burnout" of a marsh the first few days of the hunting season. It has been established through banding that ducks return to the same general area to breed year after year, and it is obvious what will happen and what has already happened in many areas if we continue to annihilate almost every locally raised duck. Examples are the many prime waterfowl marshes in the southern two-thirds of the state where few or no breeding birds return. Thus, if we continue to have early October

hunting seasons, we can expect to have fewer and fewer local ducks all over the state.

Marshes of the Class B and C type are also the main producers of muskrats and contribute to the well being of many other forms of wildlife, and in the southern and western parts of the

state constitute a very important part of the pheasant habitat.

Since this article has been written it has been learned that road improvements in the area will cause the drainage of a number of fine potholes and marshes including at least ten of the potholes in the study area.

TABLE 2. ESTIMATED NUMBER OF BREEDING PAIRS OF WATERFOWL ON FIFTEEN MAHNOMEN AND POLK COUNTY POTHOLES

<i>Species</i>	<i>No. Breeding Pairs</i>
Blue-winged Teal	36
Ringneck	26
Ruddy Duck	12
Mallard	10
Canvasback	9
Redhead	4
Pintail	4
Lesser Scaup	3
Green-winged Teal	2
Baldpate	1
Golden-eye	1

TABLE 3. WATERFOWL BROOD OBSERVATIONS ON MAHNOMEN AND POLK COUNTY POTHOLES

<i>Species</i>	<i>Number Broods</i>	<i>Total Young</i>	<i>Average Brood Size</i>
Canvasback	8	67	8.4
Blue-winged Teal	6	58	9.7
Ringneck	5	47	9.4
Mallard	3	22	7.3
Pintail	2	13	6.5
Ruddy Duck	2	4	2.0
TOTALS	26	211	
AVERAGE			8.1

TABLE 4. WATERFOWL UTILIZATION OF FIFTEEN POTHOLES IN MAHNOMEN AND POLK COUNTIES BY MONTHS

<i>Month</i>	<i>Number Visits by Biologist</i>	<i>No. Waterfowl Seen</i>	<i>No. Waterfowl Seen per Visit</i>
April	1	35	35
May	2	86	43
June	6	205	34
July	4	220	55
August	4	108	27
September	5	33	7
October	5	2	....
November	2	0	0

**TABLE 5. SPECIES COMPOSITION OF WATERFOWL OBSERVED ON FIFTEEN MAHNOMEN AND POLK COUNTY POTHOLES (INCLUDES BROODS)**

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
Blue-winged Teal	5	14	15	15	1	4	12	3	5	25	18	26	10	18	29	200
Ringneck	7	3	8	2	0	0	0	22	14	0	16	1	21	4	54	152
Canvasback	0	0	0	0	0	0	0	17	10	0	0	0	0	0	81	108
Mallard	3	4	10	2	0	0	2	0	3	1	2	4	22	4	0	57
Ruddy Duck	1	0	0	0	0	0	0	6	9	2	25	0	0	0	0	43
Lesser Scaup	7	0	0	5	0	0	0	4	5	0	0	0	0	0	0	21
Pintail	1	0	0	11	0	0	0	0	0	1	0	4	0	0	0	17
Redhead	1	0	0	0	0	0	0	0	2	0	3	1	0	0	9	16
Green-winged																
Teal	0	0	0	0	0	0	0	0	2	0	1	0	0	0	2	5
Goldeneye	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3
Baldpate	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
TOTAL																
DUCKS	25	21	33	35	1	4	14	52	50	29	65	36	57	27	175	624
Coots	4	7	1	0	0	1	0	12	15	3	57	0	0	0	0	100
Pied-bill Grebe	0	0	0	0	0	0	0	5	2	2	10	0	7	0	0	26

**TABLE 6. SUMMARY OF WATERFOWL OBSERVATIONS ON FIFTEEN POTHOLES IN MAHNOMEN AND POLK COUNTIES**

Pothole No.	Estimated No. Breeding Pairs	No. Duck Broods Seen	Total No. Ducks Seen	No. Coot Broods Seen	Total No. Coots Seen
1	13	0	25	1	4
2	2	0	21	1	7
3	5	2	33	0	1
4	7	1	35	0	0
5	0	0	1	0	0
6	2	0	4	0	1
7	4	1	14	0	0
8	8	4	52	2	12
9	12	3	50	2	15
10	8	1	29	1	3
11	13	1	65	7	57
12	2	1	36	0	0
13	7	3	57	0	0
14	4	1	27	0	0
15	21	8	175	0	0
TOTALS	108	26	624	14	100

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# Seasonal Report

by

Mary Lupient

Winter arrived the first week in November, bringing snow that covered the entire state, and to date of this writing, February 1, temperatures have been a few degrees below normal much of the time. There were a few periods of extreme cold. The Twin Cities had a record temperature of 7 below on December 5 and the thermometer registered 45 below December 19 in Bemidji, a record in that area for that date. Snowfall was heavy in northern sections reportedly as much as 31 inches in some places. A blizzard accompanied by a severe electrical storm occurred in the Twin Cities and adjacent areas, December 3.

In spite of the cold weather some of the birds that normally go south remained with us. There were several records of Mourning Doves, single birds in various localities, and some flocks; 20 were seen by Al Grewe near Waseca December 13, a flock of 24 was reported by Josephine Herz and a flock near Northfield by Orwin Rustad. The last two observations were made during the Christmas count. Meadowlarks and robins were fairly common in the south half of the state. The Duluth Bird club recorded a robin on the Christmas count and H. R. Hanson said one wintered at Waiker. Even the Great Blue Heron, a bird not often seen in Minnesota in winter, was reported by William Pieper and members of the Avifaunal club. Four of them were living near the Northern States power plant on the Minnesota river, January 1. A few kingfishers and Wilson's Snipes braved the cold weather.

Several species of ducks occupied Twin City lakes until they froze over. George Ludcke, Sr. reported 222 Mal-

lards on Lake Harriet November 17. He said people fed them and they became so tame as to approach cars parked along the shore. They even walked out on the street. A report by Karen and Whitney Eastman enumerated 19 species of ducks on Lake Harriet in November, among them a Red-throated Loon. Some Mallards and Black Ducks normally spend the entire winter in Minnesota wherever there is open water. In White-water Refuge a spot of open water was used by 32 Mallards and a Blue-winged Teal seen by Dr. and Mrs. D. G. Mahle on their Christmas count. To date the Minnesota river is open at Cedar Avenue and the Mississippi has many open spots in the Twin Cities where American Golden-eyes and American Mergansers live through the winter. The St. Croix is usually open in places and of course Lake Superior has large areas of open water. The Duluth Bird club listed 177 Golden-eyes, two Red-breasted Mergansers and 397 Old Squaws on their Christmas count. An unusual record of the Old Squaw Duck was sent in by William Pieper. He saw a female on Goose lake, Ramsey county, November 2, 1955.

According to Dr. P. B. Hofslund, hawks, including Red-tailed, Rough-legged, Marsh and Bald Eagles, were still flying in goodly numbers at the Duluth flyway, November 9. Some years ago hawks wintered in the river valleys of southern Minnesota, but for the past few years they have been scarce. This winter there were numerous records of hawks, notably the Sparrow Hawk. A Red-shouldered Hawk was seen by Dr. D. G. Mahle December 28 near Plainview and two Red-shouldered Hawks were reported by William Pieper, one in

St. Paul and one at the Isaac Walton Bass Ponds, January 6 and 8 respectively. He also reported two Bald Eagles on the ice at Lake Vadnais, St. Paul, November 25, and a Golden Eagle, December 4, at Cedar forest, a Goshawk, November 27, 1955, Ramsey county and one January 8 at the Isaac Walton bass ponds, A. C. Rosenwinkel reported a Goshawk near St. Paul, January 2, and one was seen by this writer near Shakopee, January 13. Red-tailed Hawks and Rough-legged Hawks were seen by several observers.

Several Northern Shrikes were reported in various sections throughout the state. One came to a feeder owned by Mrs. E. R. Selnes, Glenwood and harassed the birds. A Cardinal that frequented the feeder did not return after being chased by the shrike. She has other predators. Two Great Horned Owls perched on her roof at midnight, January 11, and serenaded her and Mr. Selnes. The exciting record of a White Gyrfalcon was reported to the Museum of Natural History by Robert Wiemier. He saw this very rare visitor in Fridley just north of Minneapolis, January 2. The bird perched in a tree for some minutes allowing a thorough observation. The description in Robert's *Birds of Minnesota* states that the White Gyrfalcon appears largely white, more or less marked above with slaty black, the tips of the wings usually black or blackish. It is about Goshawk size with pointed triangular wings and long tail.

Blue and Snow Geese migrated the first two weeks in November. The writer saw a flock of about 100 Snow Geese a few miles south of Minneapolis, November 10 as two jets swiftly approached them cutting off the leading dozen. The rest of the geese bunched in confusion and the leader of the first dozen left them as they flew straight on without pause. It circled back and met the still confused remainder of the flock. They immediately fell into formation as it turned again to fly after the first

birds and both flocks rose to disappear in the clouds.

About 175 Whistling Swans were seen near Onamia by Michael Ivanovs, November 3. There were a few reports of Swans being shot during hunting season. Two that had been crippled were brought to the Minneapolis park board.

An Arctic Great Horned Owl that had been shot in Koochiching county was brought to the Museum of Natural History December 27, 1955. Dr. Roberts describes the Arctic Great Horned Owl as follows: the underplumage is very pale tawny or pale buffy, the face largely white with a narrow black rim, the legs and feet are pure white or very pale buffy barred only above.

The following are records for the Snowy Owl: December 18, 1955, St. Paul, at a feeder, John Hall and A. C. Rosenwinkel; January 2, 1956, Hill Farm, St. Paul, John Hall and A. C. Rosenwinkel; December 4, 1955, North county road line near Minneapolis, William Pieper; December 18, 1955, near Tamarack, John Futcher; north and near Minneapolis December 27, L. L. Barrett; Koochiching county, one was shot after it had killed two geese.

Dr. P. B. Hofslund reported that Mr. and Mrs. Richard Evans saw a gull at Two Harbors this winter that fits the description of the Ivory Gull. Several years ago Dr. Olga Lakela, Duluth, reported an Ivory Gull on Lake Superior. The Duluth Bird club listed a Glaucous Gull and 1046 Herring Gulls on the Christmas count which of course covered only those seen in and around Duluth.

Three Tufted Titmice appeared in Vadnais forest early in November and Mrs. Julia Lesch has one at her feeder in Waseca.

At Marine on St. Croix Marjorie Edgar reported November 22 that three Canada Jays came daily to her feeder.

A Brown Thrasher was reported by J. R. Kingman, January 10 at Deep-

haven, Lake Minnetonka. Dr. W. J. Breckenridge had one at his feeder November 24.

Red-breasted Nuthatches were scarce this season except in Duluth where 25 were reported. Only two Golden-crowned Kinglets were reported and only two Winter Wrens, one by A. C. Rosenwinkel, St. Paul, January 2 and one at Walker by H. R. Hanson.

Some flocks of Red-winged Blackbirds remained and a small flock of Rusty Blackbirds wintered in the Minnesota river bottoms.

Last winter there was an influx of Bohemian Waxwings especially in the south half of the state. This season very few were seen. Pine Grosbeaks in unusually large numbers were reported this winter from various sections, but Evening Grosbeaks are scarcer than usual. Last season there was the exceptional appearance of White-winged Crossbills in many areas. This winter there are no reports at all so far. There were two records of Red Crossbills. Nine were seen at Duluth and a small number wintered at Vadnais forest, first reported by R. E. Cole, November 1, and later seen by several observers.

Redpolls, Snow Buntings and Tree Sparrows were abundant. Large flocks were reported everywhere.

There were some reports of White-throated Sparrows, which is unusual. Two were listed on the Duluth Christmas count. Several were noted in the Minnesota river bottoms by William Pieper and two came daily to a feeder maintained by Mrs. Edward Harms near Bloomington. Mrs. E. R. Selnes has a wintering Harris Sparrow, another unusual record. A Song Sparrow is wintering with her, and Dr. D. G. Mahle recorded one, December 27, at Plainview. Fox Sparrows migrated as late as November 16. The peak was the first week in November.

Not many Ruffed Grouse were reported, but apparently Ring-necked Pheasants were fairly abundant. This writer saw flocks of 25 and 30 in various places near the Twin Cities, all males except one flock. The Avifaunal club reported 481 on the Christmas count. Mrs. Cora Corniea observed flocks near Cedar Forest and Rev. V. Strnad of Alden said he often saw flocks of 20 or more while driving through the country. He reported seeing a Yellow-bellied Sapsucker near Albert Lea, January 14.

A Mockingbird appeared at the D. D. Jackson home in Minneapolis, December 17 and was seen after Christmas. It liked the shelter of an evergreen tree near the house but fed somewhere else. A. C. Rosenwinkel reported a Mockingbird at the Burt Brandt home, St. Paul, December 19 and 20. It fed on bitter-sweet berries that grew by the porch and at times was just outside the window only two feet from Mr. Brandt.

The following report appeared in the *Blue Jay*, a magazine published by the Saskatchewan Natural History Society, Regina, Saskatchewan. It will be of interest to readers of *The Flicker*. Reports of the rearing of a family of American Egrets in the Qu'appelle Valley north of Regina was investigated by E. L. Fox, Regina, August 30, 1955. He found five American Egrets in the area and was able to absolutely identify them. He believed three of them to be juveniles. A few days later Fred Lahrman of the Provincial Museum and John A. Livingston, executive director of the Audubon Society of Canada, accompanied Mr. Fox to the area and confirmed his report. Pictures were taken of the birds. They did not see the actual nesting, but a farmer that lived nearby stated that he had watched the birds through binoculars during the summer and saw them nesting and feeding three young. *Minneapolis, Minn.*

# The Canadian Lakehead

## *Edited by A. E. Allin*

The early winter of 1955-56 was fairly severe. Following a relatively mild but wet October, when the lowest temperature was 24.0° on October 22 and 25, there was a sharp change on November 2. That night the marshes and smaller lakes were frozen and all but a few of the hardier ducks were driven south. During November the area received .84 inches of rain and 20.25 inches of snow. The lowest temperature was 18° below zero. On December 19, the temperature fell to -27.7°, the coldest day recorded for December since 1884. The snowfall of 29.4 inches compared with a normal of 12.8. The temperature during January was less severe but the region received a record snowfall of 41 inches on January 19, 20 and 21. On January 24, the temperature fell to -20°.

As a result of the extreme depth of the snow, conditions are very unfavorable for the deer herds and for the ground-feeding birds. The Hungarian Partridge, which had a very successful breeding season, are finding it difficult to obtain food and we may expect a decimation of their numbers. Ring-necked Pheasants again introduced into the area a year ago will also be affected and probably only those flocks protected and fed will survive. The introduction of the early thirties could not withstand local conditions and none persisted a decade later.

Birds were relatively scarce during November, December and January, if one excepts the exotic House Sparrows, Starlings and Pigeons and the resident Ravens and Canada Jays which have been fairly common. The last Canada Geese were reported on November 9 and all but a few hardy Mallards, Blacks, and American Golden-eyes had left by the middle of that month. An exception was an American Merganser still present in January at the mouth of

Current river in Port Arthur. T. Tuominen reported a Winter Wren on November 9. The Allins observed two Red-winged Blackbirds on November 11, and five Cedar Waxwings on December 20. N. Denis saw 125 Robins on December 18. A lone Bronzed Grackle was noted by several of our club members in late December. The Robbs noted a Pigeon Hawk on December 26. On the same date a Slate-coloured Junco was feeding at Rogers' station, east of Porth Arthur. The Mockingbird reported in October remained in the area for several weeks and on one occasion entered a school and fearlessly fed on an apple which was presented. It has not been seen subsequent to the -27.7° of December 19.

A few Evening Grosbeaks were present throughout the early fall and Mrs. Rydholm observed 300 in mid-November. Subsequently they were uncommon. Pine Grosbeaks appeared in numbers on October 22-23. For a brief period they were common, feeding on the few berries of the Mountain Ash not already consumed by Robins and Starlings. Their numbers then decreased, although small flocks could be found feeding on the frozen fruit of ornamental apple trees. On January 14, a flock of 30 was seen feeding along railway tracks, possibly on seeds spilled from passing grain cars. Pine Siskins, Redpolls and Snow Buntings have been very scarce. On December 23, Dorothy Adams reported a large flock of White-winged Crossbills feeding on the road in Lybster township. Coming over a sharp rise, her car struck four of these birds as they rose from the ground. We have had previous records of such fatalities as Crossbills frequently feed on exposed portions of dirt roads. No Red-breasted Nuthatches have been reported during the present winter although they are ordinarily not

an uncommon winter resident.

Owls always seem to attract more than casual interest and this year several interesting species have been reported. R. Ryder found a wounded Hawk Owl northeast of Port Arthur on November 10. C. E. Garton saw a Great Gray Owl on October 15 and Messrs. Robbs observed another in Fort William on December 20. This bird remained in the area for several weeks. A Richardson's Owl was observed and photographed by several naturalists in Fort William on December 17 as it sat in an open window of a garage, clutching a dead House Sparrow in its talons, even permitting itself to be touched. The first Snowy Owl was found dead on October 28. None was reported subsequently until we saw one on December 26. During the next week the Allins saw five in different areas and others were reported during the same period.

The Thunder Bay Field Naturalists' club held its annual Christmas census on December 26. Twelve observers in eight parties travelled 21 miles on foot and 185 miles by auto. When we began the census at 8:45 it was barely daylight and the thermometer registered  $-10^{\circ}$ . A strong wind was blowing and snow was waist-deep. A total of 3,273 individuals of 27 species was recorded as follows: 1 American Merganser, 1 Pigeon Hawk, 2 Ruffed Grouse, 1 Sharp-tailed Grouse, 446 Rock Doves, 24 Hungarian Partridges, 47 Herring Gulls, 1 Great Gray Owl, 1 Snowy Owl, 19 Hairy Woodpeckers, 17 Downy Woodpeckers, 20 Canada Jays, 25 Blue Jays, 100 Ravens, 9 Crows, 125 Black-capped Chickadees, 5 Hudsonian Chickadees, 1 Northern Shrike, 341 Starlings, 1873 House Sparrows, 1 Bronzed Grackle, 6 Evening Grosbeaks, 82 Pine Grosbeaks, 97 Common Redpolls, 1 Pine Siskin, 1 Slate-coloured Junco, 25 Snow Buntings.

The Sharp-tailed Grouse was new for local census lists. The Great Gray Owl, Pigeon Hawk and Bronzed Grackle had been listed on only one previous census. The 82 Pine Grosbeaks were a marked

decrease from the 930 recorded a year ago. Species showing marked increase over any previous year included the Hungarian Partridge, Hairy Woodpecker, Canada Jay, and Raven. The Red-breasted Nuthatch was conspicuous by its absence, for the first time since 1946.

The Journal of Mammalogy (36:(1): 133, 1955) stated a Marten killed in St. Louis county, Minnesota on December 3, 1953, was the first taken in Minnesota since 1920 when one was trapped in the Northwest Angle. One must expect their recurrence and increase in the state since they are again becoming relatively common in northwestern Ontario. The Geraldton district of the Department of Lands and Forests reported 656 trapped in the 1954-55 season and 3,587 were taken in the entire province. Geraldton also reported 139 Fisher and 178 Otter. A year ago the Canada Lynx was relatively common in outlying areas but this year it is less abundant. There has also been a decline in Mink. A Wolverine was recently brought to the Sioux Lookout division. This is an uncommon species in northwestern Ontario. For several years our Red Fox population has been very high but is now suffering a sharp decline. This may be partly due to the epidemic of rabies which has spread from the Northwest Territories, south and east, until it has now appeared less than 50 miles from Toronto on Lake Ontario. To date there has not been an authentic record of rabies at the Canadian Lakehead.

For several years, the Beaver has been increasing by leaps and bounds. During 1955, 115,439 were trapped in Ontario where the present population is estimated to be 1,200,000. In Rainy river district the trappers' quota for 1947 was 980 but this was raised to 11,000 for 1954-55. In some areas entire colonies are being wiped out by tularemia and in our vocation we have shown that there is probably a high incidence of this disease among the Indian trappers. Tularemia is also af-

fecting the Muskrat population which declined to a total take of 640,865 in 1954-55 compared with 838,392 in 1952-53.

For some time, it was feared the Woodland Caribou might become extinct in northwestern Ontario, but it is now believed the population is increasing and that there are some 7,000 of these animals in Ontario. Sixteen bands of six to 20 Caribou were seen in the spring of 1955 in the Patricia district by department officials on a plane trip of 800 miles.

It would appear from the above encouraging figures that sound conservation practices were paying off. On the debit side we regret to report the 1955 season was one of the worst in Ontario's history for forest fires. Two thousand two hundred and forty-seven fires burned over an area of 385,520 acres. Lightning was the big offender but other fires were caused by campers, smokers, railways and settlers. In 1936, 1,264,433 and in 1948, 1,107,389 acres of forest were burned over. The economic loss appears to be great but actually many species of birds and animals will benefit. Little sunlight penetrates the canopy of the primeval forest and the early explorers reported a scarcity of game. Following extensive fires, vast areas of aspen and birch rapidly take over the area, food becomes plentiful and moose, deer and beaver as well as smaller mammals thrive. The increase in bird life is probably even more spectacular.

The Thunder Bay Field Naturalists' club held their annual meeting on January 25. The president's report indicated the club had enjoyed a successful year. Evening meetings were held monthly throughout the winter. A dinner meeting was held in April and field days in May and June. In October members visited the Dorion fish hatchery. Members of the local club attended the Frontenac meeting of the Minneapolis Bird club and the M.O.U. meeting at Itasca. The joint meeting with members of the M.O.U. at Grand Marais in

February was well attended. During 1955, five numbers of The Newsletter were published. Several members contributed articles to scientific journals. These included "Nutria, *Myocastor coypus* in Thunder Bay District, Ontario" (Allin, A. E., Canadian Field Naturalist, 69:(1):25, 26, 1955) and "Cougar or Mountain Lion Reported in Northwestern Ontario" (Dear, L. S., Canadian Field Naturalist, 69:(1)26, 1955). Our Dryden member, Mrs. L. R. Howe, wrote a weekly column for her local paper and contributed monthly articles to the "Northern Sportsman". C. E. Garton again headed an able committee which attended three school fairs in local districts and assisted in judging contests. The club spent some 60 dollars to purchase books as prizes for insect collections and bird-naming contests. The sum of 150 dollars was contributed to our parent body, the Federation of Ontario Naturalists.

During the year 199 species of birds were identified and 49 species were found breeding. On April 30, C. E. Garton added the Lark Sparrow to our local list and on July 18 Mrs. Knowles added the Bobolink to our breeding list when she found a bob-tailed young. Several years ago Dr. H. Quackenbush introduced the Common Milkweed to his Shebandowan lake camp. Last summer, migrating Monarch Butterflies found the plants, eggs were laid and local Monarchs successfully raised, possibly for the first time in northwestern Ontario, since we have no native species of *Asclepias*. Although the specimens were not collected in 1955, we identified in our collections several Red-spotted Newts, a species which was not previously known to occur in Canada, west of Lake Nipigon. Further study of these specimens proved them to be the form *louisianiensis* which had not previously been recognized in Canada although it is the subspecies occurring in Minnesota. — Regional Laboratory, Ontario Department of Health, Fort William, Ontario.

# Ornithologists' Union Winter Paper Session

The second winter paper session of the M.O.U. was held in the Museum of Natural History, University of Minnesota, on Saturday, December 3, 1955.

The business meeting was opened by President Robert Hanlon with appropriate remarks at 2:30 p.m. Miss Severena Holmberg acted as secretary in the absence of Mr. Bronoel.

Mrs. Mary Lupient, treasurer, reported a balance in the treasury as of December 3, 1955 of \$657.46 with a total membership of 682, an increase of 256 over 1954. The report was approved as read.

Mrs. Helen Lien reported that the North Shore field trip would be on February 18 and 19 and that details would appear in *The Flicker*.

P. B. Hofslund reported that six issues of *The Flicker* have been published in 1955, bringing the publications up to date. He invited all who presented papers at this meeting to send a copy to him for publication purposes.

Mr. Hofslund reported for the Hawk and Owl Protection committee and stated that the purpose of this committee is not to prevent any control of Hawks and Owls, but to set up a model law that will educate the public in the need for protection of other than game birds.

W. J. Breckenridge, as chairman of the state bird committee, stated that the qualifications of a state bird should be that it should occur all over the state, should not have been selected by any other state, should have a striking pattern and should be significant for publicity purposes. The Loon and the Pileated Woodpecker were suggested as possessing most of these qualifications. A vote resulted in a majority voting for the Loon and it was moved, seconded and carried that the results of the balloting be submitted to other organiza-

tions urging them to join with us in selecting a state bird.

A resolution to amend the constitution to include a conservation committee was adopted. This committee is to acquaint the public with the facts, but not to try to force legislation.

A letter from Mrs. Harvey Putnam, membership chairman, was read in which she submitted suggestions to clubs for use in securing new memberships.

It was moved, seconded and carried that we accept the recommendations of the policy committee to have our present officers serve until our winter meeting in 1956, and that hereafter all officers be elected at the winter meeting.

The president announced that Orin Rustad has been appointed to the Save Minnesota Wetlands, Inc. committee.

The M.O.U. approved extending an invitation to the Wilson club to meet in Duluth in 1957.

Mr. Flugum announced that the spring meeting will be held in Albert Lea, the Gateway to Minnesota, on May 19 and 20 with field trips to Upper Twin lake and Albert Lea lake.

*Severena Holmberg, Acting Sec.*

## RESOLUTIONS

Resolution: Be it resolved that the Minnesota Ornithologists' Union express its sincere appreciation to the St. Paul Audubon Society, staff of the Museum of Natural History of the University of Minnesota, and the participating speakers in gratitude for their successful efforts in preparation of this winter meeting.

Resolutions Committee:

*Robert W. Dickerman, Chairman*  
*Walter Jiracek*  
*Orin A. Rustad*  
*William Luwe*

**PROGRAM**  
**WINTER MEETING**  
*Minnesota Ornithologists' Union*  
*Museum of Natural History, University*  
*of Minnesota*  
December 3, 1955

9:30 a.m.

Opening Address — Robert Hanlon,  
President, M.O.U.

Papers Session

1. P. B. Hofslund, U. of Minnesota, Duluth, "Birds of Gooseberry Falls State Park"
2. Beth Doeringsfeld, Museum of Natural History, "Recent findings of new and rare birds in Minnesota"
3. Robert Dickerman and Dwain W. Warner, Museum of Natural History, "Toxic algae poisoning at Reno Lake"
4. Herbert Krause, Augustana College, "Ornithology on the Major Long Expedition of 1823"

5. Robert Hanlon, Mankato High School, "Some considerations of the Minnesota bounty system"
6. George A. Selke, Commissioner, Minn. Dept. of Conservation, "Some phases of conservation and their application to Minnesota"
7. W. A. Elkins, Regional Supervisor of Federal Aid, Fish and Wildlife Service, "The Federal Aid Program in Fish and Wildlife Service Region Three"
8. Robert Farnes, Minn. Dept. of Conservation, "Status of the Sharp-tailed Grouse in Minnesota"
9. Harvey L. Gunderson, Museum of Natural History, "Grouse hunting"

Business Session

10. John R. Tester, Minn. Dept. of Conservation and Ross C. Hanson, Fish and Wildlife Service, "Some general aspects of waterfowl migration in Minnesota"
11. Arnold Peterson, St. Olaf College, "Phoebe nesting at Itasca State Park"
12. William H. Marshall, Division of Entomology and Economic Zoology, U. of Minnesota, "Cloquet Forest woodcock production"
13. Meyers Peterson, Fulton Junior High School, Minneapolis, "Investigations of a Heron rookery in Kandiyohi County"
14. Harry Goehring, St. Cloud Teachers College, "Notes on Chimney Swift banding at St. Cloud, Minnesota"

Evening Session

- Movie, "Native Grouse", Wisconsin Conservation Department
- Movie, "Wood Ducks", Museum of Natural History
- Movie, "Spring in the Subarctic", Museum of Natural History

Reception

Host — St. Paul Audubon Society

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# Notes of Interest

**BROWN CREEPER BREEDING RECORD IN SOUTHERN MINNESOTA** — On May 14, 1955 we saw a pair of Brown Creepers on a dead tree about 200 yards southeast of Villa Maria, near Frontenac, Goodhue county, Minnesota. We noticed them going under a loose piece of bark several times. On May 18 we returned to Frontenac and found the Brown Creepers at the same tree at the same place.

On May 24 Mr. and Mrs. E. D. Swedenberg visited the area and watched the birds carrying insects and food to the nest. In one half-hour period the birds brought food several times.

On June 6 we accompanied Mr. and Mrs. Swedenberg to Frontenac where we collected the then empty nest. It was about 18 feet above ground, well concealed behind loose bark.

This is perhaps the most southerly breeding record in Minnesota. — *Josephine and George Titus, Minneapolis, Minn.*

\* \* \*

**A LARGE HERONRY AT AFTON, MINNESOTA** — On April 17, 1955 the writer and Oliver Charley discovered a heronry with an estimated 200 Great Blue Heron and 12 American Egret nests. Later visits indicated that there were at least 250 Great Blue and 50 Egret nests.

The heronry is located about three miles east by southeast from the center of Hastings, Minnesota between the Vermillion and Mississippi rivers. It is situated in rich bottom land covered with 75 to 100 foot Soft Maples and a scattering of Green Ash and Oak. The heronry is about  $\frac{1}{4}$  by  $\frac{1}{4}$  of a mile.

One tree had 15 nests, several 11 or 12. On May 11 the ground was covered with egg shells, indicating hatching. — *John A. Hall, Sr., St. Paul, Minnesota.*

\* \* \*

**CHICKADEES EXCAVATE NESTING CAVITY** — On April 9, one of our first warm spring days, I found a pair of Black-capped Chickadees busily engaged in home building. They had evidently discovered a knothole containing some rather soft and brittle decayed wood. It was located near the top of an old tree stub about 12 feet above the ground. The pair of "chicks" found it fairly easy to chip, dig, or break off little particles of rotted wood to deepen their cavity. They went to work with their characteristic speed and briskness and with such perfect timing that the digging proceeded without more than a few seconds' interruption. While one bird was partly concealed in the cavity, loosening the soft material, the mate would perch on a nearby branch awaiting his turn. Soon the first bird popped out of the hole with the bill full of wood crumbs. Immediately his mate darted into the hole to continue the excavating while No. 1 flew to some low perch 15 or 20 feet from the nesting tree and forcefully expelled his "load" of decayed wood. Then it, in turn, flew to a nearby perch awaiting the next chance to "go to work" on the soft wood of the far end of the deepened cavity. After watching these busy-bodies for 15 minutes, I continued my birding in some nearby area. Returning to the spot after half an hour, I found the perky little workers still at it with undiminished energy and speed. The hole had been deepened about three inches further. Wishing the couple good luck for their venture, I left, intending to return to their home at a later date to watch them busily feeding their new offspring. — *A. C. Rosenwinkel, St. Paul.*

ORCHARD ORIOLE OBSERVATIONS — Since 1940, we have had nesting Orchard Orioles at our home each year. Some years there have been males nesting with both the second year and fully adult plumages. The nests have always been on an evergreen branch (spruce or arbor vitae) and are placed well out toward the tip of the branch. They use fresh green grass, which later turns yellow as it dries.

Each fall we have a Harris Sparrow which remains at our feeder until spring, the black bib becoming a beautiful hood by the time of spring migration. — *Mrs. J. L. Haynes, St. James, Minnesota.*

\* \* \*

ADDITIONAL BIRD RECORDS FOR THE QUETICO-SUPERIOR WILDERNESS RESEARCH AREA — During the past few years three papers have been published in the *Flicker* listing 101 species of birds for the Basswood lake area (*Beer and Priewert, 1951; Lakela, 1952; Beer and Frenzel, 1954*). A check through our field notes which were taken while working on projects at the Quetico-Superior Wilderness Research Center produced a list of 14 species which had not been recorded for the area. This brings the number so far observed in the vicinity of the research center to 115.

*Double-crested Cormorant* — A single cormorant was seen flying over Hoist bay in July 7, 1953. They are apparently not regular summer residents of the area.

*Holboell's Grebe* — A lone bird was seen repeatedly, during the first two weeks of July in 1955, on Hoist bay.

*Cooper's Hawk* — The only Cooper's Hawk observed during six summers of field work was seen hunting small birds on one of the larger islands on July 1, 1953.

*Marsh Hawk* — This hawk was seen several times while hunting over the marsh between Pine lake and Hoist bay during the latter part of June in 1953.

*Duck Hawk* — A single Duck Hawk was seen flying over Back bay on June 23, 1952. A group of some 30 crows arose from one of the islands and gave chase diving at it and making a great fuss. The hawk made one or two half-hearted passes at the pestering crows but contact was not made.

*Black Tern* — This tern was seen repeatedly on Bass lake and the western part of Hoist bay during July of 1952.

*Bonaparte's Gull* — On July 25 of 1955 a single bird was seen with a small group of Herring Gulls on some rocks in the main part of Basswood lake. The following day two were seen and three days later seven were seen. They were observed from about 30 feet.

*Veery* — This bird is a common breeding bird on State island in Hoist bay and numerous other areas on both the mainland and islands.

*Philadelphia Vireo* — This bird was observed once on June 27, 1953, near the Paul Bunyan shop on Hoist bay.

*Warbling Vireo* — A family of newly fledged young and the adults were observed in 1952 and a single bird was seen in 1953 near Hoist bay.

*Magnolia Warbler* — A single male was identified on one of the islands of Back bay on June 24, 1953.

*Cowbird* — An occasional Cowbird was seen during late June of 1953 and in July of 1954.

*Tree Sparrow* — These sparrows were observed migrating through the area on October 11, 12 and 13 of 1953. A flock was also observed feeding on State island.

*American Crossbill* — A group of five was seen on Washington island on July 12, 1955. — *James R. Beer and Louis D. Frenzel, St. Paul.*

NOTES ON THE 1954 WATERFOWL SEASON IN NORTHWESTERN MINNESOTA — The 1954 waterfowl hunting season in most of northwestern Minnesota was the poorest it has been in many years. The duck population was generally somewhat below average at the start of the hunting season on October 2, but the main reason for the poor hunting success was the almost complete lack of a northern flight. Many of the breeding areas in Canada that supply birds for Minnesota hunters had poor production this year. Then too, many birds that normally stop off in Minnesota for a few days stayed in Canada until freeze-up because of the wet grainfields which furnished an excellent food supply. Geese, Canadas and Snows and Blues, came into the area in about the usual numbers. However, they were about a week earlier than usual.

Nine migration counts were made at the Thief Lake Refuge and Public Hunting Grounds from September 10 to November 2. These indicated that the peak number of ducks was present the first part of September.

Bag checks were made at Thief Lake from October 2 to October 27. A total of 781 duckhunters was contacted and they had hunted 3,515 hours taking 714 ducks, nine geese and 24 coots. This is an average of only .9 ducks per hunter. In the previous five years it has ranged from 1.2 to 2 ducks per hunter. It took an average of five hours to bag one duck as compared with two to three and one-half hours in previous years. Mallards made up 29 per cent of the kill while Canvasbacks and Blue-winged Teal made up 13 per cent and Redheads and Lesser Scaup each made up 10 per cent. Two Greater Scaup were found in hunters' bags this year. This is the first year this species has been recorded at Thief lake.

Hunter bag checks were also made at Twin lakes in Kittson county and a total of 281 hunters were contacted. They had hunted 1,046 hours taking 383 ducks, three geese and four coots. This is an average of 1.4 ducks per hunter and .37 ducks per hour. Mallards made up 52 per cent of the kill followed by Blue-winged Teal, 11 per cent; Pintail, 10 per cent; Green-winged Teal, 8 per cent; and Gadwall, 7 per cent. Puddle ducks made up 94 per cent of the kill. This is the first year extensive bag checks have been made at Twin Lakes.

In Mahnomon county, bag checks were made at Chief Lake where most of the hunting is done by members of a private hunting club and their friends. The success ratio was quite good here with an average of 2.1 ducks per hunter and .5 ducks per hour. Lesser Scaup made up 52 per cent of the kill followed by Buffleheads, 11 per cent and Redheads, Canvasbacks and Ringnecks 7 per cent. Divers comprised 91 per cent of the kill. — *Robert E. Farnes, Minnesota Div. Game and Fish, St. Paul.*

\* \* \*

SWALLOW-TAILED KITE AGAIN RECORDED IN MINNESOTA — "We live about three miles southeast of Wayzata near Minnehaha creek on land that is largely the original Oak forest. I saw the bird late in the afternoon of June 23. I did not note the time but it was probably shortly after five. It was a clear and pleasant day. I would estimate the bird's distance at about 150 feet as I could see the black and white pattern and the long, forked tail quite clearly without glasses. Fortunately I had my glasses with me and had a brief and clearer view before it disappeared over the tree tops. It was flying — sailing would be a better word — southeast following the course of the Minnehaha about a quarter of a mile north of that stream. The name "Kite" seemed very apt as it sailed like a child's kite. Its long tail feathers were not held as they are pictured in Peterson's "Field Guide" but sagged in a rather graceful arc." — *Mrs. Sterling Graham, Wayzata, Minnesota.*

*Editor's Note:* This excerpt is from a letter received by W. J. Breckenridge, dated December 8, 1955. There have been a number of similar sight observations in the last few years, and this bird is one for which we should be on the alert. *P.B.H.*

A QUAIL BROOD NEAR WEAVER — Near Weaver, Minnesota, (in Section 18, Township 109 North, Range 9 West) a covey of 11 late-hatched Bobwhite Quail were found on October 6, 1954. They appeared to be not over five weeks of age and thus were hatched near the first of September. The brood was with the adult female and about 18 other quail which may have included a brood of full-sized young.

Quail are always interesting to watch. In this case they were seen feeding along a narrow unimproved road. As the larger quail crossed the road, now and then one jumped after a grasshopper or stretched full up on tiptoes to pick a seed or insect from a weed stalk. Shortly after many had crossed and moved on through the sparse grass, a female walked to the center of the lane and looked in all directions. Presently the 11 chicks filed across in front of her while she waited much in the manner of a school-policeman holding up a sign for students at a crossing. Then she followed the last one.

The region in which these quail were found is a sand delta of the Zumbro river and occupies about 20 square miles. Much of it is good quail habitat, having a prairie-like aspect with an exceptional variety of game cover. Amid the farm fields are large areas of unfarmed dunes, brushy marshes, ponds, and scattered thickets. There are mixed bottomland forests and upland scrub-oak groves. Within the past few years many field windbreaks of one or more rows of Jack Pine have been planted. At present most of the plantings are four or five feet tall.

During the past spring and summer Bobwhites could be heard calling at most hours of the day over much of the area. As many as five different males were heard from one vantage point. — *Wm. H. Longley, Minnesota Div. Game and Fish, St. Paul.*



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RUFFED GROUSE BROOD IN FILLMORE COUNTY — On July 30, 1954, an adult Ruffed Grouse was observed with three half-grown young just south of Preston (Section 26, T. 102 N., R. 11 W.) A few days earlier a local soil conservation service employee reported that the brood contained about six young. — *Wm. H. Longley, Minnesota Div. Game and Fish, St. Paul.*

\* \* \*

MOUNTAIN LION OBSERVATION IN LAKE OF THE WOODS COUNTY — On Friday, March 12, 1954 in mid-afternoon Cyril and Elmo Sorrels of Williams were driving to a small pulpwood cutting operation in their truck to get a load of pulpwood when they saw a large cat-like animal  $8\frac{1}{2}$  miles south of Williams. The animal was standing on the crusted snow 450 feet west of the road in an open sedge meadow containing occasional small patches of cane. Both brothers saw the cat at the same time. The cat was standing when first seen, but as soon as the truck started to slow down it about-faced from south to north and bounded for willow brush cover, rapidly covering an approximate 60 feet in 12- to 15-foot leaps, in spite of breaking through the crusted snow which was 24 inches deep. The Sorrels assumed that the cat continued north into heavy cover from whence it had come. Because there did not seem to be much chance of getting further views of it, they continued on to the pulpwood operation.

A description of the cat was obtained from Cyril and Elmo separately so that any prompting as to what they saw would be eliminated. The descriptions are as follows:

Cyril's description: "The animal was standing when I first saw it; it was cat-like with a flattish head and small ears; it was as big (tall) as a large dog and had a long body about five feet long; it was two to three times as long as a bobcat and almost two times as tall as either of the two live bobcats seen this winter while hauling pulpwood; it was heavy bodied and relatively dark brown all over; I did not see a tail as I was busy trying to stop the truck as rapidly as possible without going into the ditch; as soon as the truck started to slow down the cat turned and ran for the brush breaking through the crust on the snow."

Elmo's description: "The animal was walking along the crusted snow, stopped and stood momentarily, then whirled and ran toward the brush; it had a flat head unlike a wolf's rounded head and small ears set far apart; it stood up as tall as a big dog about 25 inches; it had a tail about  $2\frac{1}{2}$  feet long that swooped down and curved up on the end when standing, when running the tail flopped about from side to side; it was long, about  $6\frac{1}{2}$  feet over-all length; I was looking partly toward the sun but the animal was a dark brown color."

Cyril Sorrels contacted Game Warden Harland Pickett of Baudette by phone Saturday morning, March 13, 1954, to report the sighting of what he thought was a Cougar. That evening Warden Pickett contacted me reporting the Cougar observation and requesting aid in checking the observation. On Sunday afternoon Warden Pickett and I, accompanied by Cyril Sorrels, checked the site on Sec. 24, T. 160 N., R. 34 W., Lake of the Woods county. The Cougar when seen was 450 feet west of the road in an open sedge meadow containing occasional small patches of cane. The trail of pug marks came out of heavy willow brush in the open sedge meadow with the cat walking with 10- to 12-inch steps. Snowshoe Hare tracks in the vicinity were numerous and the cat tracks indicated that the cat had apparently tried to catch a hare, as the cat had bounded three or four leaps of eight or ten feet into a small clump of brush where hare sign was particularly heavy. There was no indication that the cat had been successful in stalking hares, and it had resumed walking out into the opening 60 to 70 feet where the Sorrels had seen it. The cat then turned north breaking through the heavy crust in the open as it jumped back to

cover in 10- to 15-foot leaps. As soon as the cat was in cover it quit jumping but continued moving rapidly for a short distance with 18-inch steps. The cat had walked west along the edge of the heavy cover in scattered brush about 50 feet before turning south and walking across the 250-foot wide sedge meadow, occasionally breaking through the crust. The cat moved into a dense stand of tamarack, then a bushy stand of Jack Pine before crossing a woods road on the section line between Sections 24 and 25, T. 160 N., R. 34 W., ½ mile south of where it had been seen.

The tracks had the four-toe prints and pad showing distinctly in the hard crusted snow as can be seen in the picture. Measurement of several tracks were 4½" by 4½" with a couple being slightly wider than long. Size of the tracks can also be compared in the photograph showing Warden Pickett with his hand beside the track. The tail drag marks also show in this photograph.

There is no doubt that the animal seen by Cyril and Elmo Sorrels was a Mountain Lion (*Felis concolor*) based on the evidence at hand. The description given by the Sorrels of a large, long heavy-bodied, long-tailed cat and the large round pug marks in the crusted snow with the tail drag marks point only to the Mountain Lion. The crusted snow was thick, and only a heavy animal would break through as this cat did when frightened. The Canada Lynx with feet nearly as large as a Mountain Lion but with much less weight would not have broken through the crust. — Lester T. Magnus, Minnesota Division of Game and Fish, Roseau. Work completed on P-R Project W-11-R-16.



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The Minnesota Ornithologists' Union would appreciate receiving back copies of *The Flicker* through the years 1937-1945. Our supply of these years is getting low, and the demand for them has been increasing.

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# *The Flicker*

VOLUME 28

JUNE 1956

NUMBER 2



PUBLISHED QUARTERLY BY  
**THE MINNESOTA ORNITHOLOGISTS' UNION**  
MUSEUM OF NATURAL HISTORY  
UNIVERSITY OF MINNESOTA  
MINNEAPOLIS, MINNESOTA

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## THE FLICKER

Organ of the *Minnesota Ornithologists' Union*. Published quarterly in March, June, September, and December. *The Flicker* is sent to all members not in arrears for dues. Dues for members: Active, \$2.00; Sustaining, \$5.00; Life, \$50.00; Patron, \$100 or more. All articles and communications for publications should be addressed to the editor. Subscriptions, memberships, and requests for back numbers should be sent to the treasurer.

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## THE COVER

*Long-eared Owl by Raymond Naddy*

## THE PRESIDENT'S PAGE

I had lunch the other day with Ken Morrison, our own Minneapolis-Carleton college boy who is now editor-in-chief of the National Audubon magazine. In the course of our conversation, we discussed the past and future of the M.O.U.; Ken is deeply interested in our organization since he was president of the M.O.U. in 1947-48 and has watched it grow with interest.

As one of the factors most responsible for our increased membership and fine attendance at our meetings and field trips, Ken mentioned *The Flicker*. Certainly we have all noted the improvement in appearance and the variety in content of our state magazine. We extend our thanks to Lewis Barrett of Minneapolis for instigating this change and a deep debt of gratitude to Jack Hofslund at Duluth for his most capable editorship. I must admit that I'm relieved we haven't HIRED Jack as editor and are paying him by the hour! He'd run a good treasury into the red with the hundreds of hours he has volunteered to improve the status of the M.O.U. through *The Flicker*.

As partial proof of its quality, we are proud to announce a new life member, Dana Struthers — and his membership comes all the way from California.

Looking over the mailing list recently I was surprised how few schools have subscriptions to our publication. Certainly *The Flicker*, with its center of interest in our own state, is of great value in high school libraries. Limited budgets, in many cases, prevent libraries from subscribing to many magazines they feel are necessary.

Now, good members, I have a favor to ask of you — a direct request. You always respond well to proposals like this and I hope I'll hear from Mary Lupient that *this* is no exception.

We have already asked each of you to get a new member (that would place our membership close to 1400!) and I'm sure you're all at work selling *The Flicker*. The suggestion I have to make might mean four or five new members instead of one, and these would probably be drawn from among our younger people — the M.O.U. of 1966!

In every town where we have M.O.U. memberships, I'd like to see *The Flicker* a regular item in the magazine rack of the school library. If you're interested in the M.O.U., what better gesture could you make than a gift subscription to the school library or to the town library? Where else will the message of our group find a larger audience and, perhaps, stir more people to a recognition of the need of wise management of our natural resources?

Go to the phone right now and call the librarian. Ask if they are subscribing to *The Flicker*; chances are the reply will be, "No". Then offer a gift subscription for one year and see how the magazine is received. We think you'll be pleased and proud of your part in making the Minnesota Ornithologists' Union an even better, even larger and even more valuable organization than it is today.

(The power of the pen is great! I just spoke to our school librarian and purchased a year's subscription for my own school — my students have been using my own copy but, since I'm leaving, I'd hate to leave them *without* good literature!) Which brings me to the last section—

This is the "I'm leaving" paragraph! However, I'm not only leaving the M.O.U. as president, I'm also leaving Minnesota — in fact, I'm leaving the United States! My next two years will be spent at Nassau in the Bahama Islands where I am starting a new biology department at St. Augustine's college. It would be a pleasure to have some visits from M.O.U. members — so, if you happen into Nassau, don't leave without a call, however brief.

(Continued on page 56)

# Wichita Wildlife Refuge Endangered

by

Robert Galati

It was with great anticipation that my wife and I approached the entrance to the Wichita Mountains Wildlife Refuge early in January, 1956. Our attention had been called to this refuge by Margaret Nice's article on the refuge in a reprint from "Nature Magazine", Washington, D. C., for June-July, 1955. We were most interested in seeing the big-game animals and birds. We immediately drove to the refuge headquarters where we met Ernest Greenwalt, refuge manager, who was most congenial and helpful during our six-day visit at the refuge.

In 1905 Theodore Roosevelt set aside 59,099 acres in Comanche county, southwestern Oklahoma, as a national forest. In 1936 it was turned over to the Fish and Wildlife Service as a refuge.

The refuge is of irregular outline, approximately nine by 15 miles. It includes the higher portions of the rugged, granitic Wichita Range and is interspersed with valleys and parks, a score of lakes and many ponds. Oak timber predominates. Blackjacks and scattered junipers mantle the slopes, and post-oaks, elms, ash, cottonwoods, willows, and typical southwestern creek bottom trees line the lakes and stream beds. The long-grass prairies, containing exceptional stands of near-climax prairie grasses, are outstanding.

The ancient oak-clad granite hills and prairie grass lands are rich in historical lore. Wichita Indians gave the mountains their name. Comanche Indians hunted buffalo, deer, and elk among the hills and occasionally harrassed Fort Sill troopers by taking their horses. General Phil Sheridan shot elk at the foot of the rocky peak which now bears his name — Mt. Sheridan. Wichita's

highest point, Mt. Scott, reached by a three-mile winding macadam road was named after General Winfield S. Scott. Legends persist of Spanish gold and bandit loot buried somewhere amid the boulder-strewn heights. Quanah Parker, last of the Comanche chieftains, called the Wichita Mountains his home, and his homestead, the Star House, is situated just south of the refuge.

The Wichita Mountains Wildlife Refuge is one of the four fenced big-game areas of the service. From a nucleus of 12 buffaloes, a gift from the New York Zoological Society in 1912, the herd now consists of approximately 922 animals. Numerous buffalo can be seen on either side of the road as one enters the refuge from the south. One of the most conspicuous animals on the refuge is the longhorn steer. The 350 longhorns comprise America's largest single herd of these big-boned, lumbering cattle renowned in song, story, and legend of the Southwest. This outstanding herd includes about 80 huge steers, some with horn lengths to seven feet. The Spanish explorer, Willalobos, brought the longhorns to old Mexico in 1521 where they thrived. Coronado and other north-bound explorers spread them widely as animals escaped from herds driven along for meat. Wichita longhorns are a remnant of the vast herds which trailed the central continent in the '80's and which almost disappeared when better beef cattle were introduced at the turn of the century.

Elk, once native, were shot out in about 1875. The present group of about 225 results from an importation of 17 elk from Jackson Hole, Wyoming, in 1917. Antelope were introduced in 1938, but the climate and habitat does not

agree with them. There are about 26 on the refuge at the present time. White-tailed deer, native to the mountains, have increased greatly under protection and are found in all parts. Fox squirrels, raccoons, opossums, skunks and smaller forms of wildlife are common. Prairie dogs can be seen on either side of the road just south of the refuge headquarters, sitting on their mounds, feeding, visiting or roustabouting.

Ornithologists and birdwatchers find the Wichita Refuge of continuing interest. Wild turkeys make their home among the Wichita oaks. At dusk they fly into the postoaks and roost for the night, and during any evening one can see them collecting near the refuge headquarters before perching for the night. Migratory waterfowl use the many lakes in spring and fall flights, finding the refuge attractive for nesting and feeding. Over a dozen Golden and Bald Eagles winter on the refuge. They can be seen either perched in the trees or soaring over head during the day. Turkey Vultures find the rugged mountains suitable for nesting. Scissor-tailed Flycatchers, Road-runners, Bobwhites, and Great Horned Owls can be seen during various times of the year.

Three generations of southwest Oklahomans and northwest Texans have utilized the refuge for recreational pursuits in addition to the many thousands who train at nearby Fort Sill. In 1955, 900,000 people visited the refuge. It has a great deal to offer the visitor. There are nine areas for picnicking and camping. There are good beaches on Quanah Parker, Jed Johnson, and Elmer Thomas lakes. Boating is only allowed on Elmer Thomas lake, the largest of the 20-odd artificial and natural lakes. The refuge lakes, filled by the spring runoff, are stocked with bass, sunfish, and channel catfish among others. Refuge fishing regulations are the same as state regulations, and an Oklahoma fishing license is required.

The famous Easter Sunrise service

attracts thousands of persons to the refuge from all parts of the country. This cooperative use of the refuge by the Wichita Mountain's Easter Sunrise Service association has continued for more than 15 years. In a vast natural amphitheater at the base of Mt. Roosevelt nestles the Holy City, which has been appropriately planned for the services. The lofty peaks of Mt. Roosevelt and Mt. Sheridan, and the rugged appearance of the surrounding terrain present a picture not unlike the hills of Judea. The chapel is open throughout the year.

At the present time the refuge is gravely threatened by the United States Army. Two years ago the army tried to acquire control of all the privately owned land north and south of the refuge. The secretary of army tried to assure the conservationists that his department had no intentions to expand into the refuge in the immediate future.

In April, 1955, an item of \$3,053,000 appeared in the military public works program bill for expansion of Fort Sill. Army witnesses at the hearings revealed that this money would be used to purchase 20,320 acres south of the refuge to be used as an artillery range. The bill asked for a transfer of 10,700 acres of refuge land for the same purpose. This was authorized before wildlife interests could marshal their protests. The army then tried to induce the senate and house appropriations committees to provide the funds. The army generals told the committee that the 10,700 acres they wanted were of no value to the refuge. They were closed to the public and not used for recreation. They cried, "National defense! We need this land to use as target areas for atomic artillery, because of the increased firing range of the new weapons." The 10,700 acres will not increase their range lengthwise, but merely widen it. The army feels that they need the 10,700 acres in addition to the privately owned lands as a buffer zone. What a beautiful

buffer zone! The hunting would be excellent and the fishing outstanding.

Assistant secretary of the army, Chester R. Davis, flew over the desired 10,700 acres in a helicopter. He reported that it was teeming with rattlesnakes and squirrels. There were very few trees and it was made up of mostly rocky country. He must have been an outstanding observationist because rattlesnakes are very hard to see while walking, let alone from a plane! He must have had x-ray eyes to be able to see squirrels in the heavily forested areas.

Carlyn and I covered the 10,700 acres quite thoroughly by car and on foot and found it not only to contain the most beautiful part of the refuge, but also that of the state. (We had just completed our tour with National School Assemblies through the entire state.) We found over half of the area open to the public. It contains Pekan Springs, Boulder, Postoak, and Elm Springs camps, beautiful Postoak and Treasure lakes, Charons Garden, Twin Rocks and Elk Mountain, Mountain Lincoln and Phantom Hill. The main entrance from the south also leads into this area.

At almost every turn in the road we saw both large and small mammals. In the heavily wooded area along the southern border of the 10,700 acres we saw numerous deer and longhorn steers grazing. On both sides of the main entrance buffaloes were either lying down or feeding. The trees were full of birds.

We also saw some of the souvenirs left by the army, an example of what would happen if they were to gain exclusive ownership of this area. The army and the fish and wildlife service have an arrangement where the army is permitted to use the refuge for maneuvers and to fire its weapons from the refuge to its own lands, and aircraft may practice landings and take-offs on refuge roads. This has been in effect for years. The army contends that this area is wasteland, and contains nothing but rocks, snakes, and squirrels. Yet, it

was in the heavily forested areas where the deep tracks of the heavy guns were prevalent. It was only natural that they would mount their guns under cover of the trees. None of these tracks led to the so called rock piles (actually beautiful scenic hills and mountains) that the army declares worthless. Wherever they maneuvered their big guns, only a trail of devastation was left behind. The good grassland was trampled and ruined. The beautiful scenic hills and mountains are of no use to them because they pose veritable unconquerable obstacles. It would be impossible for them to maneuver their big guns in that area of the 10,700 acres.

In December, 1955, Harry J. Donohue, special assistant to assistant secretary of public land management, visited the Wichita Mountains Wildlife Refuge for the purpose of getting an on-the-spot view of the 10,700 acres of refuge land that the army wants. He covered the 10,700 acres in dispute in a most thorough manner, and was greatly impressed by the value of this area for wildlife purposes. He spent approximately six hours going over the area by foot and car, and saw buffalo, longhorn cattle, deer and wild turkeys in considerable number. This wildlife was ranging throughout the flat land which makes up well over 30 per cent of the area. He saw countless draws reaching into the high rocky ground, and he concluded that there was very little of the 10,700 acres which is not useful and important for wildlife management.

Secretary of interior, Douglas McKay, bless him for once! . . . has replied to the army's request for a chunk of the Wichita Mountains Wildlife Refuge with a polite but firm "No." Stating that he is "Unalterably opposed" to the transfer, McKay told secretary of the army Wilber M. Brucker in a letter released October 20, 1955, by the department of interior: "I trust it will be possible to meet the basic needs of Fort Sill expansion program without impairing the integrity of Wichita Refuge."

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## MINNEAPOLIS - MOLINE

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While a number of people interested in wildlife protection had visited the refuge to ascertain the facts the committees accepted the army's version of the disputed area and approved the appropriation.

Chairman Sikes of the House Military Appropriations committee held a special hearing to listen to the witnesses who had been on the ground. His committee was perturbed by the evidence presented. Unfortunately, the legislation was already before the senate, and when the evidence was presented there, the army spokesmen repeated their incorrect assertions and questioned the veracity of the wildlife people. With no further investigation, the bill was reported to the floor. There, Senators Humphrey, Morse, Mansfield and Duff spoke strongly against granting the funds for the transfer, and Senator Neuberger entered an amendment to delete the item. The two senators from Oklahoma, eager to see Fort Sill expanded at whatever cost to the refuge, made a personal issue of the matter, and the amendment was defeated. The appropriation was approved.

Since there was so much interest in the matter, army authorities felt it advisable to enter into discussions with the department of interior. A counter proposal has been made to the army with the hope that a compromise can be worked out which will permit the army to carry out its objectives and still preserve the Wichita area for future generations.

Must valuable refuge and recreation lands be sacrificed for national defense? Whenever the armed forces wish ownership of these lands they cry, "National

defense!" There are many members of congress who immediately jump on the army's bandwagon when they hear those two words which are greatly misused at times.

The army has been using the Cabeza Prieta and Kofa Refuges in Arizona for testing poison gas. The air force recently ended its threat to the Whooping Cranes by withdrawing its request to extend its photoflash bombing range to within less than a mile of Aransas Wildlife Refuge, on the Texas coast. The navy grabbed 30,000 acres of the Desoto National Forest in Mississippi. The air force has been firing on a portion of the Desert Game Refuge in Nevada and wants primary jurisdiction of the entire project. The navy's desire to take over Passamore island off the Virginia coast was curbed by public interest. The navy has been dissuaded from trying to use a portion of the Francis Marion National Forest in South Carolina only by aroused public opinion. The army now wants to grab up the best portions of the Wichita Mountains Wildlife Refuge.

It is my personal opinion that if the various branches of the armed forces continue their land grabs of our recreational establishments and game preserves, this country won't be worth saving.

What is to keep the army from gobbling up the entire Wichita Mountains Wildlife Refuge after their present weapons become obsolete and they need more area for still larger guns?

Whether the army will succeed in gaining ownership to the best part of the Wichita Wildlife Refuge remains only a guess.

*Duluth, Minnesota*

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The latest *life member* of the Minnesota Ornithologists' Union is Dana Struthers of San Francisco, California. Dana is well known to Minnesota ornithologists for his work with the birds of prey in Minnesota and the Minnesota wetland's campaign.

The Minnesota Ornithologists' Union is happy to announce that the Wilson Ornithological Society has accepted the joint invitation of the Union, the Duluth Bird Club, and the University of Minnesota, Duluth branch, to hold its next annual meeting on the Duluth campus of the University of Minnesota on June 13, 14, 15, and 16, 1957.

# Jack Miner and the Role of Predators in Nature

by

Harold Mayfield

Few men in the history of conservation have captured the popular imagination like the late Jack Miner.

Millions remember him as the man who created a waterfowl refuge around a muddy pond. Even more remember him as the man who placed Scripture messages on the legs of migrating ducks and geese. To many of these people, his name is a symbol of conservation. To some of them, his views represent the highest authority on wildlife questions.

It is all the more credit to this remarkable man that he achieved fame against severe odds. What he did, he accomplished alone. For many years his activities were derided and opposed by his friends and neighbors. His mental isolation was deepened by the fact that he was a poor reader and thus was denied access to literature where he might have received encouragement and stimulation from other minds working on the same problems.

Yet, through energy, force of personality, and native shrewdness, he became the most distinguished citizen of Kingsville, Ontario. He captivated audiences across the continent with his fervor, his homespun manner, his rustic humor, and his stories humanizing the behavior of birds. In recognition of his contribution to conservation, in 1943 George VI conferred upon him the Order of the British Empire, and in 1947, three years after his death, the Canadian legislature set aside the week of his birthday, April 10, as National Wildlife week.

It is perhaps not surprising that Jack Miner's views on nature are regarded with extreme respect by the three sons who carry on his work. The publicity emanating from the Jack Miner Bird

Foundation, written mostly by the eldest son, Manly, who served as his father's secretary for many years, repeats words of praise from admirers that will seem extravagant to many readers: "One of the fifteen great men of the world" (along with Shakespeare, Pasteur, Edison, Burbank and others); his banded geese "have done more good in spreading the Gospel than all the missionaries in Canada;" "the greatest practical naturalist on the planet;" "pioneer bird bander in America;" "father of the conservation movement in North America."

Needless to say, biological scientists appraise Jack Miner's work somewhat more modestly.

They acknowledge with gratitude that he made thousands of people conscious of birds as living creatures and not just targets for gunning. They appreciate how much he did to dramatize and popularize the refuge idea (although California passed a law for the creation of refuges in 1870, the killing of all wildlife in Yellowstone Park was prohibited in 1894, and the first federal refuge was established by President Roosevelt in 1903). They recognize his work in the design of traps and in the banding of enormous numbers of ducks and geese, through which much has been added to our knowledge of the migration of waterfowl passing through the Lake Erie region (although Audubon banded the first migratory bird in 1803, and banders were sufficiently numerous by 1909, the year Jack Miner placed his first band, that a special section was organized for them at that time in the American Ornithologists' Union.)

Biological scientists are not unmindful of the good work Jack Miner did. Looking

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(Reprinted from the Annual Bulletin, Spring 1955, of the Toledo Naturalists' Association)

back, they are pleased to note the emphasis he placed on the planting of trees and shrubs to provide food and shelter for wildlife. Here his judgment was sound. But in other matters his judgment was not always so good. It is no reflection on his honesty nor keenness as an observer to say that his interpretations of what he saw should be regarded with the same caution one would accord the ideas of hunters, trappers, and other outdoorsmen who are unacquainted with the great body of accumulated knowledge in these fields. It would be difficult to find a careful student who would agree with Jack Miner that robins build near people's houses to get protection from crows, that crows locate other birds' eggs by sense of smell, or that there are only five per cent as many song birds today as there were in his youth.

Scientists, with exceptional unanimity, are agreed also that Jack Miner was mistaken in one of his cherished views, namely, that all creatures of prey should be pursued relentlessly and killed. It is particularly to be deplored that this idea, discredited by the careful research of ornithologists and mammalogists, should have become a major theme of the publicity issued in recent years from the Jack Miner Migratory Bird Foundation. It is to be regretted also that this publicity should carry an undercurrent of ridicule for biological research. It was just incomprehensible to Jack Miner that informed men could dispute what was so plain to him. Yet the case against him has mounted, and his sons have become bitter about it.

I have examined 22 news releases and reprints from the Foundation and 14 of them are devoted wholly or in part to arguments for the destruction of predators. Presumably, the magic of Jack Miner's name gets this material an audience in newspapers and magazines, although it is nowhere backed up by evidence rigorous enough to be acceptable by scientific journals.

Let's examine Jack Miner's views on

this particular subject in more detail. Here, as in other aspects of animal behavior, he imputed human feelings and motives to wild animals and passed moral judgment on them. He divided wildlife into the good and the bad. The list of "bad" creatures was long:

- Sharp-shinned Hawks
- Cooper's Hawks
- Goshawks
- Marsh Hawks
- Screech Owls
- Crows ("black murderers")
- Grackles
- Blue Jays
- Shrikes
- Great-horned Owls ("cannibals")
- English Sparrows ("flying rats")
- Wolves
- Foxes
- Weasels
- Skunks
- Mice
- Snakes
- House cats

Jack Miner advocated that all these should be destroyed with shotgun and trap, including the pole trap, which kills indiscriminately. Hence, the Miner Refuge is not a sanctuary for all species; it is a baited trap for some.

To Jack Miner the whole problem was simple. It was just a matter of plain observation and common sense, to-wit: (1) "Bad" creatures eat "good" creatures or their eggs; (2) if the "bad" creatures could be prevented from doing so, there would be more "good" creatures; (3) by killing the "bad" we increase the "good". After all, doesn't the farmer pull the weeds in his garden? For Jack Miner this viewpoint was not only sensible, but it also had Biblical sanction, for God gave man dominion over all other creatures.

If a person were to comment that all wild creatures flourished side by side before man interfered, Jack Miner got in his clinching argument as follows: Originally nature was in balance. Man has upset the balance in favor of the "bad"

creatures. Therefore, man should tip the scales back.

To the man in the street, Jack Miner's viewpoint is unanswerable. To the farmer, with one eye on his chicken coop, it is self-evident. To the hunter, particularly the pest hunter, it is welcome news — it not only offers more kinds of things to shoot but also adds moral virtue to the joys of hunting.

Indeed, this point of view would probably never be disputed as a result of casual observation. And at this point we should remind ourselves that something more than common sense was required to discover that the world is round or that the desk on which I am writing is composed in part of something as insubstantial as electrons.

Nature is never simple nor obvious. The relationship of predator to prey among wild creatures is far from the simple matter it seems to people who have not studied it scientifically. Little by little, many former "common sense" ideas have been upset — not by theory, not by speculation, not by casual observation, but by laborious, precise work in the field, using such scientific methods as the life-history study, statistical analysis of data, and the controlled experiment.

What have scientists concluded about predation?

1. *Predation is just one of many necessary controls that nature exercises over all species living in the wild.* If these controls did not exist, any species unchecked would soon overwhelm the earth. For example, one pair of Ruffed Grouse has the capability of multiplying to two billion birds in eleven years. Actually, when one control does not operate others tend to appear. That is, when one predator is eliminated, others come. If all predators are restrained, other factors begin to operate — starvation, disease, hatching failure, competition with other species, conflict within the same species, and so on. For reasons that are not at all obvious, most stocking

of game has proved to be disappointingly expensive. When adults are released in an area already occupied by a resident population of the same species, the newcomers often have difficulty establishing themselves even without hunting, predation, or food shortage. The same is true of trout in streams. Moreover the great cycles of abundance and scarcity in many species have been shown to occur with or without predation.

2. *A major limiting factor on many populations is conflict within the species itself.* For example, the robin and most other songbirds are territorial. That is, the male in nesting season fights to prevent other males of the same species from entering his selected area, and consequently the number of pairs that can nest in one neighborhood is limited. Any surplus is forced out into unsuitable or borderline areas, where their chances of living and nesting successfully are much reduced. Intolerance to crowding has been shown to be a limiting factor in many mammals also, including the muskrat.

3. *If the habitat is suitable and the numbers of wild creatures do not exceed the carrying capacity of it, each species has remarkable ability to withstand the hazards of existence.* Predators tend to eat whatever is easy to catch and to become scarce when food is hard to obtain. Therefore, excessive predation may be a symptom that the habitat is substandard for the species. That is what makes predators such a nuisance around game farms and other abnormal concentrations of wildlife; here they find a smorgasbord served up to them — creatures not dispersed as they would be normally, with some of them diseased, injured, or lacking in the alertness required for survival in the wild.

4. *The immediate consequences of predation may not be as bad as one might suppose.* Since most species of birds will try more than once in one season to rear a brood, the taking of eggs and young does not necessarily

reduce the total number fledged; the result in many instances is delay rather than loss. Further, creatures of prey sometimes eat one another, and eat creatures that would otherwise compete with one another for food at a crucial time of the season. For example, Great-horned Owls eat skunks, crows, and snakes; Goshawks eat crows; crows rob the nests of Blue Jays; weasels eat young Bobwhite but they also eat the mice that compete with Bobwhite for grain in winter. In some parts of the West where rodents are doing great damage, the coyote is coming back into the good graces of the ranchers.

5. *The long-range consequences of predation may be good for the species.* Unless some factor operates in favor of the more fit over the less fit, any species will deteriorate. Predation is such a factor. This is a hard thing for many people to understand, especially if they have seen a healthy bird killed by a hawk. Understanding it requires a little ability to think in statistical terms. For example, if a hunter kills a random sample of game, he has no effect on the quality of the stock for good or bad (actually, by selecting the biggest and finest for the kill, he may damage the stock). But when a hawk kills those easiest to catch, including many unfit, and this is repeated through endless generations, the reduction in the unfit takes place with the inexorability of compound interest.

6. *If we try to favor certain creatures by protecting them from all the dangers of existence in the wild state, we take on a formidable if not impossible task; and we may find that we are doing so at the expense of many other living things we value.* If we become overprotective, we will find ourselves facing some difficult decisions. For example, among our game birds, the Ring-necked Pheasant has been known to eat the young of the Bobwhite Quail, and at artificially high levels of abundance may hold a threat to all other ground-nesting

birds; among our songbirds, the House Wren sometimes pierces the eggs of other species nesting nearby; among waterfowl, I have seen a Whooping Swan attack and kill a mallard duckling. Which of these should we curb for the protection of the others? In any case, there are few people with a genuine love of nature who want to see our fields and forests reduced to the conditions of a game farm. Over-protected creatures tend to lose many of the qualities that give them their interest and charm in the wild.

Even this is not a complete account of the interesting role of the predator in nature. But perhaps it may suffice to show that no simple explanation is adequate to explain the complex relationships among living things. This discussion may help us understand why practical game-management men have concluded that under normal conditions predation is not a major factor in the life of most species. And it may help us understand experiments like the following:

In New York state there were complaints from pheasant hunters that foxes were numerous and endangering the pheasant population. So, two similar areas were set aside for study. In one, foxes were systematically destroyed (at considerable expense); in the other, foxes were left undisturbed. Finally, the hunter's kill of pheasants in the two areas were compared. There was no significant difference between them.

Indeed, nature is a never-ending puzzle. But as our understanding grows, we are coming to appreciate more fully that every wild creature has its place (even with man on the scene) and that, by attempting to alter the natural relationships among wild creatures, we are tampering with a complex mechanism, where our fumbling efforts may be harmful, not only to the best interests of wildlife but to our own as well.

Toledo, Ohio

# Enemies in Nature

by

*Irston R. Barnes*

Many natural history books, in discussing predator-prey, or food-chain, relations, sometimes use a verbal shorthand, referring to predators on a species as its natural enemies. The word enemy suggests the need for a continuing critical scrutiny of our nature vocabulary, for words carry false connotations from other fields and influence both our own thinking and our ability to communicate with other people.

If the prey species is a desirable song bird or game bird, as the Bob-white, and the Cooper's Hawk is its "enemy," then those who are for the Bob-white are likely to be against the Cooper's Hawk. Thus a semantics barrier is created to a

popular understanding that both the Bob-white and the Cooper's Hawk are equally good citizens of the woods-margin community.

When predator-prey or other natural interspecific relations are seen in true perspective, the enemy concept is clearly inaccurate and inappropriate. Naturalists using the enemy figure of speech mean only some other form of life which is dependent in a particular way on the species in question. A robin may die of old age, starvation, disease or the strike of a hawk; yet only the last is casually designated as an enemy. Surely it is not reasonable to prefer the parasite, the maggot or the vulture to the hawk. The



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robin, if capable of a choice, might prefer the hawk. Nature knows no such preference, but finds opportunities in every form of life to support other life. From such interspecific relations, or food chains, come much of the infinite variety of life which we know.

The robin that eats the worm, the hawk that takes the robin, and the bobcat that sometimes surprises the hawk are not severally the enemies of their respective food supplies. Neither the robin, the hawk nor the bobcat, although it takes the life of an individual, poses any threat to the species. The hunter takes what is readily available, and when the abundance of one food diminishes, it turns to another food or moves to other hunting grounds. In general, man is the only predator so relentless in his hunting that he extirpates or extinguishes a species.

The true enemies of a species are those life forms, or inanimate forces, which destroy the essential elements of its environment or that by competition drive it from its habitat or from access to food and shelter. Sometimes an introduced species, such as the rabbit in Australia, destroys plant life and alters the nature of a habitat. Sometimes an introduced

predator, the mongoose in the Caribbean Islands, finds native species that are unprepared, by powers of escape or by reproductive capacity, to withstand its attack. Sometimes introduced competitors usurp the place of the native species, as has happened with the Hawaiian birds. More often, however, it is the unchecked multiplication of a species in the absence of normal predation that creates the disastrous competition. The deer of the Kaibab Plateau were a prosperous population so long as the mountain lion and wolf preyed on them, but when the predation was removed, the explosion of numbers destroyed the food resources and wholesale starvation resulted. Robins, if unchecked, could be their own destroyers; the hawk is their protector.

Man is the great destroyer of habitats, the great force which by changing the patterns of land use, has brought some species of wildlife to extinction and opened the way for explosive expansions by others. Man is the nearly omnipotent enemy of wildlife; yet even here the word is misleading. Much of the harm that man does is unnecessary, unintentional and unwanted, but this is another subject.

(This article appeared in the November-December 1955 issue of the Atlantic Naturalist. Dr. Barnes is president of the Audubon Society of the District of Columbia. "Enemies in Nature" may be reproduced in any way so long as credit is given to the author and to the Atlantic Naturalist, Box 202, Benjamin Franklin Station, Washington 4, D. C.)

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## THE PRESIDENT'S PAGE (Continued from page 45)

My association with my fellow officers and the members of the M.O.U. has been a most pleasant and satisfying experience for me. I have found good friends, good interests and a wonderful spirit of comradeship. These things are long remembered.

Good birding (and under Charlie Flugum's leadership it's BOUND to be good), and I'll be thinking of all of you as I stalk Black-necked Stilts and Flamingoes and sit beneath a palm tree to read my latest copy of *The Flicker*!

Sincerely yours,  
Bob Hanlon, President

# Notes on Swift Banding at St. Cloud, Minn.

by  
*Harry H. Goehring*

The banding of Chimney Swifts is not new in southern United States. H. L. Stoddard, starting in 1924, had about 6000 Swifts banded by the end of the fall season of 1926 in Thomasville and Cairo, Georgia, and Tallahassee, Florida. In 1928, Professor W. R. Green began banding Swifts at Chatanooga, Tennessee. Dr. G. H. Lowery, Jr. started Swift banding in Baton Rouge, Louisiana, in 1937.

Conditions for successful Swift banding operations are ideal in southern states. Migrating or wandering flocks of Swifts increase in number as they move southward and a few flocks may be found which number over 6000 birds.

This flocking tendency during migration has made Swifts the most rewarding species to band; the most banded of all birds. A large number may be banded in a few days and the number of recaptured Swifts is the highest of all species of banded birds. It is not unusual to find 15 per cent of a flock previously banded. Nor is it unusual to find one bird out of 300 banded by some other bander.

## *Purpose of Banding*

The main purpose of Swift banding is to gather information on their (1) migration routes, (2) dates of migration, (3) speed and habits of migration, (4) age, and (5) winter range.

The report of the American Embassy at Lima, Peru, stating that 13 banded Swifts had been killed by Indians during the winter of 1943-44, gave the first confirmation of the winter range of the North American Swift. Of the 13 birds, eight were banded in Tennessee, and one each in Illinois, Connecticut, Alabama, Georgia, and Ontario.

## *Procedure*

Upon arrival in the spring, Swifts are found roosting in large chimneys in flocks. After a mate is selected the pair leave the flock to establish a nest in a chimney away from other nesting pairs. Occasionally, an unmated single will be found in the same chimney with a nesting pair.

In late summer, or early fall, young and old Swifts again assemble in the larger chimneys preparatory to the southern migration. Thus, banding is done most advantageously in the spring or late summer.

The chimney for banding operations is selected by counting the Swifts which actually enter the chimney to roost for the night. At dusk several hundred birds may be found flying in circles above the chimney. After a few scouts have entered the chimney, a few more follow, and finally as many as 200 may go in during a one-minute interval. Some time after dark the chimney may be covered to prevent them from leaving at daybreak.

The trap which is placed on top of the chimney has a glass top through which sky light may enter. Because this glass is set at an angle the Swifts which attempt to fly through it to freedom are deflected toward the funnel end where a stove pipe leads them down to the collecting cage. The collecting cage at roof level is made of hardware cloth to allow a movement of air through the several hundred birds which may be collected at one time. The flow of birds to the cage may be stopped at any time by covering the glass topped trap on the chimney top.

Table 1  
**SUMMARY OF BANDING OPERATIONS**  
 (Aug. 29, 1952 - Sept. 1, 1955)  
 ST. CLOUD, MINN.

NUMBER OF BANDED BIRDS HANDLED .....	398
NUMBER HANDLED ONLY ONCE .....	289
NUMBER HANDLED TWICE .....	48
NUMBER OF BIRDS BANDED .....	2687
NUMBER HANDLED ONLY THRICE .....	8
NUMBER OF DIFFERENT BANDED BIRDS HANDLED .....	345
TOTAL BIRDS HANDLED .....	3085
FOREIGN BIRDS RECOVERED AT ST. CLOUD .....	11

Table 2  
**SWIFTS BANDED AT ST. CLOUD, MINNESOTA**  
*Number Recaptured by Date of Banding*

No. Banded	Location and Date	1952		1953			1954		1955		Banded in Flock	
		Aug. 29	May 31	J <sup>n</sup> e 3	Sept. 1	Sept. 4	Sept. 5	May 24	J <sup>n</sup> e 1	Sept. 5		Aug. 17
620—	Armory Bldg.											
	Aug. 29, 1952 ....	F									0.1%	
240—	Paramount Bldg.											
	May 31, 1953 ....	31	F								13.1	
126—	Armory Bldg.											
	June 3, 1953 ....	15	17	....							20.2	
369—	Waite Park											
	Sept. 1, 1953 ....	26	6	5	FFF*						9.8	
228—	Raymond Bros.											
	Sept. 4, 1953 ....	23	3	10	42	FF					26.4	
210—	Sauk Rapids											
	Sept. 5, 1953 ....	21	4	5	13	17	....				22.4	
198—	Paramount Bldg.											
	May 24, 1954	10	6	6	11	7	7	F			19.5	
146—	Paramount Bldg.											
	June 1, 1954 ....	6	3	4	8	1	1	1	FF		15.1	
116—	Raymond Bros.											
	Sept. 5, 1954 ....	2	....	....	....	3	1	....	....	....	4.9	
361—	St. Augustine											
	Aug. 17, 1955 ..	11	7	....	11	13	4	2	5	6	F	14.0
73—	Waite Park											
	Sept. 1, 1955 ....	....	....	....	....	....	....	....	....	7	15.1	
2687	Totals .....	146	47	30	94	43	13	4	7	6	8	14.8
<i>Number of Different</i>												
	<i>Birds Recaptured .....</i>	117	42	23	79	36	12	4	7	6	8	
<i>Percent of Flock</i>												
	<i>Recaptured .....</i>	19	17	18	21	16	6	2	5	5	2	

\*F = Recapture of Swifts banded at "Foreign Stations"

### Results

Table 1 shows the summary of Swift banding operations from August 19, 1952 to September 1, 1955. It will be noted that a total of 3085 Swifts were handled during this time, of which 2687 were newly banded and 345 different Swifts were taken as previously banded birds. Of the banded birds, some were recaptured once, twice or three times. Eight were handled four times; once for banding and three times during subsequent banding operations. Eleven Swifts were banded by banders in other locations.

Table 2 shows the number of newly banded birds, and the location and date of those previously banded for each of the 11 banding operations. It will be noted that, in general, banded Swifts were recaptured from each of the different banding operations.

The last column to the right indicates the percentage of banded birds found in each of the chimneys. It indicates that approximately 10 to 20 per cent of the flocks were previously banded.

Near the bottom of the table is found the total for each of the columns. The total number of recaptured birds, i. e., 146, 47, 30, etc., represents the number of times birds banded on August 29, 1952, May 31, 1953, June 3, 1953, etc., were handled during operations following

those dates. The actual number of different birds recaptured from those banding dates are found in the next line to be 117, 42, 23, etc.

Of special interest is the last line headed "Per Cent of Flock Recaptured". It will be seen that 19 per cent of the original 620 birds banded on August 29, 1952 were recaptured by August 17, 1955 in St. Cloud; 17 per cent of the 240 banded May 31, 1953; 18 per cent of the 126 banded on June 3, 1953; and 21 per cent of the 369 birds banded September 1, 1953 were later recaptured. As may be expected, this percentage decreases in the later banding operations.

In all but one operation, Swifts were taken which had been in the previously worked chimney. For example, 31 banded August 29, 1952 were retaken May 31, 1953; 17 banded May 31, 1953 were retaken three days later in a different chimney; 42 banded September 1, 1953 were retaken September 4, 1953; and 17 banded September 4, 1953 were retaken the next day, September 5, 1953, in the Sauk Rapids high school chimney, a distance of over two miles.

Table 3 shows the band number, date of the St. Cloud recovery, and the date and place where the 11 foreign Swifts were banded. Of special interest is number 47-162056 which was at least

Table 3

### SWIFTS BANDED ELSEWHERE (FOREIGN) AND RECOVERED AT ST. CLOUD

<i>Band Number</i>	<i>Date Recovered</i>	<i>Date Banded</i>	<i>Place Banded</i>
49-58287	Aug. 29, 1952	Oct. 7, 1950	Memphis, Tennessee
51-16023	May 31, 1953	Oct. 11, 1952	Memphis, Tennessee
51-9957	Sept. 1, 1953	Oct. 21, 1952	Memphis, Tennessee
50-54246	Sept. 1, 1953	Sept. 22, 1951	Memphis, Tennessee
50-54654	Sept. 1, 1953	Aug. 6, 1952	Bemidji, Minnesota (Warner - Marshall)
47-162056	Sept. 4, 1953	Oct. 6, 1946	Memphis, Tennessee (7 yrs.)
50-54246	Sept. 4, 1953	Sept. 22, 1951	Memphis, Tennessee
49-58387	May 24, 1954	Oct. 1, 1950	Memphis, Tennessee
51-8960	June 1, 1954	Oct. 5, 1952	Memphis, Tennessee
54-30294	June 1, 1954	Oct. 4, 1953	Chatanooga, Tennessee
51-16168*	Aug. 17, 1955	Oct. 11, 1953	Memphis, Tennessee

seven years old when recovered. Also of interest is number 50-54654 banded by Warner and Marshall, University of Minnesota, at Bemidji, Minnesota. Swift number 51-16168 bears the distinction of being banded in two different states and being handled three times.

Table 4 shows that 14 Swifts banded in St. Cloud were recovered and released at foreign stations. Since nearly all of them were recovered in Memphis, Tennessee, it may be assumed that the migration route of the St. Cloud Swifts is through or near Memphis. At this time no longevity records could be set on these birds.

Incidentally, it will be noted that the Memphis recoveries are all in the fall of the year. Ben Coffey, Jr. of Memphis states that they have practically no spring migration of Swifts through Memphis. Apparently the Swifts select some other route on their northern migration.

Table 5 reveals the known, or recorded, fate of only 12 of the 2687 Swifts banded in St. Cloud. The only other returns on these banding operations come from banding station recaptures.

Seven of the 12 Swifts were recovered in or near St. Cloud, Minnesota; one but five days after banding. Known causes of death were given as flying into a picture window, caught in a window screen, and flying into a moving car.

#### Summary

From the data secured by these banding operations, and general observations during the process, the following summary statements seem appropriate for Swifts at St. Cloud, Minnesota:

1. Swifts gather in flocks, sometimes numbering over 600 birds, preparatory to, and during, migration;
2. Flocks, or parts of them, apparently stay in a locality for some time during migration in spite of disturbance by banders;
3. They tend to avoid chimneys in which they previously had been disturbed;
4. Swifts tend to return to the general locality in which they previously were found;
5. The southern migration route of Swifts from St. Cloud is through or near Memphis, Tennessee;

Table 4

### ST. CLOUD SWIFTS TRAPPED AND RELEASED AT OTHER STATIONS

<i>Band Number</i>	<i>Date Banded</i>	<i>Date Recovered</i>	<i>Place Recovered</i>
20-158377	Aug. 29, 1952	Sept. 25, 1955	Memphis, Tennessee
20-158390	Aug. 29, 1952	Sept. 26, 1953	Memphis, Tennessee
20-158399	Aug. 29, 1952	Oct. 10, 1955	Baton Rouge, Louisiana
20-158467	Aug. 29, 1952	Oct. 11, 1952*	Memphis, Tennessee
20-158492	Aug. 29, 1952	Oct. 5, 1952	Memphis, Tennessee
51-87102	Aug. 29, 1952	Sept. 18, 1954	Memphis, Tennessee
51-87211	Aug. 29, 1952	Oct. 12, 1952	Memphis, Tennessee
		Sept. 18, 1954	Memphis, Tennessee
51-89120	May 31, 1953	Sept. 27, 1953	Memphis, Tennessee
51-89239	June 3, 1953	Sept. 26, 1953	Memphis, Tennessee
22-171700	Sept. 4, 1953	Sept. 18, 1954	Memphis, Tennessee
51-89669	May 24, 1954	Oct. 10, 1954	Memphis, Tennessee
51-89368	May 24, 1954	Sept. 25, 1955	Memphis, Tennessee
51-89775	June 1, 1954	Sept. 25, 1955	Memphis, Tennessee
51-89890	June 1, 1954	Sept. 18, 1954	Memphis, Tennessee
54-61444	Aug. 17, 1955	Sept. 25, 1955	Memphis, Tennessee

\* On this date No. 20-158467 was banded on the other leg at Memphis; and recaptured at St. Cloud Aug. 17, 1955.

Table 5

ST. CLOUD SWIFTS RECOVERED DEAD,  
OR AT OTHER THAN BANDING STATIONS

<i>Band Number</i>	<i>Date Banded</i>	<i>Date Recovered</i>	<i>Place Recovered</i>
51-87129	Aug. 29, 1952	May 31, 1955	St. Cloud, Minn. (dead)
51-89094	May 31, 1953	Fall, 1953	Foley, Minn. (dead)
51-89101	May 31, 1953	Sept. 18, 1953	St. Cloud, Minn. (dead)
51-89201	June 3, 1953	June 8, 1953	St. Cloud, Minn. (dead)
22-171327	Sept. 1, 1953	July 3, 1954	Red Lake, Minn. (dead)
22-171428	Sept. 1, 1953	May 27, 1954	Long Prairie, Minn. Caught in basement, released
51-89297	Sept. 4, 1953	May 23, 1954	St. Cloud, Minn. (dead)
51-89384	May 24, 1954	July 5, 1955	Eagle Bend, Minn. Band removed and released
51-89201	June 1, 1954	June 8, 1954	St. Cloud, Minn. (dead)
51-89958	Sept. 5, 1954	June 13, 1955	Kelliher, Minn. (dead)
51-89977	Sept. 5, 1954	July 18, 1955	St. Cloud, Minn. (dead)
54-61001	Sept. 5, 1954	June 14, 1955	North of St. Cloud, Minn. (dead)

6. The recorded recovery of banded Swifts, at other than banding stations, is less than one-half of one per cent; a low return indeed.

*Concluding Remarks*

It is obvious, when studying the returns from bird banding, that many more bands are recovered than are reported. The failure of reporting the bands is most often due to a lack of information about the procedure. All persons interested in birds should feel responsible for, and assist in, supplying information to the public about reporting recovered bird bands. When talking about birds, encourage your audience, whether it be a large group, a small group, or an individual, to look for and report recovery of banded birds. Newspapers welcome stories on bird recoveries. If the bird is dead the band, or at least the number of the band, should be sent to the Fish and Wildlife Service, Washington, D. C. with appropriate information such as the date and place of recovery, the kind of bird, and the probable cause of death. If the bird is taken alive the band should be read, the bird released, and the information reported to Washington.

Tell others about bird banding and how to report recoveries, won't you? Recorded information about birds will be increased manyfold if you do. — *St. Cloud Teachers College, St. Cloud, Minn.*

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# The Birds of Gooseberry Falls State Park

by

*Pershing B. Hofslund*

With the exception of the state park at Lake Itasca the avifauna of most of our park areas has been studied only incidentally. From June 13 to September 7, 1955 I served as park naturalist for Gooseberry Falls State Park in southeastern Lake county. During this period almost daily observations were made on the birds of the area, and it is on these observations that the following report is made.

The park, located some 40 miles northeast of Duluth, consists of 637.38 acres of land largely covered by second growth birch, poplar, and alder. The birch and poplar are rapidly reaching maturity and are being replaced largely by Balsam Fir. There are two good sized stands of Balsam Fir-White Cedar, and there is a sprinkling of such trees as Red and White Pine and Black and White Spruce. The park is divided into four areas by Highway 61 which runs northeast through the park and the Gooseberry River which flows east by southeast. Each of the four sections formed by the highway and river are easily reached through trails following along each bank of the river. Essentially, all of the sections are alike, although some habitat differences are brought about by the influence of the lake and the artificial conditions resulting from the establishment of one area as picnic and camping grounds. Such birds as waterfowl and shorebirds were generally found only in the areas near the lake and the Parula Warbler and Winter Wren were recorded only in the Cedar-Balsam woods.

One hundred and five species of birds were observed within the park boundaries or on the lake just off shore. Of

these, nests or nestlings were found for 35 species and the continued presence throughout the summer of 17 additional species indicated a breeding population of at least 52 species. The Red-eyed Vireo, Oven-bird, Redstart, Chestnut-sided Warbler, and Black-throated Green Warbler were, if not the most abundant, at least the most conspicuous of the breeding birds.

Generally, it can be said that the birds that were present were what one would expect to find in a northeastern Minnesota second-growth deciduous woods, influenced as it was by the mixture of conifers and the presence of a large body of water. The surprising and somewhat puzzling feature was the near absence or complete absence of species that one finds in basically similar habitats in northeastern Minnesota. For instance, adult Rose-breasted Grosbeaks were not found at all, and only immature birds appeared during fall migration. The Scarlet Tanager was recorded only once, a single male at 4:00 a.m. July 4. No Sharp-shins or Cooper's Hawks, no Baltimore Orioles, one pair of Catbirds, one pair of Hermit Thrushes, a surprising lack of Red-winged Blackbirds, and most unusual in my experience, the almost complete absence of Cowbirds. I did not have a single record of a young Cowbird being fed by host birds. Adults were seen on three occasions, all in the latter part of June and early July.

Nesting was underway by the time I arrived at the park, and it continued at least as late as August 30 when Cedar Waxwings still had young in the nest. The nesting season had two peaks, one occurring during the third week of June

and the second between the second and third weeks of August. For most birds the nesting season had ended by July 20, but late nesters such as the Goldfinches and Cedar Waxwings generally were most in evidence during the month of August. Cedar Waxwings were of interest in that a nesting pair of birds was located as early as June 20, and the latest nesting that I recorded was also of Cedar Waxwings, a nest with young on August 30.

Migration of non-nesters was noted as early as July 6 when four Least Sandpipers were found feeding at the edge of one of the beaches, but it was not until August 10 that a movement of any magnitude was encountered. From this day until the end of August new birds appeared in the park every day. The peak of the migration period occurred between the third and fourth week of August. The most spectacular movement was that of the Eastern Nighthawk. They were noted first on August 8, and from this date until August 29 they were recorded daily. On the day of August 19 a tremendous flight of these birds passed over the park. Just how many actually were in this movement would be difficult to estimate, but in a drive along the lake shore for a distance of roughly 13 miles a count was made of over 2000 individuals. The car was travelling at a speed of about 50 m.p.h., a rate which kept us ahead of the birds. A few individuals had been noticed early in the day, but the major flight did not start till around 4:00 p.m., and at 7:30 p.m. it was still going with hardly an interrupted view of the birds. Conservatively, at least 10,500 individual Nighthawks probably flew over Gooseberry that evening.

The following annotated list includes all of the birds observed in the confines of the park and the lake just offshore during the period delineated in the first paragraph of this paper.

COMMON LOON (*Gavia immer*) Re-

corded only twice during the summer. Three immatures were seen on August 10. These were possibly from nearby areas, but undoubtedly were not from nesting pairs in the park.

HORNED GREBE (*Colymbus auritus*)

Seen only as migrating birds during late August.

PIED-BILLED GREBE (*Podilymbus podiceps*) Recorded once in early September.

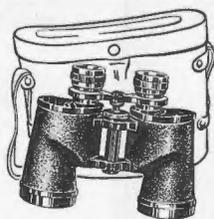
GREAT BLUE HERON (*Ardea herodias*) A lone individual recorded on June 18. Migrating birds were seen on September 6.

CANADA GOOSE (*Branta canadensis*)

A flock of 8 was seen migrating over the park on September 6.

BLUE-WINGED TEAL (*Querquedula discors*) Recorded only on September 5.

AMERICAN MERGANSER (*Mergus merganser*) A flock of 17 which were believed to be this species was seen on September 7.



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- RED-BREASTED MERGANSER (*Mergus serrator*) Apparently nested in the park. Young were first seen on August 2. Only a single female with a brood of four was recorded.
- SHARP-SHINNED HAWK (*Accipiter velox*) Only seen as migrants, the first record being on August 10.
- COOPER'S HAWK (*Accipiter cooperi*) A migrating bird seen September 7.
- BROAD-WINGED HAWK (*Buteo platypterus*) The only hawk known to nest in the park. A nest of one pair was found in the crotch of a Yellow Birch about 13 feet above ground. Apparently this nest held young on June 27.
- MARSH HAWK (*Circus hudsonius*) Seen patrolling the park in early June and July. There was no indication that this species nested in the park.
- OSPREY (*Pandion haliaetus*) A single bird, obviously in migration, seen August 30.
- DUCK HAWK (*Falco peregrinus*) Two immatures seen September 1.
- PIGEON HAWK (*Falco columbarius*) An adult bird was seen on July 26, but I have no further records of this species.
- SPARROW HAWK (*Falco sparverius*) Seen only in migration.
- RUFFED GROUSE (*Bonasa umbellus*) A female with 10 young seen on June 13 and again June 19. The flock was not seen after that date. Adults were seen occasionally during the summer.
- SORA RAIL (*Porzana carolina*) A single bird was seen on several occasions between August 10 and September 7.
- SEMI-PALMATED PLOVER (*Charadrius semipalmatus*) One seen August 24.
- KILLDEER (*Oxyechus vociferus*) One seen July 30.
- GOLDEN PLOVER (*Pluvialis dominica*) One seen August 31.
- WOODCOCK (*Philohela minor*) Individuals seen on several occasions in late June.
- SPOTTED SANDPIPER (*Actitis macularia*) Locally common throughout the summer.
- SOLITARY SANDPIPER (*Tringa solitaria*) Two were seen on July 15.
- LESSER YELLOW-LEGS (*Totanus flavipes*) Seen occasionally after August 11.
- PECTORAL SANDPIPER (*Pisobia melanotos*) Occasionally after the middle of August.
- LEAST SANDPIPER (*Pisobia minutilla*) First of the migration shorebirds noted. Four seen on July 6. Other records throughout August.
- STILT SANDPIPER (*Micropalama himantopus*) One seen on September 7.
- SANDERLING (*Crocethia alba*) One bird recorded on August 31.
- HERRING GULL (*Larus argentatus*) Several nesting pairs on the bluffs of the Gitchi Gummi Trail. Young still in down seen July 2.
- BLACK-BILLED CUCKOO (*Coccyzus erythrophthalmus*) Several nesting pairs in the park.
- NIGHTHAWK (*Chordeiles minor*) Feeding individuals seen on several occasions during early summer. Migration began at least as early as August 8 and continued to some degree at least as late as September 7. Peak flight August 19.
- CHIMNEY SWIFT (*Chaetura pelagica*) Seen occasionally during the summer.
- RUBY-THROATED HUMMINGBIRD (*Archilochus colubris*) One nest was found on July 4. At that time the female was on the nest which was located about 18 feet up in a Paper Birch. On July 19 there were still young in the nest.
- BELTED KINGFISHER (*Megaceryle alcyon*) Two fresh nestholes, but young were out of the nest on July 13.
- FLICKER (*Colaptes auratus*) Several pairs noted throughout the summer.
- PILEATED WOODPECKER (*Hylatomus pileatus*) Evidences of this wood-

- pecker were noted throughout the park, but it wasn't until September 2 that any were actually seen. There were two on that date, one of which seemed to be an immature still being squired by an adult.
- YELLOW - BELLIED SAPSUCKER** (*Sphyrapicus varius*) First noted on September 7.
- HAIRY WOODPECKER** (*Dendrocopos villosus*) At least one pair was known to be a resident of the park.
- DOWNY WOODPECKER** (*Dendrocopus pubescens*) Probably the most abundant woodpecker in the park. One nest was found. On July 26 young were being fed in a nest located about 35 feet high in a Balsam Poplar that was still living.
- EASTERN KINGBIRD** (*Tyrannus tyrannus*) First seen in the park on August 10, after which they were quite common until September 5.
- CRESTED FLYCATCHER** (*Myiarchus crinitis*) There were several pairs in the park during the breeding season.
- EASTERN PHOEBE** (*Sayornis phoebe*) One nest was found, June 29, on the park superintendent's cabin. Several vacant nests, apparently this year's nests, were found on trail shelters.
- YELLOW-BELLIED FLYCATCHER** (*Empidonax flaviventris*) Seen in fall migration.
- ALDER FLYCATCHER** (*Empidonax traillii*) Common during breeding season.
- LEAST FLYCATCHER** (*Empidonax minimus*) Common during breeding season.
- WOOD PEWEE** (*Contopus virens*) Only one bird was seen during the breeding season.
- TREE SWALLOW** (*Iridoprocne bicolor*) Seen only during migration.
- PURPLE MARTIN** (*Progne subis*) Seen several times during breeding season, but did not nest in the park.
- CANADA JAY** (*Perisoreus canadensis*) One bird seen on June 19 by Mrs. J. K. Bronoel.
- BLUE JAY** (*Cyanocitta cristata*) A few birds seen throughout the summer.
- RAVEN** (*Corvus corax*) Recorded on June 19 and 25. On the latter date there were four birds in one group.
- CROW** (*Corvus brachyrhynchos*) Common throughout the summer.
- BLACK-CAPPED CHICKADEE** (*Parus atricapillus*) Common throughout the summer. Copulation noted as late as June 25.
- RED-BREASTED NUTHATCH** (*Sitta canadensis*) Common throughout the summer. On June 26 one pair was feeding young out of the nest.
- HOUSE WREN** (*Troglodytes aedon*) Common throughout the summer. One nest was found containing young on June 17. The nest was about 10 feet up in a birch stub.
- WINTER WREN** (*Troglodytes troglodytes*) At least one pair lived in the park during the breeding season.
- CATBIRD** (*Dumetella carolinensis*) Only one pair found in the park during the breeding season. They were feeding young on July 6.
- BROWN THRASHER** (*Toxostoma rufum*) At least three pairs were residents of the park during the breeding season.
- ROBIN** (*Turdus migratorius*) A common park resident. The following nests were found: June 20. Female on a nest in the crotch of a Balsam Poplar. The nest was placed about 24 feet high; July 13. Female building a nest about 10 feet high in a Speckled Alder crotch; July 15. A nest placed about 7 feet high in a White cedar. Female was sitting on eggs that were apparently ready to hatch, as she had to be lifted off the nest before I could examine it.

(Continued on page 68)

This small island, a few hundred feet from the mouth of the Knife River in Lake county, Minnesota, supports a nesting colony of Herring Gulls.



# GULL ISLAND

*by*

*Henry Gilbert and P. B. Hofslund*



In early June the Duluth Bird Club spends an afternoon banding the nestling gulls.

The banders work in pairs; one locating and holding the young gulls, the other applying the bands.



Some gulls are too small to band, others are missed, but altogether about 500 young are banded each year.

Most of the recoveries have been from the Great Lakes region, but some have come from as far away as Nain, Labrador and Vera Cruz and Tampico, Mexico.



**HERMIT THRUSH** (*Hylocichla guttata*) Only one singing male was noted during the breeding season. During the fall migration it was the least common of the thrushes that breed in the park.

**OLIVE-BACKED THRUSH** (*Hylocichla ustulata*) Several breeding pairs. Very common during migration.

**VEERY** (*Hylochichla fuscescens*) The most common of the breeding thrushes, but was probably second to the Olive-backed in the number that went through the park during the fall migration.

**GOLDEN-CROWNED KINGLET** (*Regulus satrapa*) At least two pairs in the Balsam-Cedar woods. Probably breeders.

**CEDAR WAXWING** (*Bombycilla cedrorum*) Very common. The following nests were found: June 13. Nest about 20 feet high in a Black Ash; August 6. Nest about 7½ feet high in Mountain Maple. At least three eggs in nest, one of which hatched August 10. Nest empty August 13; nest in Speckled Alder at about 7 feet in height. It contained one egg and two newly hatched young.; August 16. Nest in Speckled Alder and placed about 14 feet above the ground. Contents of the nest were not examined.; August 20. Nest 6 feet up in a Green Alder. Contained three young that appeared to be about three days old. Young were still in the nest on August 30, but on August 31 all three young were dead in the nest. There had been a sudden drop in the temperature on the previous night.; August 21. Adults were feeding young in nest built in a Speckled Alder at a height of roughly 12 feet.

**BLUE-HEADED VIREO** (*Vireo solitarius*) A few pairs nested in the park. On June 25 one pair were feeding young, apparently in a nest. On June 30 another pair were feeding young that had been out of the nest for some time.

**RED-EYED VIREO** (*Vireo olivaceus*) This was perhaps the commonest bird in the park, but the only nest that I found was an empty one in an alder that had recently been cut down. During the last two weeks of August there were hundreds of Red-eyes all over the park area, but particularly in the campgrounds. By September 7 this was reduced to just a few individuals.

**BLACK AND WHITE WARBLER** (*Mniotilta varia*) Fairly common throughout the park. No nests were found, but young out of the nest were seen at various times.

**TENNESSEE WARBLER** (*Vermivora perigrina*) Seen only during fall migration and then uncommonly.

**ORANGE-CROWNED WARBLER** (*Vermivora cclata*) Seen only during the fall migration on August 29.

**NASHVILLE WARBLER** (*Vermivora ruficapilla*) Locally common. On June 22 a pair was feeding a young bird just out of the nest.

**PARULA WARBLER** (*Parula americana*) Only one pair was known to be a resident in the park. No young or other evidence of successful breeding was noted.

**MAGNOLIA WARBLER** (*Dendroica magnolia*) At least three pairs were known to live in the park. On June 24 a young bird, barely able to fly, was banded.

**CAPE MAY WARBLER** (*Dendroica tigrina*) An adult female appeared on the campgrounds August 14. It was still at the same spot feeding on Red Osier berries on August 21.

**MYRTLE WARBLER** (*Dendroica coronata*) A common warbler. Undoubtedly was double-brooded during the summer of 1955. The following nests were located: June 14, 1955. The nest was placed on a White Cedar bough overhanging the river at a height of about 15 feet from the tree

base. There were young in the nest at this date.; July 12. Female was on a nest placed at a height of about 24 feet in the crotch of a birch tree. This nest fledged young.; July 18. This nest was well hidden about 5 feet from the top of a 30 foot Balsam Fir. The adults were feeding young in the nest on this date.

**BLACK-THROATED GREEN WARBLER** (*Dendroica virens*) This species was one of the most abundant birds of the park. It gave every indication of being double brooded. On June 21, adults were feeding young just out of the nest, and again on June 23 the same thing was observed for another pair. On July 18 a pair was feeding young that had left the nest, but apparently were still within a few feet of it. The nest was about 24 feet high in a White Cedar. On August 6 a male was feeding a young bird that appeared to be semi-independent. On August 10 this bird was still being fed by the male.

**BLACKBURNIAN WARBLER** (*Dendroica fusca*) On July 13 a pair was feeding semi-independent young. On July 16 another pair was feeding young in a well concealed nest near the top of a 36 foot Balsam Fir.

**CHESTNUT-SIDED WARBLER** (*Dendroica pensylvanica*) One of the most abundant birds in the park. On June 18 a nest was being built in a small Beaked Hazel bush. On June 27 a nest was found placed about three feet up in a birch sapling. The nest contained four young at that date. They left by July 1. A pair was feeding semi-independent young on July 17. During the first week of August there were many immature Chestnut-sided Warblers in evidence.

**BAY-BREASTED WARBLER** (*Dendroica castanea*) One bird was seen on August 13.

**PINE WARBLER** (*Dendroica pinus*)  
Two birds were seen on September 7.

**PALM WARBLER** (*Dendroica palmarum*) They were first seen August 26. After that date they became increasingly abundant until September 5, after which the numbers were noticeably less.

**OVEN-BIRD** (*Seiurus aurocapillus*) If not the most abundant bird in the park, it certainly ranked second. They were feeding young as early as June 25 and as late as July 20. They were still present in the park when I left on September 7.

**NORTHERN WATER-THRUSH** (*Seiurus noveboracensis*) First seen on August 10 and last on August 30.

**MOURNING WARBLER** (*Oporornis philadelphia*) An abundant warbler in the park. On July 5 at least four pairs were feeding young just out of the nest.

**YELLOW-THROAT** (*Geothlypis trichas*) A common warbler in the park. A nest was found on June 22 containing five eggs. It was built at the base of a Red-osier Dogwood about six inches above ground. The first egg hatched at 4:00 p.m. that day and the rest of them sometime before 9:00 the next morning. On July 14 a pair was feeding young recently out of the nest. As they could not fly they were probably less than 11 days of age. On August 11 a pair was feeding semi-independent young and another pair was feeding bob-tailed young probably younger than 20 days of age.

**WILSON'S WARBLER** (*Wilsonia pusilla*) Recorded on August 13.

**CANADA WARBLER** (*Wilsonia canadensis*) Locally common. A nest was found on June 28 which contained four young. The nest was sunk in a hillside under a White Cedar seedling. The young remained in the nest at least as late as July 1.

**REDSTART** (*Setophaga ruticilla*) One of the very common birds in the park. The following nests were found: June

19. Nest was built in an alder at a height of about 7½ feet. It contained four eggs.; June 28. A nest at about the same height, also in an alder and also containing four eggs.; June 28. A nest placed about 8½ feet high in the crotch of a birch. This nest contained young. On July 3 a young bird was found dead in the nest.; July 9. A female was building a nest in the crotch of an alder at a height of about 12 feet.
- RED-WINGED BLACKBIRD** (*Agelaius phoeniceus*) A few birds probably nested in the park, but they were relatively scarce. Large flocks began appearing late in August and some birds were still present when I left.
- BRONZED GRACKLE** (*Quiscalus versicolor*) Present only during late August and then only one or two individuals.
- COWBIRD** (*Molothrus ater*) A few birds were seen early in June. Not a single case of parasitism was noted during the summer in the park.
- SCARLET TANAGER** (*Piranga olivacea*) Only one record for the summer.
- ROSE-BREASTED GROSBEAK** (*Pheucticus ludovicianus*) A few immatures appeared early in August.
- INDIGO BUNTING** (*Passerina cyanea*) A male bird was seen several times during the early part of the summer.
- PURPLE FINCH** (*Carpodacus purpureus*) There were several nesting pairs. During the second week of August this was one of the most frequently encountered birds in the park.
- PINE SISKIN** (*Spinus pinus*) This species arrived in the park around the middle of July. It was still present September 7.
- GOLDFINCH** (*Spinus tristis*) Common in the park, but only one nest was found. It was located about 12 feet high near the top of a Speckled Alder. On August 11 the parents were feeding young birds in this nest. The young appeared to be well feathered.
- SAVANNAH SPARROW** (*Passerculus sandwichensis*) One bird was seen early in the summer (June 14). None was seen after that date until fall migration.
- SLATE-COLORED JUNCO** (*Junco hyemalis*) On August 13 two birds were seen.
- CHIPPING SPARROW** (*Spizella passerina*) Very common. One nest was found on June 27. It was in a seven foot White Spruce about two feet above ground and contained three young.
- CLAY-COLORED SPARROW** (*Spizella pallida*) A few, apparently nesting, pairs were found.
- WHITE-CROWNED SPARROW** (*Zonotrichia leucophrys*) First seen on September 7.
- WHITE-THROATED SPARROW** (*Zonotrichia albicollis*) A fairly common nesting bird. Young of this species were seen as early as June 22 and these were semi-independent. A nest was found on June 28, sunk in the ground at the base of a Mountain Maple. It contained four well feathered young that left the nest June 29. The biggest part of the fall migration occurred the last part of August and the first part of September. They were still abundant on September 7.
- SWAMP SPARROW** (*Melospiza georgiana*) This species was not noted until late August, but by the first week of September there were many immature birds seen in the park.
- SONG SPARROW** (*Melospiza melodia*) A common bird in the park, but only one nest was found. This one was located in a rose bush about one foot from the ground. It contained three well feathered young which left the nest on July 9. — *Biology Department, University of Minnesota, Duluth Branch, Duluth.*

# Seasonal Report

by

Mary Lupient

The weather in February was about normal throughout the state until the last few days of the month when it became very cold. The first two weeks of March brought very severe weather. A record cold for March 12 showed a reading of 21° below at International Falls and 8° below at the Twin City airport. Cold weather continued on through April with the exception of the third week when temperatures were so mild that hepaticas and bloodroots bloomed abundantly in sheltered spots around the Twin Cities. In northwestern Minnesota thawing snow caused flooding in the Red River valley, made roads impassable and created hardships for inhabitants. However, it provided a haven for migrating water birds. Winter was with us again the last week in April. Temperatures fell below freezing every night throughout the state and in Rochester the reading was 12° April 30. In southern sections about 18 inches of snow fell April 28 and in some northern areas snow was deep at date of this writing, May 1. Dr. D. W. Warner, Robert Dickerman and Al Grewe drove through Mahnomen and Becker counties to Itasca Park, April 22. Lakes were still frozen and there was several feet of snow; in some places drifts were many feet deep. A letter from J. C. Carlsen, biologist at Mud Lake Refuge, informed Harvey Gunderson that the deep snow and extreme weather had made survival difficult for Sharp-tailed Grouse, Ruffed Grouse and Hungarian Partridge. Pinnated Grouse were booming in the Rothsay Slough area April 14 to 21 according to Dr. Warner, Robert Dickerman and Al Grewe. They stated that about 200 Sandhill Cranes, 50 Marbled Godwits, hundreds of Lapland

Longspurs, a few Chestnut-collared Longspurs, great numbers of Slate-colored Juncos and a few Oregon Juncos were in the area on the above date. A few Vesper and Savannah Sparrows were there too, singing.

The late cold spring retarded migration peaks, although a few individuals of some species arrived on time. Blue, Snow and Canada Geese migrated in eastern and western sections the first half of April. In the Mississippi valley they flew confusedly over the frozen marshlands looking for a place to land.

There was no open water in March except in the rivers, and the duck migration was mostly delayed until the ice thawed in shallow water. Scaup appeared on the Mississippi, March 2. In eastern and southern sections Loons, Grebes, Cormorants and Mergansers followed the opening of the lakes during the first two weeks of April and with American Golden-eyes were still present May 1.

A large migration of Great Blue Herons appeared April 2 in the marshes along the Minnesota River. They stood about in disconsolate groups wherever there was a bit of water. A few Black-crowned Night Herons came with them. A Yellow-crowned Night Heron was brought to the Museum of Natural History.

The first report of Whistling Swans was by Ray Glassel who saw four, March 31, near Savage in water that stays open all winter. Several hundred reportedly arrived in the southern Mississippi valley up as far as St. Paul during the first part of April. Dick O'Neill reported that about 100 were at Pine Bend, April 2. About April 15, a large flock

came to the marshes adjacent to the Cedar Ave. bridge, Minneapolis, where crowds gathered to watch them. According to Beth Doeringsfeld they left the area, April 25. Whistling Swans were seen in flood waters at MacGregor, April 13, reported by John Futcher.

A White Gyrfalcon was seen by Mrs. Josephine Herz and Mrs. Rachel Tryon along Hwy. 101 near Shakopee, March 26, the second record of this rare bird for this winter. In southeastern Minnesota, hawks in migration were reported singly and in small groups during the last half of March and all of April. They were reported from Dodge, Mower and Winona counties by William Longley, April 3. He reported a Ferruginous Rough-legged Hawk on that date in the same area. A Pigeon Hawk was seen by this writer April 2, a Ferruginous Rough-legged Hawk, April 19, and three Ospreys, April 26, all in the Minnesota River Valley near Savage. Marsh, American Rough-legged and Red-tailed

Hawks were seen by Dr. W. J. Breckenridge between Washkish and Baudette, April 4. On April 5, he found a Bald Eagle at nest five miles southwest of Norris Camp. Lester Magnus flew at a height of 15 feet above this nest and the bird did not leave, a probable indication of eggs or tiny young. According to J. C. Nelson several Golden Eagles lived at Mud Lake Refuge during the winter.

Small numbers of Horned Larks were reported in Dodge county February 10 by William Longley. There were hundreds at Baudette, April 4, according to Dr. Breckenridge. The peak of the migration in the Minnesota River Valley near the Twin Cities was February 22.

A few Tree Swallows appeared April 1 and not many more were around by the end of the month. A few Bank and Rough-winged Swallows were busily catching insects at the Isaac Walton bass ponds April 22. A very small number of Purple Martins appeared in April, fortunately because of the weather. Warblers didn't migrate either, except for a small number of Myrtles, two of which got as far as Itasca Park, April 22, according to Dr. Warner. Hermit Thrushes were slow in coming and no Olive-backed or Grey-cheeked Thrushes were reported by date of this writing. Robins were still migrating in large numbers the last week in April although some had arrived everywhere in the south half of the state by the last of March. William Longley reported a Bluebird in Winona county, March 22.

There was a peak migration of both Kinglets at the Isaac Walton bass ponds, Minneapolis, April 23. After that date they apparently passed on, and it is to be hoped that they survived the weather.

Shore birds were very scarce, small flocks of Pectorals and Yellow-legs appeared and there was a light migration of Wilson's Snipes, April 24. This writer saw a flock of 19 Hudsonian Curlews near Minneapolis, April 26. The first

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Killdeer record came from William Longley, Winona county, March 21.

Red-winged Blackbirds arrived a few days later than usual and there were myriads of them. Rusty Blackbirds appeared at the usual time, and the first Yellow-headed Blackbirds came to the Isaac Walton bass ponds April 26. Apparently there was an abundance of crows through the winter. There were several reports, most noteworthy was one from Mrs. W. C. Olin, St. Paul, who said hundreds passed her house every afternoon about 3 p.m., always flying in a northerly direction, possibly to roost.

Western Meadowlarks were singing everywhere in the south half of the state March 16 to 20, and in early April were reported in northern sections by Dr. Breckenridge.

Hudsonian Chickadees were reported during the winter by Marie Aftreith, Schroeder. She saw an Arctic Three-toed Woodpecker and also a Fox Sparrow which for a time came to her feeder, but she thinks it was killed by a Bluejay. Mrs. C. E. Peterson, Madison had a Hudsonian Chickadee at her feeder all winter and also three Harris's Sparrows through February and first part of March. Two pairs of Black-capped Chickadees were excavating in dead tree trunks at the Isaac Walton bass ponds, April 2. The cavities were then large enough so that the chickadees were completely hidden. Each time they left the vicinity they came out with a small chip which they carried to the branch of a nearby tree and dropped. The observation lasted 20 minutes, a procedure that followed each time they came out.

Song and Swamp Sparrows generally arrived later than usual, although a few individuals came at the regular time. Fox Sparrows arrived along the Mississippi valley, April 1, the peak of the migration was a week later and most of them had gone by April 20. Some Tree Sparrows and Slate-colored Juncos

were still around at date of this writing. There was a very large population of these two species this season, many flocks numbering hundreds were seen. There were large flocks of Redpolls as well. A flock was seen at Itasca Park, April 22, which was the last report received.

Three White-winged Crossbills were reported by Mrs. E. W. Joul. She saw them in Minneapolis, February 21, and happily enough she found 10 Red Crossbills, April 24, also in Minneapolis. These are the only reports of crossbills for the period February 1 to May 1.

Large flocks of Snow Buntings were reported from southern sections during February. A letter to Harvey Gundersen from J. C. Carlsen contained the following very interesting report of the recovery of a banded Snow Bunting, "On February 1, 1956, Mrs. Johnnie Nelson drove through a flock of Snow



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Buntings on the way from her farm to Holt, Minnesota. Upon reaching Holt it was noted that one of the birds had been killed and became lodged in the radiator grill. Upon examination it was noted that the bird carried a band with the following information: Zoolog. Museum, Denmark, 877284. The band was brought to the refuge office in the hope that we could find out where it had been banded. We dispatched a letter to the Zoological Museum at Copenhagen giving all the details, and received a reply from a Mr. Brink-Olsen on March 19. He stated that he did not have complete information on this bird, but that the band had been sent to Niaquornat, Umanak District, Greenland in March 1953. This is all we know at the present time. I might mention in passing that Snow Buntings are very common winter residents here. They generally appear during early October and are present until heavy thawing starts in the spring. Usually this is about March 15 but this year they were present until March 25. Our location is approximately twenty miles northeast of Thief River Falls, Minnesota."

In 1955, Carl M. Johnson, Worthington, banded 2501 individuals of 96 species. His records came too late for publication in the 1955 Flickers, but the following banding records are interesting and noteworthy. A Varied Thrush arrived in the fall of 1955 and fed for several days on privet berries. On May 5, 1955, a Snowy Egret appeared along

a drainage ditch near Worthington. The wind was too strong to take good pictures of it. He trapped and banded a Nelson's Sparrow of which he has pictures.

The Minnesota Ornithologists' Union and the Thunder Bay Naturalists' club held their annual joint meeting at Grand Marais February 18-19. It was a most successful meeting, 114 were present. The lake was open all along the shore and visibility was good. Herring Gulls were very abundant and four Glaucous Gulls were observed. A pair of Buffleheads were in the bay at Grand Marais and two rafts of Old Squaws were seen near Hovland. Some observers saw a Hudsonian Chickadee at a feeder in Grand Marais. At one point along the shore, 46 Bohemian Waxwings were flying about in the trees. Suddenly they all flew down to a hedge and gathered into such a concentrated bunch that they had the appearance of a huge fluttering bouquet, an unusual and beautiful sight.

Everywhere on this trip the forests were of exceptional beauty, no mar on the pure white snow except interesting animal tracks. The evergreens wore tufts of snow and in the later afternoon the birches and aspens cast long shadows on the crystalline whiteness beneath. There was sunshine and a light breeze during both days which, with the companionship of our congenial Canadian friends, made for a very happy outing. — *Minneapolis, Minn.*

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# The Canadian Lakehead

*Edited by A. E. Allin*

The winter of 1955-56 will be remembered for its length and severity. Commencing with the freeze-up of November 2, temperatures remained at consistently low levels until the present date (April 24), although we were spared the prolonged periods of extremely sub-zero temperatures sometimes experienced. The total snowfall of 160 inches was a new record, well above the 148.8 inches which fell in 1936-37. The 11 inch fall of April 5 and the 17 inches on March 29 were records for the respective months. March was relatively mild, but April was very cold, particularly at night. Consequently the snow melted slowly, is still deep in the woods, and drifts are present in shaded areas of the cities. Small streams began to break up about April 11, and are now in flood, but some portions of the Kaministiquia River are still ice-blocked and the local Bay is only partially open.

As usual the first regular migrants were crows and Herring Gulls which arrived on March 18, although a Bald Eagle had been seen over Sibley Peninsula on March 2, a record early for that species. An American Golden-eye was picked up in a Fort William yard on March 15 but none was seen during the next month.

Common Redpolls also arrived in mid-March. A Saw-whet Owl was found dead on March 20. To date, however, we have seen only 35 species in 1956, compared with 60 species in 1954 and 49 in 1955. The first butterfly, a Milbert's Tortoise-shell, was seen on April 18. A Skunk was observed grubbing on April 22, and both Wood Frogs and Swamp Tree-Frogs were heard on the same date.

Probably as a result of the heavy snows covering the weeds and a relatively poor crop of fruit and seeds on the

trees, the late winter of 1955-56 was a poor one for bird-watching. Snow Buntings were only reported once and Redpolls were uncommon. There were no reports of Pine Siskins, Purple Finches, or crossbills. Pine Grosbeaks had been fairly common in the fall of 1955, then decreased in numbers to become more common in February. Their numbers steadily decreased and none was seen after mid-March. Evening Grosbeaks were abundant, possibly because of feeding stations. The Hogarths fed 125 pounds of sunflower seeds to their flock. These Grosbeaks were common across Ontario and south to Lake Ontario. No Waxwings were reported although Bohemians were common in southern Manitoba. The only Northern Shrikes were reported in mid-April by R. Robb and J. Lowcock.

The majority of our resident species were present in their usual numbers. Pileated Woodpeckers were reported frequently, and this species is undoubtedly increasing in numbers. The Red-breasted Nuthatch on the other hand was reported on only one occasion. Canada Jays were present in their usual numbers after being very abundant in the fall. Black-capped Chickadees and a few Brown-headed Chickadees appeared regularly at the feeding station in Chippewa park. Mr. Hollenbeck states the latter fall prey to cats more readily than do the Black-capped.

Few summer residents were reported after Christmas. A female American Merganser fed on dead trout eggs from the Port Arthur fish hatchery at the mouth of Current River. Both Black Ducks and Mallards were reported in open water at the Dorian hatchery. A Bronzed Grackle apparently wintered successfully in Fort William, but the first wintering Brewer's Blackbird dis-

appeared in mid-February. A Brewer's wintereed at Dryden where a Magpie was taken in a trap, according to Mrs. L. R. Howe. The Magpie is a rare visitor to Ontario.

Apart from the few March arrivals noted earlier, migration commenced on April 1 when a Red-breasted Merganser was seen by the Hantons, 18 days earlier than it had been previously recorded here. A Pied-billed Grebe picked up on April 4 was a fairly early record. Mrs. Knowles reported the first Robins and Slate-colored Juncos on April 7. The Robbs were fortunate enough to see an Oregon Junco on April 14. Great flocks of Starlings were seen on April 15. These birds were undoubtedly migrants, ready to disperse throughout the country. Relatively few wintered in the district.

Following the severe storm of April 5 the first hawks were reported. Sparrow Hawks appeared on April 9, and were abundant on April 15. A Goshawk was seen on April 10. The first Marsh Hawk was seen on April 13, and the first Red-tailed on April 15. A Bald Eagle was seen near an old nesting site on April 10. The Allins saw three American Rough-legged Hawks on April 22.

The first wave of migrating waterfowl arrived on April 14-15 when Canada Geese, Pintails, Mallards, Black Ducks, American Golden-eyes and American Mergansers were reported. Killdeer were first seen on April 15. A Great Blue Heron was reported west of the Lakehead on April 11, although one wondered where it could obtain food with the lakes still frozen and the small streams only commencing to break up. Black Ducks are now more abundant than we have ever seen them, but only a few Pintails and Mallards are present. C. E. Garton reported the first Scaup sp. and a single pair of Ring-necked Ducks on April 22. K. Denis reported the first Buffleheads on the same date.

Probably the greatest change in local fauna in recent years has been in our

fish population — not so much in the status of native species but in the number of new species which have been deliberately introduced or have accidentally gained entrance to local waters. The four species which fall into the latter category include the Smelt, Sea Lamprey, Carp and Fallfish. Those deliberately introduced include Brown Trout, Rainbow Trout, Ouananiche or Land-locked Salmon, the hybrid Splake or Wendigo, and Black Crappie.

The Sea Lamprey entered Lake Superior through the St. Mary's River about a decade ago. It is now relatively common and is known to breed in several rivers flowing into Lake Superior, northeast of the Lakehead. A considerable percentage of our Lake Trout now show Lamprey marks and fear is expressed lest the local trout fishery be destroyed through the ravage of this destructive cyclostome, as it has been in Lakes Huron and Michigan.

The Carp is the most recent introduction to local waters where it was probably released by bait-fishermen who brought it in from distant parts. An adult ripe male, weighing eight pounds was taken at Rossport on August 13, 1954. I have previously reported an 82 mm. specimen which I took in Fort William Harbour on September 18, 1954. A local duck hunter caught a 140 mm. specimen in the same area on November 22, 1955. There is also a record for Lake Helen in the Nipigon watershed. It is possible these were original introductions. It is likely however that they are now breeding locally, although it had not been thought likely Carp would find the cold waters of Lake Superior a suitable habitat. If they do increase in numbers they may cause damage to local marshes by destroying the vegetation. This would be more dangerous in our inland lakes than in Lake Superior.

The Smelt was first reported locally in the early forties and my earliest record is a 54 mm. young of the year, which I took in Lake Superior east of Port Arthur on July 25, 1943. They now

run the local streams in countless millions in late April, providing sport and food for thousands of enthusiastic "smelters". It is not likely this introduction has done any harm in Lake Superior. Recently, however, it has been introduced into one of our inland trout lakes and here it may compete with the native species to the detriment of the latter.

Just as the Welland Canal permitted the Sea Lamprey to reach the lakes above Niagara Falls, so diversion channels may permit other species to enter waters where they were not native. We believe such a channel permitted the Fallfish to gain access to Lake Superior from a tributary of the Albany River which flows into Hudson's Bay. The only specimen of Fallfish from the Lake Superior drainage was one we took in Cedar Creek, a branch of the Kaministiquia River, on August 22, 1943. This species may have entered by way of either the Ogoki-Nipigon or the Kenogami-Aguasabon diversion.

The Black Crappie is the only species deliberately introduced other than several members of *Salmonidae*. A few years ago a number of adults from the Rainy River district were planted by fish and wildlife officials into a small lake on the Sibley Peninsula. It was thought a pan-fish of this type would be a desirable addition to our fish fauna particularly in view of the increasing numbers of American tourists visiting that delightful area. To date there is little data on whether the introduction was successful.

The first trout to be introduced into Lake Superior was probably the Rainbow. It is now fairly common in Lake Superior where it is occasionally taken trolling. In spring it runs up the local streams to spawn and for several weeks provides sport for local anglers. Since it prefers the lower stretches where the water is warmer it provides little competition for the Brook Trout. Recently an occasional Brown Trout has been taken. Since these have not been intro-

duced into the Ontario waters of Lake Superior, they must have migrated across the boundary from Minnesota where they occur in many streams as well as over the rocky reefs. Here they spawn in October and November. They, too, thrive in waters too warm for the native Brook Trout. There are some vague records of King Salmon being taken locally in Lake Superior, but none can be confirmed. Dr. Abbott once showed me a specimen he had taken angling at the mouth of the Arrowhead River, and there are a few other records for the Minnesota waters of Lake Superior where they were introduced years ago.

The Fish and Wildlife Division of the Ontario Department of Lands and Forests has introduced two other members of the *Salmonidae*. The first of these is the Land-locked Salmon or Ouaniche, a native of a few lakes of northern Quebec, about Lac. St. Jean. This species was successfully introduced into Trout Lake near North Bay where it found wind-swept gravelly shores acceptable sites to replace the rapid streams of its native home. Plantings have recently been made into two local lakes. There is no evidence that it was successful in one of these, but ice-fishermen have taken a few from the second area. The limit is one fish a day. They are best taken in early spring by trolling a long streamer fly in the wake of a fast-travelling motorboat.

The Windigo or Splake, a cross between male Brook Trout and female Lake Trout, has been introduced into Cavern Lake northeast of the Lakehead. This hybrid supposedly grows more rapidly than Brook Trout, but retains the fighting qualities of that species. In Cavern Lake, during 1955, it took bait so readily that too many were taken. Since it apparently does not reproduce naturally, it may prove less valuable than had been anticipated. — *Regional Laboratory, Ontario Department of Health, Fort William, Ontario.*

## Notes of Interest

**WATERFOWL BREEDING PAIR SURVEY OF RED LAKE DITCHES** — On May 18, 1955 approximately 85 miles of drainage ditches in the Red Lake Game Preserve district were surveyed for breeding pairs of waterfowl by air with the Warden Service airplane from Warroad with John Parker, pilot, and Lester T. Magnus, area game biologist. On May 24 approximately 115 miles of drainage ditches were surveyed for an approximate total of 200 miles for the two dates.

The areas covered in the Red Lake Game Preserve district were 38 miles in the Winter Road Lake-Hiwood area, 47 miles in and near the "Moose Range", 48 miles in the Skime-Moose River area and 67 miles in the bog Schilling to Hillman Lake area. Potholes and lakes in the area were also surveyed on the flight. Ditch width probably averaged ten feet, so if the lineal miles covered are converted to acreage, approximately 250 acres were covered. On 200 miles of ditches, 43 total pairs of waterfowl were seen plus two groups, or one pair per 4.65 miles of ditch. Species seen were Blue-winged Teal, 9 males; Mallard, 20 males and one pair; Ringneck, 1 male and 5 pairs; Baldpate, 3 males and one pair; and unidentified Dabbler, one pair; and Lesser Scaup, 2 males and 2 groups.

An effort was made to sample all types traversed by ditches in the area: black spruce bog, leatherleaf bog, willow, aspen upland, jack pine, sedge, etc. Some of the ditches, of course, had beaver flowages or ran into burnouts or lakes. Ducks were found mostly in the more open types such as leatherleaf-bog birch, bog birch-scrub willow or aspen-willow. Most Blue-winged Teal were in the western portion of the Moose River-Skime area or where mineral soil and upland are more closely adjacent to the ditches. Ringnecks and the scaup were seen where ditches passed through or were adjacent to burnouts or beaver flowages. Surprisingly enough, the Mallards, 16 of 21 total pairs, were in the more open Labrador tea-leatherleaf-stagnant spruce type far from upland and/or mineral soil. Actually, the Mallards were represented by only one visible pair and 20 males; thus it is possible that the female Mallards belonging to the 20 males were nesting elsewhere.

The duck population on the 200 miles of ditches sampled is low —one pair per 4.65 lineal miles. Production, using an average brood size of six and assuming 50 per cent nesting success, would be 129 ducks, or .65 duck per mile, or in numbers — 27 Blue-winged Teal, 63 Mallards, 18 Ringnecks, 12 Baldpates, 6 Scaup, and 3 unidentified dabblers.

No attempt was made to determine production on potholes and lakes because these water areas were not all classified as to type and area. It is not known what the total miles of drainage ditches in the Red Lake Game Preserve district amount to, so a total production figure for the area cannot be arrived at. Another factor to be considered that would probably raise production figures is the fact that no ditches in or adjacent to settled land were surveyed. Some ditches where settlers at one time attempted to farm were covered, but none where current agricultural operations are in progress and where it would be reasonable to expect more waterfowl. — *Lester T. Magnus, Minnesota Division of Game and Fish, Roseau. Work completed on P-R PROJECT W-11-R-16.*

\* \* \*

**KILLDEER FEEDING** — On Saturday, October 8, 1955, at Mother Lake, south of Minneapolis, I saw a Killdeer acting in a way that was strange to me. It appeared to be feeding on a mud bar, and it would reach out with one foot and gently and rapidly pat the ground. Then it would pick up something 2" to 6" from the site of

the patting, take a step or two, and resume the patting. Either foot was used. During the patting it seemed to look straight ahead, apparently not concerned with what the foot was doing. I think he was using "averted vision" which bird-watchers know is better than direct vision for detecting slight movements. I watched this bird for two or three minutes, and a few minutes later I saw another Killdeer doing the same thing.

These observations were made from Cedar Avenue, which crosses the lake. I used a 40x60 spotting scope mounted on the car door. The distance was such that the bird comfortably filled the field of view. I have not had an opportunity to repeat this observation, so I wonder if anyone else has viewed such an action. — *Tilford Moore, St. Paul*

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BARROW'S GOLDEN-EYE AT SAINT PAUL — Most everyone is familiar with the large numbers of American Golden-eyes which spend the winter with us wherever there is open water. I have always looked these flocks over quite carefully in search for the rare Barrow's Golden-eye. I had expected that they would be difficult to separate, so was quite unprepared for the way in which my first one stood out from the Americans. I found this Barrow's at the sewage plant at Pig's Eye Island, in the Mississippi in Saint Paul, on March 27, 1955.

This bird was much larger than the Americans — perhaps they were small or average, and he a large specimen. He was about 100 yards away, and after viewing him with a 7x50 binocular I changed to a 40x60 spotting scope for closer study. All of Peterson's marks were noted. First, of course, was the crescentic white spot, and the size, then the purple head and its very different shape, and the more extensive black of the body.

There may have been a female with him, but only the tip of her bill was yellow. Perhaps it was too early in the season for a wholly yellow bill. Limited time prevented closer study of the duck to separate her from the dozen or so Americans in the same flock. — *Tilford Moore, Saint Paul*

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WHISTLING SWAN REPORT FROM VIRGINIA, MINNESOTA — On May 30, Nels Hervi reported to me that on that day he had seen a Whistling Swan on a small pond about 11 miles north of Virginia on Highway 53. Later I learned that the bird had been picked up by a section crew along the right of way of the Duluth, Winnipeg and Pacific R.R. Co. about seven miles north of Britt. When discovered, the bird was quite limp, but still alive. Apparently it had been stunned by impact with some obstacle. At noon they took the bird to the section house and when work for the day was over Arne Andeline took it to his home, gave it water, force-fed it and put it out for the night. The next morning it seemed to have revived and on the third morning they put it in the water of the pond and it swam away, apparently fully recovered. There it remained for some three weeks or more when it disappeared only to be rediscovered on another pond not far away. Evidently it remained in the vicinity until the latter part of August since when no report of it has come to me.

There were reports that originally there was a group of six at Myrtle Lake near Orr, and that this number was later reduced to five. This bird may have been the lost one of the three pair. However, to this date, I have been unable to verify the report of other swans in this part of the country or to find anyone who has actually seen them. — *Vera F. Barrows, Virginia, Minnesota*

SOME UNUSUALLY LATE DEPARTURES FOR DUCKS IN MINNEAPOLIS — Lake Harriet, one of the lakes in the city of Minneapolis, remained open until the night of November 29. High winds prevented the lake from freezing even though the temperature had dropped below zero for several days. The wind died down on the night of Nov. 29 and the lake froze over in one night. As the lake level was somewhat lower than normal this year, the weed beds in front of our home on the lake provided excellent feed, not only for the puddle ducks but also for the diving ducks. Residents around the lake also began to feed corn which encouraged a large number of mallards to stay on later than usual. With our 9x35 binoculars and a 30-power Balscope Sr. mounted in our picture window, we recorded the duck population daily from early November until this date — December 6.

We thought it worthwhile to note the last date on which we observed certain species of waterfowl. We saw a total of 23 species.

- Horned Grebe (flock of 10), November 7
- Gadwall (1), November 10
- Common Loon (1), November 14
- Buffle-head (pr), November 15
- Shoveler (pr), November 20
- White-winged Scoter (female), November 25
- Red-throated Loon (In Lake Calhoun with lots of Golden-eyes and American Mergansers), November 26
- Ring-necked Duck (5 below zero), November 27
- Red-head Duck (2 pr.) (High winds and snow toward evening), November 28
- American Golden-eye Duck (many), November 29
- American Merganser (many), November 29
- Red-breasted Merganser (3), November 29
- Pintail (female), November 29
- Green-winged Teal (female), November 29
- Ruddy Duck (3), November 29
- Coot (25), November 29
- Lesser Scaup, November 29
- Canvas-back Duck (3 pr), November 29
- Pied-bill Grebe (1) (Sitting on ice with mallards for two days. He froze to the ice but finally freed himself and flapped to shore. Could not take off. We caught him and sent him to park board for winter quarters), December 1
- Black Duck (1) (Sitting on ice and feeding on handout corn with Common Mallards), December 1
- Hooded Merganser (1) (Sitting on ice with Mallards for two days), December 1
- Wood Duck (male) (Sitting on ice with Mallards since November 30. In beautiful plumage. Must be eating corn), December 6
- Common Mallard (200) (Lake frozen over November 29 and four inches of snow fell Dec 1, but about 200 are still sitting around in the snow and feeding on corn given by residents around the lake, Dec. 6.

— *Whitney and Karen Eastman, Minneapolis, Minnesota*

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TWO DAYS OF BIRDING ON THE NORTH SHORE — I have always found birding along the North Shore very fascinating. The two days I spent at a cabin resort near Gooseberry State Park were hardly long enough to canvass even the immediate vicinity of the resort grounds with any kind of thoroughness. There was so much to see, to hear, and so much to be investigated, that my time was up before I could carry out many of the observations and trips I had planned to make. In

general, plant life and bird life had evidently progressed faster during this year's spring and summer than during last year's. The state of progress in nature by July 16, 1955 was about the same as last year's by July 26.

Many broods were evidently out of the nest at this time. I had the pleasure of watching the following species feeding their fledglings: Black-throated Green Warbler, 2 broods, (three), (two) Blackburnian, 2 broods, (two) (one); Magnolia, two broods (three), (two); Myrtle, one brood of two; Chipping Sparrow, a brood of four hungry, noisy youngsters as big as their busy mother; Clay-colored Sparrow, 2 broods, (two), (two); Song Sparrow, two broods, (two), (three); Chestnut-sided Warbler, one brood of two; Savannah Sparrow, 2 families — adults found feeding a youngster occasionally. Young were practically "self-supporting".

Behind the row of cabins in a low, wet, densely overgrown woodland of birch, alder, balsam, spruce, mountain ash, willow, etc., I found a pair of Mourning Warblers, each with food in the bill apparently about to feed their young in a well-concealed nest. They "chipped" at my presence and changed their perches repeatedly, the female keeping well hidden. This performance continued for a long time. They refused to reveal the location of nest and young. After 20 minutes I gave up watching them and searched for the nest, in vain. This very same thing was repeated three times during the rest of my two brief days, and the location of their nest remained a well-guarded secret.

A pair of Bobolink, too, was successful in keeping me from finding its nest and young. In the second evening of my stay, about sundown, when I ventured into the neighbor's field, a low, damp meadow, now unused and overgrown with various grasses and weeds and summer flowers, a still beautiful male "Bob" flew up out of the tall grasses and perched on a low-hanging telephone wire chipping at me in a worried and anxious manner and giving an occasional short refrain of his jolly spring song. As I moved about and closer, trying to find his nest and mate and probably a brood of young, he became very excited, uttering longer portions of the regular song as he sat on the wire or flew to a perch on a lone bush in the "prairie". Although his song was given almost in its entirety, it sounded worried and unhappy rather than sprightly and carefree. I looked for the "precious" nest until it became too dark. Since I had to leave early on the next morning, I had no further opportunity to go nest hunting, and so Robert of Lincoln can still sing, "snug and safe in this nest of ours, hidden among the summer flowers. Nobody knows but my mate and I, where our nest and our nestlings lie!" — *A. C. Rosenwinkel, St. Paul*

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#### FIRST WINTER RECORD OF HARRIS'S SPARROW IN MINNESOTA —

From December 23, 1955, through January 3, 1956, a Harris's Sparrow was observed daily at their feeder by Mr. and Mrs. Paul Kingsley at Minnetonka township west of Minneapolis. On December 29, Mr. and Mrs. Philip Tryon and the writer observed the bird which was a young of the year with white throat and an irregular patch of black spots on the breast; the black hood of the adult being absent, and the crown of the head speckled with black and buff.

Mrs. Kingsley reported that the bird fed on sunflower seed and also on peanut butter in a jar hung above the uncovered window feeding tray. It seldom fed on the ground, and usually came to the feeder with a White-throated Sparrow. The latter bird, which manages to fly in spite of a dragging wing, is still at this writing (January 13) visiting the feeder.

The Harris's Sparrow was very belligerent, usually chasing all birds except the White-throat from the feeding tray. It was not at all shy, and would not fly when observed at very close range. — *Josephine D. Herz, Excelsior, Minnesota*

SNOWY OWLS, MEASUREMENTS AND FOOD — The junior author received for mounting a large female Snowy Owl (*Nyctea nyctea*), shot December 27, 1955, at Littlefork, Koochiching county, Minnesota. The trunk skeleton was deposited in the collection of the Minnesota Museum of Natural History, University of Minnesota. In attempting to compare this specimen (MMNH X-Catalogue No. 444) with published data we found a surprising paucity of information on weights, and on total length and wing spread measurements of Snowy Owls. In the museum collection there are 13 specimens which yield some of these data; five of the specimens have information as to fat condition, a most important collateral to weights. The following table summarizes these data.

*Snowy Owl Specimen Weight and Measurement Data\**  
Males

Locality	Date	Fat Cond.	Weight	Stomach Contents	Total Length	Wing Spread
Aitkin, Aitkin county,	Dec. 5, 1896	Fat	1010	empty	561	1459
Aitkin, Aitkin county,	Oct. 31, 1902	not fat	1229	empty	561	1453
Aitkin, Aitkin county,	Nov. 12, 1904,	very poor in flesh	1035	.....	561	1428
Chisago City, Chisago Co.,	Nov. 4, 1954	....	1395	empty	.....	.....
White Bear, Anoka Co.,	Feb. 6, 1937	....	1560	.....	.....	.....
Madison, L.Q.P. Co.,	Jan. 9, 1893	....	1814	several mice	586	1694
Albert Lea, Freeborn Co.,	Feb. 16, 1954	....	.....	.....	561	1140
Littlefork, Koochiching Co.,	Dec. 27, 1955	very fat	2495	remains 21 mice	610	1559
Aitkin, Aitkin Co.,	Dec. 25, 1901	quite fat	2097	animal hair, bones, and 1 mouse skull	625	1651
Pine City, Pine Co.	.....	....	.....	.....	623	1603
Lake Minnetonka, Hennepin Co.	Dec. 30, 1954	....	1616	.....	606	1537
Madison, L.Q.P. Co.,	Dec. 30, 1891	....	2353	empty	610	1600
Woodbridge, North Dakota Co.,	Dec. 19, 1891	....	2410	empty	625	1562

\*All weights converted to metric scale

The Littlefork bird was the heaviest yet recorded for a Minnesota specimen of Snowy Owl. This was in part due to the great covering fat, in places one-fourth of an inch thick. The weight was also due in part to the stomach contents. This was removed, weighed, and the volume measured by water displacement. The contents weighed 240 grams, and its volume was 200 cubic centimeters (about that of a teacup). The mass proved to contain the remains of 21 field mice (*Microtus pennsylvanicus*). These were in varying stages of digestion ranging from freshly swallowed to completely digested, with the skull and other bones free of meat and tissue. All skulls were broken, even of animals swallowed entire. It would prove interesting to know how many pellets would have been cast up after this large feeding. — Robert W. Dickerman and John A. Jarosz, Minnesota Museum of Natural History

\* \* \*

ORNITHOLOGICAL AND MAMMAL OBSERVATIONS IN NORTHEASTERN MINNESOTA, 1955 — Diving ducks can be seen most all winter on Lake Superior but puddle ducks are uncommon. On January 16, I noted a drake and two hen Mallards sitting in Lake Superior within the Duluth city limits.

A pair of Meadowlarks made their first appearance in our field at home (just north of Duluth) on April 6, 1955. This was the earliest date I have seen them in northeastern Minnesota. On the following day, April 7, a Flicker arrived. Mourning Doves, the Yellow-throat, Myrtle Warbler and Wilson's Snipe were all seen in the Duluth area on April 22. A trip to Nine Mile Lake, in Lake county, on May 14 netted an additional spring arrival — the Northern Water-thrush.

May 18, 1955 was a field day. My work with the Minnesota Conservation Department took Ed Longtin and me to Jay Cooke State Park. Enroute we saw a Franklin's Ground Squirrel between Carlton and the village of Wrenshall in Carlton county. In the park we observed the following birds: Baltimore Oriole, Crested Flycatcher, Black-billed Cuckoo, Yellow-throat, House Wren, White-throated Sparrow, Rose-breasted Grosbeak, Palm Warbler, Hermit Thrush, Veery, Golden-crowned Kinglet, Northern Water-thrush and Redstart. 1955 was an early spring.

The fall of 1955 yielded more migration information. On October 15 a dead Greater Scaup was found on Wild Rice Lake, St. Louis county. Large numbers of Buffle-head arrived in the area on that day. A Barn Swallow hovered around our home just north of Duluth on October 25. Robert Jessen, aquatic biologist for the State of Minnesota at French River fish hatchery, saw a pair of Blue-winged Teal on Wild Rice Lake, St. Louis county, on October 28, 1955. He shot one of the two ducks. — *John G. Hale, Minnesota Division of Game and Fish*

\* \* \*

NOTES ON THE FALL WATERFOWL MIGRATION IN MARTIN COUNTY, MINNESOTA — During a bi-monthly aerial migration count on Martin county lakes on November 1, 1955, I had an opportunity to witness a spectacular movement of waterfowl. While "glassing" Fox Lake for rafted ducks at about 4:30 p.m. I noticed three large flocks flying high over the distant horizon. After moving to Pierce Lake and completing my census, I began a count of migrating flocks. This was about 5:00 p.m. From 5:00 to 6:00 p.m. I tallied a total of 41 flocks which I estimated to total 4125 birds. About the last half of this hour's count was limited to observations against the setting sun and by 6:00 p.m. it was almost completely dark. Ducks were observed until the failing light made observations impossible.

Although ducks appeared to be moving ahead of the advancing cold front without giving local lakes a second glance, a recheck of the 18 census lakes the following day, November 2, produced some startling results. A total of 16,370 were tallied as compared to 1364 on November 1. Mallards comprised about 85 per cent of the total and Lesser Scaup almost all of the remaining 15 per cent. Only a scattering of other species were observed. The previous day's total of 1364 had been primarily Mallards with only two Lesser Scaup being tallied. Evidently most of the build-up occurred during the night since counts on November 1 were not completed until 5:00 p.m. and the heavy concentrations were immediately noticeable the following morning.

The majority of these birds remained in the area until November 7, when another cold front forced them out. My latest count on November 15, totaled 2650 almost all of which were Mallards. One of these, incidentally, appeared to be at least a partial albino since it was a pale sandy color. It was observed in a raft of Mallards on Pierce Lake on November 2 and again on Budd Lake on November 15. — *Maynard M. Nelson, Area Game Biologist, Minnesota Division of Game and Fish, Fairmont. Work completed on Minnesota Pittman-Robertson Project W-11-R-16.*

BALD EAGLES AT WEAVER ON THE MISSISSIPPI — In the late fall when the frosty mornings find the still waters thinly ice-coated and winter threatens soon to seal the wide expanse of marsh with ice and snow, the Bald Eagles appear in the Mississippi River bottomlands in southeastern Minnesota. The great flocks of ducks and coots have begun to disperse by this time but hundreds still hesitate to leave. A few of the remaining birds are wounded and have no choice but to stay.

The eagles and a few gulls patrol the icy shores scavenging upon the dead and ensuring that few cripples will have to face the prospect of freezing or starving to death. On December 1, 1954, an adult Bald Eagle was seen feeding upon a large duck at the ice edge in the Weaver Marshes when a second eagle alit a few feet away. Watching as the first eagle tore apart the duck, he became impatient with hunger and tired of gazing after the loose feathers tumbling and sliding down the ice. He finally launched into the air, circled away behind the feeding eagle, and then swept down to attack. If this was bluff, it was well played but not sufficient. With surprising agility the attacked eagle leaped, striking viciously with both great feet, but he missed and fell in a heap upon his back. He shuffled to his feet, hunched over the duck once more, and snarled at the attacker who again alit nearby to survey the situation.

Twice more the second eagle attempted the robbery by aerial assault, but with much less heart, before he decided upon a ground attack. He walked up and grabbed with one foot at the duck but hustled away to reconsider when met with a fury of wings, beak, and talons. Between attacks eagle number one was busy with eating. Soon the entire duck would be gone. The second eagle ambled over and stood within inches of the other, watching for an opening. Three or four times he thrust a foot at the prize, but missed as he was shouldered back, but at last successful he made off with half the food.

In the last stage of the meal two more eagles appeared. One alit by the first, the other alit by the second, and both watched until hardly a trace of food remained. Bones, feathers, skin and all disappeared.

Seven eagles, five adult and two immature, were present on this date. Earlier, on November 14, an adult Golden Eagle was observed. In 1952, the "best year" for eagles at the Weaver Marshes, 19 Bald Eagles were present on November 6, 22 were counted on November 27 (10 adults), and 14 were still present on December 4. — *Wm. H. Longley, Minnesota Division, Game and Fish, St. Paul*

\* \* \*

HAWK OWL IN CARLTON COUNTY — As I was traveling east on Hwy. 210, approximately 7½ miles from Cromwell, Minn. on February 5, 1956, my attention was attracted to a bird sitting in a tree along the highway. Stopping the car, I was able to observe strong face markings and a prominent tail jutting out from the bird. It had some resemblance to what I would call a chunky Sparrow Hawk. Turning the car around, I drove just adjacent to the bird who was perched in the top of a lone, dead aspen at the edge of a bog about 50 feet from the north side of the highway. While driving up to the bird my suspicion was confirmed that the bird was a Hawk Owl. The owl did not seem perturbed by our presence, only occasionally jerking its tail. Nor did it seem perturbed by the passing cars to which the owl was fully and plainly exposed. — *John Fitcher, Avifaunal Club, McGregor, Minn.*

# Conservation News

by

P. B. Hofslund

It becomes increasingly apparent that the proponents of good conservation practices are being met with more and more obstacles, particularly on the national level. It seems that recently more dangerous practices, such as this one quoted from Volume 20, Number 22 of the *Conservation News*, have been advocated and actually practiced sometimes in defiance of state and federal laws: "The latest example of flagrant disregard of state game laws by high army officers occurred after an assistant attorney general of New Mexico handed down an opinion that game on federal land within the state was still under state jurisdiction and could not be hunted except by persons holding proper New Mexico permits. He ruled that army personnel stationed in Texas would have to secure non-resident permits to hunt on 400,000 acres of army gunnery range in southern Mexico.

The Fort Bliss commander, Maj. Gen. P. W. Rutledge replied through a spokesman that no licenses other than those he would issue himself would be necessary for his troops. He also said deer would be carried out of New Mexico by military convoy if attempts were made to enforce state law."

Because of the above and other flagrant disregard of public property there has been introduced, the Scott-Ervin Bill, S 2301, which would simply require that if any hunting or fishing is done on federal lands, it has to be done according to the conservation laws of the state in which the area is located.

Robert Galati's article on the Wichita Mountains Wildlife Refuge points out a similar danger in military installations. Mr. Galati's original manuscript had additional pointed comments on certain purposes that are apparent in some of the military requests, but which were taken out by the editor as a discretionary move.

*The Flicker* is a quarterly publication; therefore most conservation news published here will be "old hat" to most readers. However, it seems to your editor that the Minnesota Ornithologists' Union must take a leading role in the fight to preserve our heritage, and even reiterating old philosophies and repeating something that is no longer news may serve to keep our members alert to the dangers offered by selfish interests. If the members find that such a course is desirable in our organization, we will continue this feature in further issues.

Northern Yellowstone is critically overstocked by some 12,000 Elk on a winter range capable of supporting no more than 5000. This has an effect that is greater on other animals than on the elk themselves. For instance, White-tailed Deer have disappeared, because they cannot compete on a depleted range with their larger and more adaptable relatives. Fewer than 200 Bighorn Sheep remain where several hundred ranged. Mule Deer are well below their former numbers. Such a situation is not uncommon in areas that are overprotected in favor of certain species. Drastic action is needed in Yellowstone as much as it was needed in Itasca a few years ago. We all have a stake in Yellowstone even if we have never been there.

Not all things are gloomy on the conservation side. Here are some headlines from the November and December, 1955 issues of *Conservation News*: "New York Voters Submerge Panther Dam", "Proponents agree to Give Up on Echo Park Dam", "Metcalf Cautions Glacier View Boosters" (the proposal for a dam to flood part of Glacier Park). It shows that a strong front from conservationists can produce desired results.

## THE BOOK PAGE

Recently there came to your editor's desk three ornithological books of different types, all excellent in their own right. I would like to review these three books in a rather informal way.

The first is a book (I hesitate to speak of it as a manual, although it was written for that purpose) that in my opinion belongs on the shelf of every serious birder in the United States. I am writing of the third edition of O. S. Pettingill's "A Laboratory and Field Manual of Ornithology". This new edition is a cloth bound volume of 379 pages dealing with most phases of ornithology. Its primary purpose is to serve as a laboratory and field guide to the study of ornithology, but with its expanded text it far surpasses the ordinary conception of a manual, and serves as a textbook of ornithology as well. Its use is not limited to the college student nor the trained ornithologist; anyone who has more than a passing interest in birds will find it a most valuable reference to have on their book shelf.

Pettingill, Olin Sewall, Jr. *A Laboratory and Field Manual of Ornithology*. 3rd edition, 1956. Revised. Burgess Publishing Company, Minneapolis 15, Minnesota. \$5.00.

The illustrations, which are excellent, were done by Dr. W. J. Breckenridge of the Museum of Natural History, University of Minnesota.

About ten years ago, it was my privilege to attend the summer session of the University of Michigan Biological Station, and while there to take work in ornithology under Dr. Pettingill, courses which crystallized an interest in ornithology that I had held since childhood. Almost an institution at the station was Dr. Theodora Nelson, affectionately known as "Teddy". Dr. Nelson, since 1921, has been in attendance at the station almost every year in the capacity as student, assistant in ornithology, or private investigator. This past year she has written a history of ornithology of the biological station published by the Burgess Publishing Company of Minneapolis. Students who have attended the station's sessions will read the account with nostalgia, and those who have not will still find it a very interesting account of birding in a limited region. Serious workers will find a valuable reference to the ornithology of the southern peninsula of Michigan. It would not be proper for a former member of the "bird" classes to not mention a special section of the book devoted to the "bird trip breakfast", a tradition of the course. I suspect that a member of the station's ornithology classes might conceivably forget everything else about his trips, but never the "bird trip breakfasts".

Nelson, Theodora. *The History of Ornithology at the University of Michigan Biological Station 1909-1955*. Burgess Publishing Company, Minneapolis 15, Minnesota. 1956. \$3.75.

The third, a booklet prepared by Anne Winton Dodge, Helen Ford Fullerton, W. J. Breckenridge, and Dwain W. Warner, is of special use to those people who bird around the Twin City area. It is a combined field check-list and migration chart to the birds of the Minneapolis-St. Paul region, and is designed to fit inside the Peterson "Field Guide". In its 29 printed pages there is condensed an amazing amount of information. There are listed 282 species of birds for which there are authentic records from the Twin City region. For each species there is a calendar graph which answers the question, "When is the bird found here?", and by lines the authors have indicated whether the bird is common, unusual, or rare. A habitat key indicates the area where the birds are most likely to be found, and there is space where the observer can make his own notations. The authors' hope that the list may encourage the accumulation of further accurate data and so broaden the knowledge of the birds of the area should undoubtedly be fulfilled. This is one of the most worthwhile projects to come out of Minnesota birding in the last few years, and its reasonable price of 25c should help in getting it into the hands of many who will spread the interest and increase our knowledge of Minnesota birds.

Dodge, Anne Winton, Fullerton, Helen Ford, Breckenridge, Walter J., and Warner, Dwain W. *The Birds of the Minneapolis-St. Paul Region*. Minnesota Museum of Natural History, Minneapolis, Minnesota. 1956. 25c.  
P. B. H.

## FALL FIELD TRIP MEETINGS

There are two fall field trips scheduled by the Minnesota Ornithologists' Union for 1956. The first is a combined meeting with the Thunder Bay Field Naturalists' Club in the Fort William-Port Arthur, Canada area. It will be held on Labor day week end, September 1, 2, and 3. Plans have not been completed as yet, but tentatively a Saturday night program and banquet, and a full day of birding on Sunday are scheduled. The meeting place will be the Tourist Bureau, City Hall, Fort William, Ontario. Further information will be sent out to M.O.U. members, but for those who are not members who would like to join the group on this field trip, write to one of the officers of the M.O.U. or to Dr. A. E. Allin, City Hall, Fort William, Ontario.

Birders who make this trip will want to take the opportunity to visit the Hawk Lookout at Duluth, Minnesota. Large flights of hawks may be observed any time after the first of September through October if the weather is not too unfavorable. The Lookout will be manned by Duluth observers on the week ends of September 8-9, 15-16, and 22-23.

The M.O.U. annually plans a get-together at the Lookout on one of the week ends in September. Experience has shown the third week end in September is usually the most productive, so the September 22-23 week end of 1957 is officially designated as a M.O.U. field trip date. Newcomers to the area may get full information from the Duluth Chamber of Commerce or from J. K. Bronoel or P. B. Hofslund whose addresses are given on the inside front cover of this magazine.

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## NEW JUNIOR AUDUBON MATERIAL

Any group of 10 or more children with leader may form a club by filling out the registration form and sending dues of 25 cents per member to the National Society at 1130 Fifth Ave., New York.

Each leader receives the following material:

1. A Nature Program Guide. This is a 100 page leader's manual, containing nature projects, activities, games, treasure hunts, patterns for bird houses, bird feeders, electric nature games and instructions for making leaf prints, exhibits, posters, etc. There is also information on how to make a wildlife sanctuary.
2. A Nature Program Guide Supplement. This contains additional projects and activities with suggestions for special programs and events such as Bird day, Arbor day, Audubon's birthday.
3. A State Bird Map. An outline map of the United States bordered by illustrations, to be colored, of all the state birds.
4. Audubon Junior News. A nature magazine for boys and girls, written and illustrated in part by club members. It contains projects and activities for groups and individuals.

Each member receives:

1. An Audubon Junior Club Notebook. This is planned to stimulate each child to carry on his own explorations in the world of nature. It contains stories of a marsh, a meadow, and a forest, each illustrated with colored pictures of birds, flowers and animals. It also has full page outline drawings for hand coloring. In addition, it has space to write up stories of visits to these areas and a place to keep a nature calendar for a year.
2. An Audubon Junior Club Button. An attractively colored pin depicting a bird, and signifying that the wearer is a Junior Member of the National Audubon Society.

# Audubon Camp Opens June 17

Five sessions of two weeks each will be conducted this summer at the Audubon camp in northwestern Wisconsin, the National Audubon Society has announced.

The camp's second year of operation will start on June 17 and terminate September 1. Last year adult students from 19 states, the District of Columbia and Canada attended summer sessions at the camp on the Hunt Hill Sanctuary near Rice Lake and Spooner. It is the National Audubon Society's only nature and conservation training center in the midwest.

Walter W. Engelke of Madison will again direct the Audubon camp. He reported recently that a survey of those attending last summer's sessions revealed a cross-section of occupations. Represented were teachers, school principals, librarians, housewives, students, doctors, secretaries, nurses, businessmen and retired people.

In discussing the attractions of the Audubon camp, Mr. Engelke stated: "Each two-week session is a thrilling experience in outdoor living. Through daily field trips in small groups campers learn to know the world about them, become aware of the interdependence of all living things and their relation to soil, water, rocks and weather; gain techniques for presenting this knowledge in a lively manner in their own teaching and leadership situations. There is constant opportunity for group discussions and individual consultations with instructors. Daily association with people of kindred interests from all over the country is a delightful feature."

Campers are comfortably housed in new frame buildings. Meals are served in an attractive dining hall, and a large lounge provides space for evening movies, slides and entertainment.

The Audubon camp of Wisconsin has a staff of experienced naturalists who accompany small groups on field trips, give informal talks, and supervise projects. The Audubon camp motto is "Have fun while learning." There are no book assignments nor tests. Above the minimum age of 18, people of all ages and walks of life can and do participate in the sessions. None of the hiking on field trips is strenuous; on longer trips the groups travel by station wagon or bus.

Sessions for this summer start on June 17, July 1, July 15, August 5, and August 19. Cost, which includes accommodations, meals, and tuition, is \$95 per person. The camp is on Devil's Lake, four miles from Sarona.

The Audubon camp is situated in Wisconsin's northern lake country. It comprises 300 acres of forests, fields, marshes, streams, ponds and lakes, and has been described as an ideal location to learn about the out-of-doors. The property was given to the National Audubon Society by Miss Frances Andrews of Minneapolis. Public-spirited conservationists of the midwest, led by Mrs. F. L. Larkin of Milwaukee and Whitney Eastman of Minneapolis, contributed more than \$80,000 to bring the camp into existence. Its operation is patterned after the successful Audubon camps in Maine, Connecticut and California.

For information about enrollment in this summer's sessions at the Audubon camp of Wisconsin, write to the National Audubon Society, Camp Department, 1130 Fifth Avenue, New York 28, N. Y.

The Minnesota Ornithologists' Union has the following books for sale:

Peterson's Field Guide to the Birds .....	\$3.75
Northern Fishes .....	4.00
Where to Find Birds in Minnesota .....	2.00

Please send orders to Mrs. Mary Lupient, 212 Bedford St. S.E., Minneapolis, Minn.

The Minnesota Ornithologists' Union would appreciate receiving back copies of *The Flicker* through the years 1937-1945. Our supply of these years is getting low, and the demand for them has been increasing.

**AFFILIATED SOCIETIES**

- 1 Albert Lea Audubon Society
- 2 Avifaunal Club
- 3 Duluth Bird Club
- 4 H. J. Jager Audubon Society
- 5 Mankato Audubon Society
- 6 Minneapolis Audubon Society
- 7 Minneapolis Bird Club
- 8 Minnesota Bird Club
- 9 St. Paul Audubon Society

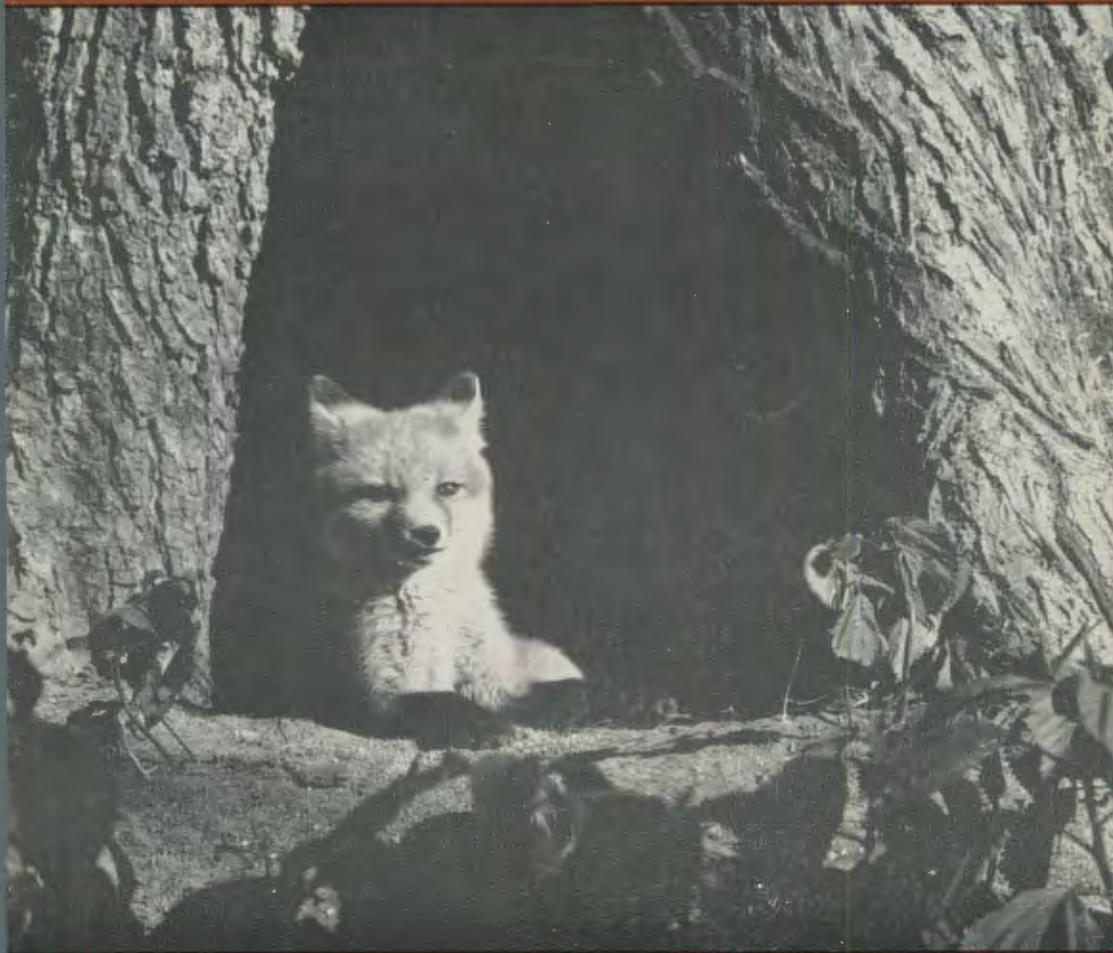


# *The Flicker*

VOLUME 28

SEPTEMBER 1956

NUMBER 3



PUBLISHED QUARTERLY BY  
**THE MINNESOTA ORNITHOLOGISTS' UNION**  
MUSEUM OF NATURAL HISTORY  
UNIVERSITY OF MINNESOTA  
MINNEAPOLIS, MINNESOTA

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## THE FLICKER

Organ of the *Minnesota Ornithologists' Union*. Published quarterly in March, June, September, and December. *The Flicker* is sent to all members not in arrears for dues. Dues for members: Active, \$2.00; Sustaining, \$5.00; Life, \$50.00; Patron, \$100 or more. All articles and communications for publications should be addressed to the editor. Subscriptions, memberships, and requests for back numbers should be sent to the treasurer.

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## THE COVER

*Red Fox at Den Entrance by Harvey Gunderson*

## THE PRESIDENT'S PAGE

What would the M.O.U. be like without its field trips? What a depressing thought! Much of the present jovial fellowship would be lacking. M.O.U. members have demonstrated their fondness for field trips by their turn-out for such events and by their reluctance to gather for a business meeting during birding hours. Quite aside from the scientific value of bird observation in the field, a day or a week end of birding is a welcome respite from the everyday routine of making a living. Although most of us do considerable lone-wolf birding we find special enjoyment in birding with a group. The opportunity of journeying to another locality and meeting informally with other people of similar interests and enthusiasms, to search for and observe birds in their natural haunts, is a highly rewarding experience. There is contact with experts who can aid with identification problems. Even a chance remark by a fellow birder may be just what is needed to recognize the presence of a bird that one has had difficulty in spotting. It works both ways. There is a wealth of enjoyment in being able to help a fellow birder. Haven't you seen the glow of gratitude upon calling attention to a bit of song, a trait of behavior or a likely habitat which helped in spotting a particularly elusive bird?

With birds decked out in their springtime best and with northward migration at its crest, May field trips have proved most popular, the third week end being tops. Running up a big list is quite a sport in itself. Frontenac is well known for the wonderful lists it has yielded, but who would have ventured to predict the remarkable count of 141 species at Albert Lea last May? When such a group of experts gather, however, the bird that escapes notice must be elusive indeed. Of course there are exasperating moments. Wouldn't it be great if someone invented a selective hearing aid with which one could single out a faint bird song in the distance and call it unmistakably to the attention of a fellow birder for verification?

Even though most of us bird as a diversion, we have, through birding experience, become ardent conservationists with a desire to preserve in every community a representative sample of the various habitats upon which our birdlife depends. With a desire also of preventing inconsiderate people from taking advantage of bird concentrations during migration to dangerously reduce their numbers. One of the most delightful M.O.U. field trips that more members should take advantage of is a visit to the hawk lookout on the skyline drive at Duluth in September. Here one can get better acquainted with the most misunderstood and abused of our birds by observing great numbers of them, noting their behavior pattern and often seeing them near enough to study in detail the plumage markings of the various species. It isn't unusual to look down at the back of a Sharp-shin or a Pigeon Hawk only 40 feet away. Birders can rejoice in seeing them pass this bottle-neck in migration with safety, thanks to the splendid work of the Duluth Bird Club.

Financially speaking, let's remember the M.O.U.'s crying need for more subscriptions to *The Flicker*. If your salesmanship is not up to par you can help both the M.O.U. and a friend by doing a bit of early Christmas shopping with a gift subscription.

It comes as quite a jolt to be without the active, able leadership of Bob Hanlon. We're going to miss you, Bob, but we know you'll still be one of us despite the distance. Good luck in your new venture.

Sincerely,  
Charles Flugum

# A Trail Census of Birds at Itasca State Park, Minnesota

by

S. Charles Kendeigh

## Introduction

LaSalle Trail, named after the early North American explorer, is located in the northeast corner of Itasca State Park, east of the north arm of Lake Itasca. It is about 1.3 miles long (2100 meters), beginning at the park road just south of the entrance to the Lake Itasca Forestry and Biological Station of the University of Minnesota and extending to U. S. Highway 71. The trail has been in existence at least 40 years, perhaps much longer. In compiling the census along this trail, a method was employed that is not in common use. The author is grateful to the following persons who read and commented on an early draft of this manuscript: Dr. Joseph J. Hickey of the University of Wisconsin and Dr. William H. Marshall and Dr. Dwain W. Warner of the University of Minnesota.

Itasca, one of the oldest state parks, was established in 1891. It is located in the northwestern part of the state and is covered with forest, much of which is virgin. All commercial logging ceased in 1918, although dead and dying trees, especially pine, are still being removed under park supervision. The park consists of 32,000 acres of which 3000 acres are lakes and ponds and 1500 acres are in swamp. The swamps and bogs consist of alder (*Alnus* sp.), willow (*Salix* sp.), dogwood (*Cornus* sp.), elm (*Ulmus* sp.), black ash (*Fraxinus nigra*) and especially black spruce (*Picea mariana*) and tamarack (*Larix laricina*) (Marshall and Buell 1955). Aspen (*Populus tremuloides*) mixed with some birch

(*Betula papyrifera*) and bur oak (*Quercus macrocarpa*) covers 13,000 acres, red pine (*Pinus resinosa*) 5700 acres, jack pine (*Pinus banksiana*) 1800 acres, spruce-balsam (*Picea glauca*, *Abies balsamea*) 1600 acres, white pine (*Pinus strobus*) 800, and cut over areas now in early secondary succession 200 acres (Hansen and Duncan 1954). In addition there are small areas of sugar maple (*Acer saccharum*) and basswood (*Tilia americana*). The pine, aspen, and maple-basswood forests have a thick underbrush, principally hazel (*Corylus americana*, *C. rostrata*), except in small local areas.

All these forest types, except maple-basswood, are represented along LaSalle Trail. The tall red and white pines along the trail apparently got started after the fire of 1772 and are 150-170 years old (Spurr 1954). The jack pine and aspen-birch forests are much younger, about 55 years, and date from the fire of 1886.

Aspen trees average five to 11 inches in diameter at breast height, and are ranked by foresters in class 4 of their five categories, which means a "good" density. Rough triangulation of six trees between stakes 3 and 18 (fig. 5) gave an average height of 61 feet (range 53 to 66). Aspen-birch occurs in nearly pure stands (fig. 1) and mixed in with other vegetation types along the trail.

Jack pine (fig. 2) predominates over most of the trail east of stake 20 (fig. 5) where it averages five to nine inches and ranks "good" to "very good" in density, the two highest density classes.



Fig. 1. Aspen-birch between stakes 7 and 8



Fig. 2. Observation blind in position along trail next to a nest of the Blue-headed Vireo at stake 21 in jack pine.



Fig. 3. Large red and white pines mixed with aspen-birch at stake 15. Undergrowth mostly hazel.

Height measurements on eight trees gave an average of 70 ft. (range 50-101). The tallest and densest stand of jack pine is from stakes 37 to 42, although here it contains a greater mixture of the red and white pine as well as aspen-birch.

Red pine is more numerous than white pine but of about the same height (fig. 3). The two pines occur in mixed stands along with considerable aspen-birch. The size class varies from nine to over 15 inches and density from medium, at stakes 33 to 36, to very good, at stakes 16 to 19. Ten trees of the two species averaged 87 ft. in height (range 71 to 98).

The black spruce-tamarack occurs back from the trail between stakes 4 and 12. The trees are five to nine inches in diameter and of medium density. Four openings occur along the trail (fig. 4) where the original vegetation has been destroyed and secondary succession is in progress.

#### *Procedure*

As shown in fig. 5, the trail was marked with numbered stakes at intervals of 50 meters (about 162 ft.) in order to orient all observations. All birds seen or heard were recorded in relation to the nearest stake and whether on the right or left side of the trail. A separate trail map was made for each species, and all records of the species seen on all trips entered on it with appropriate date symbols. Record dates tended to fall in clusters. Fig. 6, for instance, is the composite map for the Wood Pewee, showing dates and locations where individuals were recorded. Some attempt was made, especially for those trips when I was alone, to indicate the distance from the trail where the individual was recorded. Lines are drawn around groups of dates lying close together where apparently single males or pairs were established. Boundary lines between location of adjacent birds could

be drawn with some certainty when both birds were recorded on the same dates. Circles are left open where only one or two dates were obtained as apparently the bird's territory extended beyond the census strip. Sixteen completely circled groups of dates plus five incomplete territories seem to indicate the equivalent of 18 pairs for the trail census strip. This is the manner in which Table III was constructed.

This procedure differs from the Williams spot-map method of taking a bird census in that it marks territories linearly rather than areally (Kendeigh 1944). It differs from the usual strip censuses in that it requires replication of counts throughout the nesting season rather than computing population densities from a single count. The procedure also eliminates the error, pointed out by Hayne (1949), of using the average distance at which the species first comes to the observer's attention to represent the width of the census strip.

Seven complete bird counts were made over the trail, but six of these required two visits to complete with approximately half of the trail covered on each visit. Six bird counts were made partly from 4:45 to 6:45 a.m., while accompanied by a small bird class, and partly alone, from 8:00 to 11:00 a.m. The one other complete bird count was made alone. The dates of the census trips were June 17-18, 21-22, 25, 28-29, July 5-6, 8-10, and 12-13, 1955. Weather conditions on all dates of censusing were uniformly favorable.

Most birds were recorded by song, hence were males, but non-singing males and females were also noted. The conspicuousness of the various species or the ease with which they were recorded depended largely on the amount and loudness of their singing, and this varied as the season progressed. Table I shows the percentage of established nesting pairs or territorial males recorded on each trip. Both the average of percent-



Fig. 4 The opening along LaSalle Trail at stake 32.

ages for the seven most abundant species and the percentage of all nesting birds regardless of species indicate that, in general, birds maintained their conspicuousness during June but declined rapidly in July. Occasional records of over 100 per cent mean that transitory birds or birds possessing territories lying in large part outside of the census strip were counted in addition to the resident birds. The rapid decline in conspicuousness of birds during July indicates that breeding censuses had best be completed before this time, although this is not necessary for some species.

The Wood Pewee maintained a fairly uniform rate of singing throughout the period of study as it continues to nest

late in the summer. The Black-capped Chickadee was noted more frequently when with families off the nest than earlier. This was true to a certain extent also with the Red-breasted Nuthatch in late June. The Red-eyed Vireo, contrary to the general rule, became much more vocal and conspicuous from late June through the July period than it was earlier. Veeries had the woods resounding in song on July 5-6.

An obvious defect in this method of trail censusing, not inherent in the William spot-map method, is that because of their louder songs, some species can be detected at greater distances from the trail than can others and hence will be recorded in proportionately larger

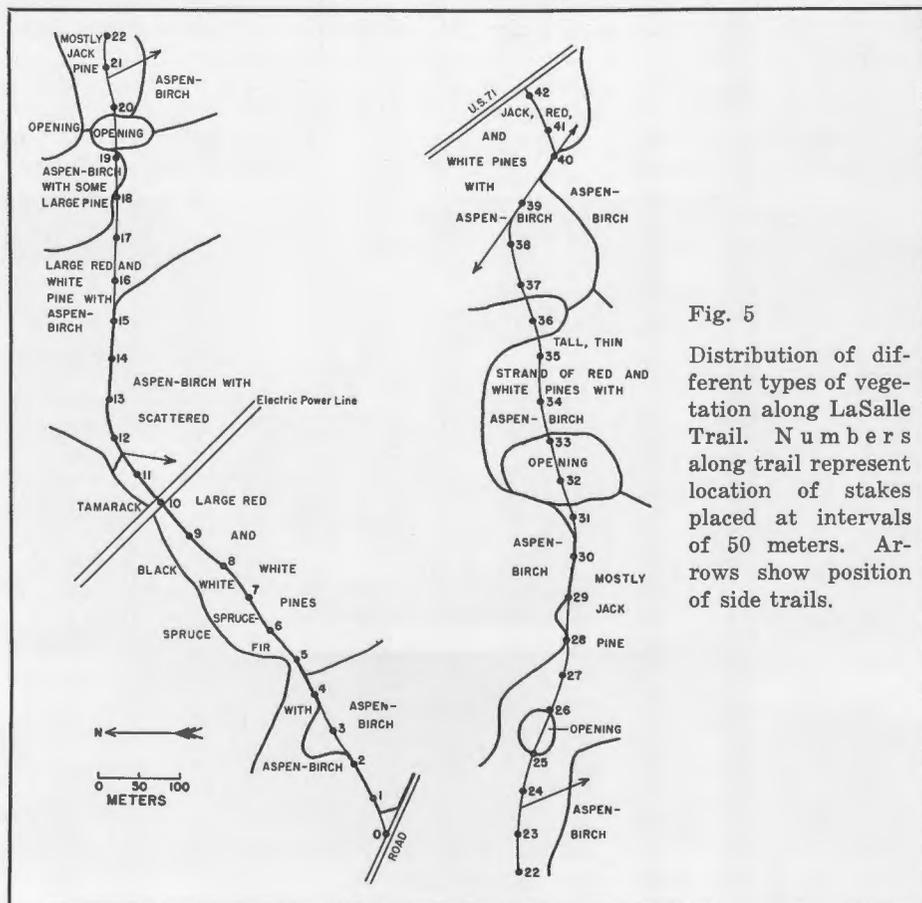


Fig. 5

Distribution of different types of vegetation along LaSalle Trail. Numbers along trail represent location of stakes placed at intervals of 50 meters. Arrows show position of side trails.

numbers. An attempt was made to assess the value of this factor by estimating the distance at right angles from the trail that the birds first came to the attention of the observer by either sound or sight. These data are summarized in Table II. It should be kept in mind that these figures are not intended to record the greatest distances that one can hear the song of a species. Birds sing only part of the time and may often be first noted by sight or alarm notes. One wonders sometimes if merely the passage of the observer along the trail may not incite adjacent birds to singing or movement when otherwise they might have been quiet and unnoticed.

For most species, it is apparent that

the large majority of records fall within 50 or 75 meters (167 or 250 ft.), although a few individuals are recorded at considerably greater distances. An effort was made to determine the *effective censusing distance* for each species as objectively as possible. This is the distance at right angles from the trail within which the total number of birds observed can be used for calculating the actual population density. After trying several criteria, the most satisfactory procedure appeared to be to take that distance beyond which the total number of birds recorded did not exceed one-half of the largest number in any distance-interval closer to the trail. Thus, the effective censusing distance for the

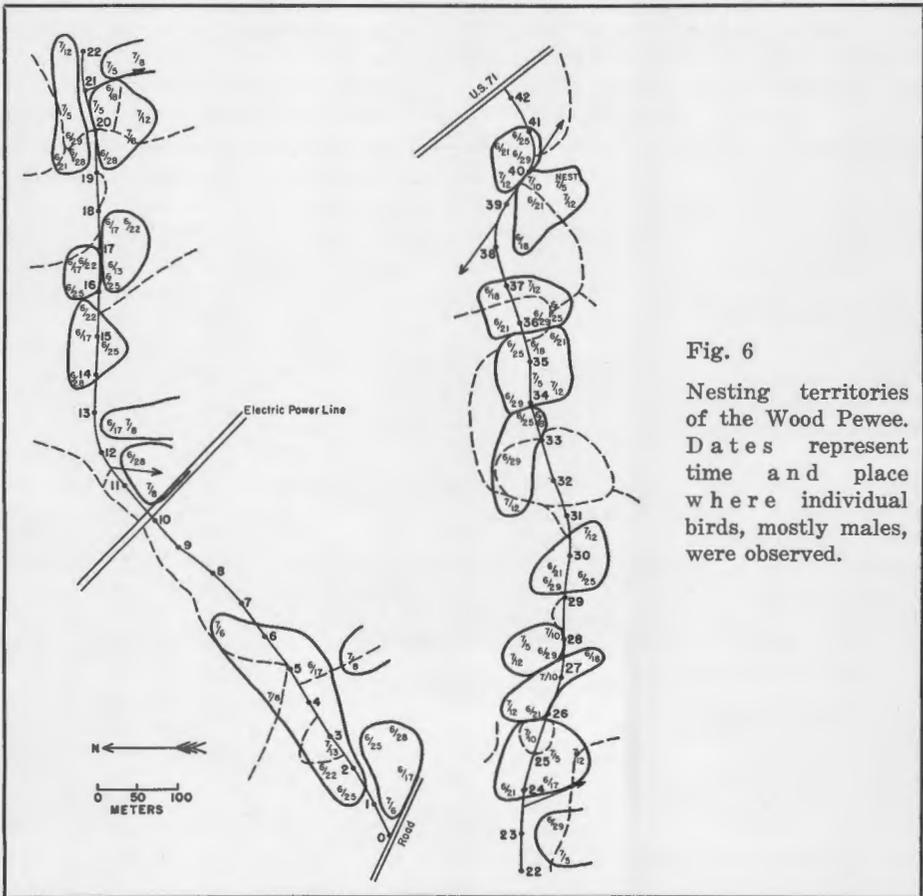


Fig. 6

Nesting territories of the Wood Pewee. Dates represent time and place where individual birds, mostly males, were observed.

Downy Woodpecker is 50 meters because the total number (1) beyond 50 meters is only one-third the number (3) observed within 25 meters where presumably all were found. The effective censusing distance for the Crested Flycatcher could not be placed at 75 meters because the three recorded beyond this distance are actually more than were observed closer to the trail.

The accuracy of this procedure is based first of all on the assumption that the number of birds beyond the effective censusing distance replaces more or less exactly the number missed within this distance. Thus with the Downy Woodpecker, if the one observed beyond 50 meters replaces one missed within the interval 26 to 50 meters, there are three birds counted within each of the two closest strips. If the six Least Flycatchers observed beyond 50 meters are added to the 29 in the 26 to 50 meter

strip, the total of 35 approaches closely the 38 in the 0 to 25 meter strip where presumably all were recorded. It is possible that some Wood Pewees were missed both in the 0 to 25 and the 26 to 50 meter strips, so that if the six birds observed beyond 50 meters are divided between the two closest strips their totals are raised to 18 and 17 respectively.

A second assumption affecting the accuracy of the procedure is that the presence of the trail does not modify the random distribution of birds throughout the community. This is probably true for all species except the Chipping Sparrow, where it is likely that the very large number observed within 25 meters is due to the preference of this species for feeding in open areas with low plant growth.

It may well be that effective census distances vary for the same species for

Table I. Weekly variation in conspicuousness. Species with 10 or more established pairs along the trail indicated by an asterisk (see Table III).

	Percent breeding population recorded per census						
	June 17-18	June 21-22	June 25	June 28-29	July 5-6	July 8-10	July 12-13
Crested Flycatcher	200	100	67	100	0	67	0
Least Flycatcher*	88	65	77	73	50	54	46
Wood Pewee*	72	67	56	67	56	56	67
Black-capped Chickadee	75	0	50	150	75	100	75
Red-breasted Nuthatch	67	67	100	133	67	0	0
Veery*	53	63	63	53	89	47	32
Red-eyed Vireo*	46	67	88	71	71	79	71
Black-throated Green Warbler	125	50	0	50	0	0	0
Blackburnian Warbler	100	38	12	75	25	25	0
Chestnut-sided Warbler	60	60	100	100	100	40	40
Pine Warbler	....	62	75	75	50	38	12
Oven-bird*	86	79	64	57	36	14	21
Mourning Warbler*	69	85	69	46	77	31	23
Common Yellow-throat	44	22	67	67	111	55	33
Scarlet Tanager	60	80	40	60	80	40	40
Rose-breasted Grosbeak	120	40	120	80	80	60	40
Purple Finch	50	50	75	25	0	50	25
Chipping Sparrow*	60	50	80	80	20	70	40
White-throated Sparrow	83	50	67	83	50	50	33
Average (7 species*)	68	68	71	64	57	50	43
Percent total pairs (188)	73	61	69	70	59	49	39

different portions of the nesting cycle, but this refinement of analysis is not practical with the present data. The figures represent the effective censusing distance for this particular observer, for this particular time of the year, for the time of day at which the counts were made, and for the types of habitats visited.

In order to calculate population densities for each type of vegetation, it was necessary to determine the area occupied by each type. Since the trail frequently ran along the boundary between two different types of vegetation, each of which was being censused, the length of trail with which each vegetation type had contact on one side was determined. Where the trail transected a vegetation type, the length of trail involved was doubled to allow for both sides. This was easily done from the vegetation map that was prepared (fig. 5), and from the

staked intervals of 50 meters. The length of trail-sides associated with each type of vegetation is as follows:

Openings in forest	400 meters
Tamarack-black spruce back from and not in direct contact with the trail	(400)
Aspen-birch	500
Aspen-birch with scattered large red and white pines	650
Red and white pines mixed with aspen-birch	700
White spruce-fir mixed with aspen-birch	500
Jack pine mixed with red and white pines and aspen-birch	550
Mostly jack pine	900
Total	4200

These lengths multiplied by the effective census distance for each species gives the effective census area for the species within each type of vegetation.

Table II. Number of times species first noticed at various distances from the trail.

Species	Distance at right angles from trail in meters						Effective census distance
	0-25	26-50	51-75	76-100	101-125	126-150	
Downy Woodpecker	3	2	1				50
Crested Flycatcher	1	0	1	2	0	1	100
Least Flycatcher	38	29	2	4			50
Wood Pewee	15	14	5	1			50
Red-breasted Nuthatch	3	3	1				50
Veery	16	18	4	1	0	1	50
Blue-headed Vireo	0	4	1	2	1	1	100
Red-eyed Vireo	25	28	13	6	1		75
Parula Warbler	1	2	1	0	1		75
Blackburnian Warbler	7	1					25
Chestnut-sided Warbler	8	6	0	1			50
Pine Warbler	9	5	1	1			50
Oven-bird	9	9	6	3	0	1	75
Mourning Warbler	4	8	10	1	3		75
Common Yellow-throat	5	9	10	2	4		100
Scarlet Tanager	4	3	2	0	0	1	75
Rose-breasted Grosbeak	5	6	1	2			50
Purple Finch	1	5	0	1			50
Chipping Sparrow	22	3	5	1			25
White-throated sparrow	4	4	3	0	1		75
Total, exclusive of Chipping Sparrow	158	156	62	27	11	5	

The number of birds recorded can then be readily put in terms of density per 40 hectares (100 acres).

#### Results

Fifty-four species and 233 established males or pairs were recorded along the trail. Possibly those species indicated with a "+" in Table III were not nesting as they were recorded only once or twice. In addition to this list, several other species were identified in flight over the trail, but were not part of the trail's breeding population. The Broad-winged Hawk is based on an active nest found late in the period by John D. Goodman, the Saw-whet Owl was recorded one night by Alfred Grewe, and the Tennessee Warbler was identified by George W. Cox. The author can vouch for the identity of all other species.

The most prominent bird family was the Parulidae, represented by 14 species and 67+ territorial males followed by the Fringillidae with 7 species and 30+ established males, the Picidae with 6 species but only 6+ males, the Tyrannidae with 4 species and 48 males, the Turdidae with 4 species and 22 males, and the Vireonidae with 3 species and 31 males. The seven most abundant species over the trail as a whole in order were Least Flycatcher, Red-eyed Vireo, Veery, Wood Pewee, Oven-bird, Mourning Warbler, and Chipping Sparrow.

A study of population densities (Table III) shows that most species have a preference for one type of vegetation over another. The Least Flycatcher and Wood Pewee are widely dispersed but show a preference for aspen-birch and are surprisingly well represented in nearly pure jack pine. The wide range of the Veery, Red-eyed Vireo, and Oven-bird may also be related to their preference for aspen-birch which is mixed in with most other vegetation types. Other species such as the Red-breasted Nuthatch, Blue-headed Vireo, Parula Warbler, Blackburnian Warbler, Pine Warbler, and Common Yellow-throat are much more restricted in habitat dispersal. We

may list the most characteristic species in the different types of vegetation in order of abundance as follows:

#### *Shrubby Openings*

Chipping Sparrow  
Common Yellow-throat  
Chestnut-sided Warbler  
Red-eyed Towhee  
Nashville Warbler  
Golden-winged Warbler  
Alder Flycatcher  
Catbird  
House Wren  
Ruby-throated Hummingbird

#### *Aspen-birch*

Least Flycatcher  
Wood Pewee  
Veery  
Red-eyed Vireo  
Mourning Warbler  
Oven-bird  
Rose-breasted Grosbeak  
Scarlet Tanager  
Crested Flycatcher  
Redstart

#### *Spruce-fir*

Blackburnian Warbler  
Black-throated Green Warbler  
Parula Warbler  
White-throated Sparrow  
Canada Warbler  
Winter Wren

#### *Red and white pines*

Blackburnian Warbler  
Pine Warbler  
Red-breasted Nuthatch  
Rose-breasted Grosbeak  
Purple Finch

#### *Jack pine (mixed)*

Chipping Sparrow  
Least Flycatcher  
Pine Warbler  
Blue-headed Vireo

Total densities of all species are comparable to those found elsewhere over the country. In pure vegetation of a single type, birds are most abundant in the aspen-birch (386), although there are only eight species listed as present, and least abundant in the tamarack-

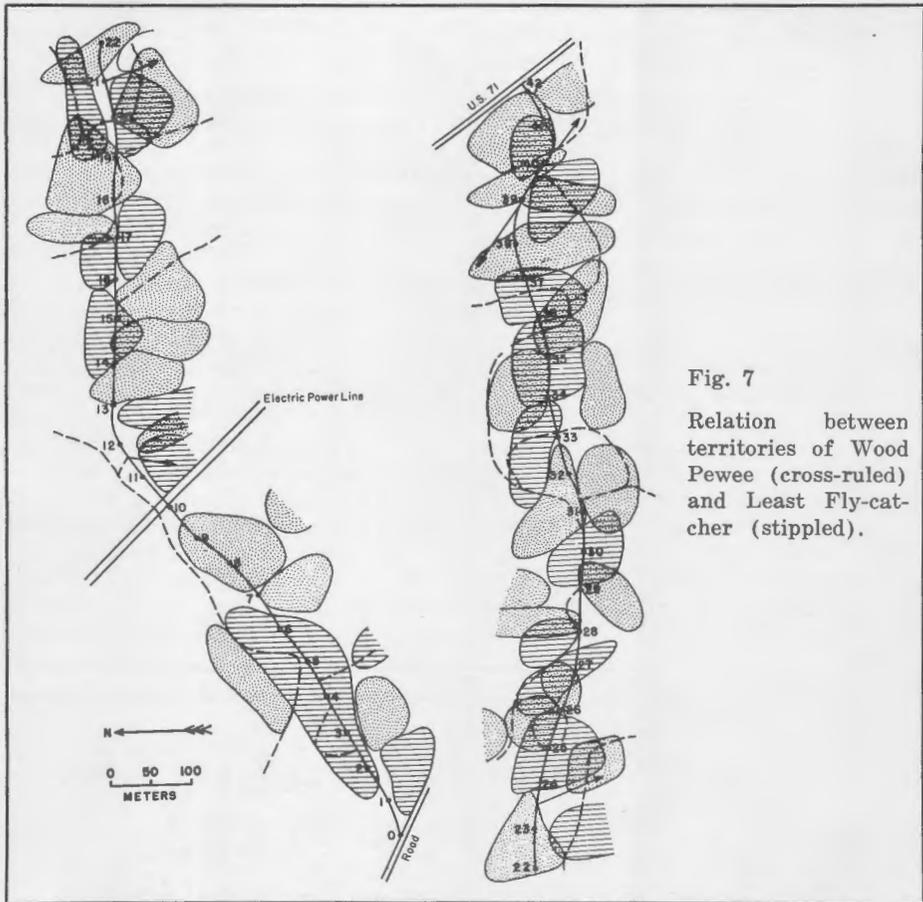


Fig. 7

Relation between territories of Wood Pewee (cross-ruled) and Least Flycatcher (stippled).

black spruce (80). When aspen-birch has an over-story of large pines, niches are provided for additional species (total, 16) and the population level is raised to 463. The greatest density attained by any species, that of the Blackburnian Warbler (91 per 40 hectares) is attained in this community.

#### Discussion

The population densities attained by a species depends in part on the amount of competition tolerated between individuals within the species as reflected by the size of territories. The total bird density in a community depends, in addition, on the number of separate niches provided for different species. Segrega-

tion of species into distinct niches comes about in the process of evolution as the result of competition for similar nest-sites, song posts, food, or other conditions. One might expect such interspecific competition to be especially conspicuous between related species, and this appears to be true between the Least Flycatcher and Wood Pewee (fig. 7). Between stakes 0 and 20 along the trail, the territories of the two species scarcely overlap, and one species replaces the other so that nearly all space is occupied. The picture is more confused from stake 20 to 42 due partly to the greater concentration of birds and partly perhaps to inaccuracies in the data, but

even here, though territories overlap, they are not indetical, and each individual of one species has at least some territory not also occupied by an individual of the other species. Some individuals may well be more aggressive than others in protecting their territories from intruders. There are splendid opportunities for further detailed studies of interspecific relations between species along this trail, as well as elsewhere in the park.

In order to understand adequately the niche requirements of species, detailed life-history studies are desirable. During the 1955 season, students at the Lake Itasca Forestry and Biological Station undertook such studies of the Ring-necked Duck, Belted Kingfisher, Phoebe, Least Flycatcher, Golden-crowned Kinglet, Blue-headed Vireo, and Chipping Sparrow, but details of these studies cannot be described here. Everyone of

the more numerous species listed in Table III could profitably be made the object of intensive research.

Although the variety of vegetation types in close proximity to each other makes LaSalle Trail excellent for studies of life-history, competition, and niche requirements of birds, the trail is not so well suited for measuring breeding bird populations in different types of vegetation, except in aspen-birch. The different types of vegetation are in too small blocks and too mixed in composition. Extensive areas (at least 25 acres) of each vegetation type in pure stands would better portray differences in the composition and population levels of different bird communities. Such measurements and studies of breeding bird populations could be made in other selected parts of the park. A large shrubby cut-over opening along the trail opposite Bert's Cabins would be fine for such a study, a good but not large stand of



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tamarack-black spruce occurs in the northeast corner of the park, red and white pines occur in a good stand along the Bohall Trail, white spruce-balsam fir could be conveniently studied along the Lind Saddle Trail extending south from the Middlewest Trail, jack pine is in extensive nearly pure stands along

the east boundary north of the entrance road into the park, and maple-basswood is well represented in a block near the southwest corner of the park and in another block near the east end of Bohall Trail on the west side of Lake Itasca. A research program to cover all these areas would be well worthwhile.

Table III. Number and density per 40 hectares (100 acres) of established males (pairs)

Species	Total number along trail	Openings	Tamarack-black spruce	Aspen-birch	Aspen-birch with scattered large pines	Red, white pines with aspen-birch	White spruce-fir with aspen-birch	Jack, red, white pines with aspen-birch	Jack pine
Broad-winged Hawk, <i>Buteo platypterus</i>	1							+	
Ruffed Grouse <i>Bonasa umbellus</i>	2								
Great Horned Owl, <i>Bubo virginianus</i>	1								
Saw-whet Owl, <i>Cryptoglaux acadica</i>	+								
Ruby-throated Hummingbird, <i>Archilochus colubris</i>	1	+							
Yellow-shafted Flicker, <i>Colaptes auratus</i>	1								
Pileated Woodpecker, <i>Ceophloeus pileatus</i>	1								
Yellow-bellied Sapsucker, <i>Sphyrapicus varius</i>	1							+	
Hairy Woodpecker, <i>Dryobates villosus</i>	1								
Downy Woodpecker, <i>Dryobates pubescens</i>	2				25				
Arctic Three-toed Woodpecker, <i>Picoides arcticus</i>	+								
Crested Flycatcher, <i>Myiarchus crinitus</i>	3				12	6			
Alder Flycatcher, <i>Empidonax trailli</i>	1	+							
Least Flycatcher, <i>Empidonax minimus</i>	26	20	20	80	86	34		44	53

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Species	Total number along trail	Openings	Tamarack-black spruce	Aspen-birch	Aspen-birch with scattered large pines	Red, white pines with aspen-birch	White spruce-fir with aspen-birch	Jack, red, white pines with aspen-birch	Jack pine
Wood Pewee, <i>Myiochanes virens</i>	18	40		80	12	46	16	15	35
Blue Jay, <i>Cyanocitta cristata</i>	1								
Black-capped Chickadee, <i>Parus atricapillus</i>	4								
White-breasted Nuthatch, <i>Sitta carolinensis</i>	2								
Red-breasted Nuthatch, <i>Sitta canadensis</i>	3					34			
Brown Creeper, <i>Certhia familiaris</i>	+								
House Wren, <i>Troglodytes aedon</i>	1	+							
Winter Wren, <i>Troglodytes troglodytes</i>	+						+		
Catbird, <i>Dumetella carolinensis</i>	1	+							
Robin, <i>Turdus migratorius</i>	1								
Hermit Thrush, <i>Hylocichla guttata</i>	1								+
Olive-backed Thrush, <i>Hylocichla ustulata</i>	1					+			
Veery, <i>Hylocichla fuscescens</i>	19	20	20	80	37	34	48		26
Yellow-throated Vireo, <i>Vireo flavifrons</i>	3								
Blue-headed Vireo, <i>Vireo solitarius</i>	4						8	14	4
Red-eyed Vireo, <i>Vireo olivaceus</i>	24	13		64	57	23	21	19	18
Golden-winged Warbler, <i>Vermivora chrysoptera</i>	1	+							
Tennessee Warbler, <i>Vermivora peregrina</i>	+								
Nashville Warbler, <i>Vermivora ruficapilla</i>	1	+							
Parula Warbler, <i>Compothlypis americana</i>	2						21		
Yellow Warbler, <i>Dendroica aestiva</i>	+								

Species	Total number along trail	Openings	Tamarack-black spruce	Aspen-birch	Aspen-birch with scattered large pines	Red, white pines with aspen-birch	White spruce-fir with aspen-birch	Jack, red, white pines with aspen-birch	Jack pine
Black-throated Green Warbler, <i>Dendroica virens</i>	4						+		
Blackburnian Warbler, <i>Dendroica fusca</i>	8					91	64		35
Chestnut-sided Warbler, <i>Dendroica pensylvanica</i>	5	40				23			9
Pine Warbler, <i>Dendroica pinus</i>	8					34		29	26
Oven-bird, <i>Seiurus aurocapillus</i>	14			21	33	23	11	29	6
Mourning Warbler, <i>Oporornis philadelphia</i>	13			42	16	8	21	10	18
Common Yellow-throat, <i>Geothlypis trichas</i>	9	40	40	8					
Canada Warbler, <i>Wilsonia canadensis</i>	1						+		
Redstart, <i>Setophaga ruticilla</i>	1				+				
Baltimore Oriole, <i>Icterus galbula</i>	1								
Brown-headed Cowbird, <i>Molothrus ater</i>	6								
Scarlet Tanager, <i>Piranga erythromelas</i>	5	13		11	16				6
Rose-breasted Grosbeak, <i>Hedymeles ludovicianus</i>	5				25	23			9
Purple Finch, <i>Carpodacus purpureus</i>	4					23	16	15	
Red-eyed Towhee, <i>Pipilo erythrophthalmus</i>	2	+							
Chipping Sparrow, <i>Spizella arborea</i>	10	80(-)				46(-)		29(-)	89(-)
White-throated Sparrow, <i>Zonotrichia albicollis</i>	6	13				15	21	10	
Swamp Sparrow, <i>Melospiza georgiana</i>	3								
Song Sparrow, <i>Melospiza melodia</i>	+								
Total species	54	16	3	8	11	16	15	11	15
Total individuals	233	279	80	386	319	463	247	214	334

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### Summary and Conclusions

A breeding-bird census was made along LaSalle Trail, Itasca State Park, Minnesota, by plotting the repeated occurrence of individuals on seven complete surveys.

Effective census distances at right angles to the trail varied from 25 to 100 meters for different species and these distances were used for converting the population densities of several species into number of territorial males (pairs) per 40 hectares (100 acres).

The conspicuousness of most species, especially the ease with which they could be recorded because of their singing, declined rapidly after the end of June.

Principal vegetation types along the trail were shrubby openings, tamarack-black spruce, aspen-birch, red and white pine, jack pine, and spruce-fir, although

only aspen-birch occurred extensively in pure stands.

In regard to the taxonomic composition of the avifauna, the following families were best represented: Paruidae (14 species), Fringillidae (7), Picidae (6), Tyrannidae (4), Turdidae (4), and Vireonidae (3).

The seven most abundant species were in order: Least Flycatcher, Red-eyed Vireo, Veery, Wood Pewee, Oven-bird, Mourning Warbler, and Chipping Sparrow. Altogether there were 54 species counted in the breeding population along the trail.

The population level of species varied significantly from one type of vegetation to another. Total bird densities were highest in aspen-birch (386 males per 40 hectares) and lowest in tamarack-black spruce (80). Each vegetation type had characteristic species that there reached their greatest abundance.

Some evidence is presented to show that the Least Flycatcher and Wood Pewee mutually exclude each other from part or all of each other's territories, but inter-species relations between these as well as other species need detailed analysis.

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# Leisure-Time Study of Birds<sup>1</sup>

by

Orwin A. Rustad

Indian summer, with its aromatic smell of wood smoke in the crisp, autumn air beckons us far afield. Fascinated, we watch a seemingly endless ribbon of Franklin's Gulls slowly winging southward over hills and down valleys and over other hills until lost to sight. Far above in the haze a hawk hangs motionless on an updraft of air. In a nearby clump of willows an early flock of winter "chippies" serenade us with their musical "teeler." The leisure-time study of birds can be an interesting hobby offering many delightful hours afield. The study of birds is without a doubt an activity that can be enjoyed for an entire lifetime. It has always been a popular past-time and is certainly a hobby for the entire family to enjoy together. It can be started at any age and has a delightful way of fascinating the young and old alike. There is something so alluring about the mysterious migration of birds, their attractive colors, and cheerful songs that much has been written about them.

Also, much has been written about the importance of leisure-time activity, and the importance of stimulating in our youth, and adults as well, an interest in some wholesome spare-time recreation. In the May, 1951, issue of the NEA Journal, Darrell J. Smith emphasized the "one important segment of man's true wisdom is acquired through recreation. Classroom teachers have the opportunity to teach this joyous recreative living. Theirs is a position of leadership, of stimulation, of welcome direction. They can do much to insure happier and more beneficial vacation days for their pupils." In the November, 1951, issue of the NEA Journal, Florence E. Learzaf emphasized a need for nature study in

our teacher training courses when she stated that "every fall some of our new teachers for the intermediate grades feel a bit shaky in science. They never blink an eye at the assignment of reading or social studies but hesitate to undertake classes in science as they recall that their last formal science courses were back in their high school days." In the March, 1952, issue of *Educational Leadership*, George H. Henry and Daniel Wood pointed out the feeling of many educators that "the Liberal Arts colleges, though they have been groping toward general education ever since Meiklejohn's experiment of Amherst in 1918, are generally unconcerned about efforts to work out a scheme of general education at the high school level."

The development of bird study as a leisure-time hobby can well be illustrated by an example from Rice county, Minnesota. Some ideas as to methods used by the writer in studying birds in this area are offered with suggested reference books, periodicals, and organizations which are useful to both the classroom teacher as well as to those interested in the study of birds as just a hobby. This is in no way meant to be a complete treatise of ornithology of Rice county, but rather an introduction to a subject with endless possibilities. It is hoped that this article will have some suggestions to teachers and others in stimulating interest in bird study and natural history of their own environs.

The importance of learning what others have published about the bird life of your area should not be overlooked as this offers an additional opportunity for original research, especially during the long winter months when field activities are somewhat at a standstill.

<sup>1</sup> Reprinted by permission from "Minnesota Naturalist" 5:5-10.

Some sources of such information are as follows:

*The Auk.* Publication of The American Ornithologists' Union. The 10 year indices to *The Auk* are useful sources of information. This is a national organization being the largest of its kind on this continent and is composed of both amateurs and professional ornithologists.

*The Condor.* Publication of The Cooper Ornithological Club. This is a regional organization for the West, but occasionally references to the midwest are given.

*The Wilson Bulletin.* Publication of the Wilson Ornithological Club. This is a regional organization for the midwest and should be very important in a search of this kind.

*The Flicker.* Publication of the Minnesota Ornithologists' Union. There are eight affiliated societies belonging to the M.O.U. throughout the state. Members of these affiliated groups, as well as *The Flicker*, should be a great source of information.

*Inland Bird-banding News.* Publication of the Inland Bird-Banding Association for the bird banders in the Mississippi valley, the Great Plains and central Canada.

*The Conservation Volunteer.* Official bulletin of the Minnesota Department of Conservation.

*Audubon Field Notes.* Publication of the National Audubon Society, 1130 Fifth Ave., N. Y. This is a bi-monthly publication of cooperative field observations from throughout the nation as follows: Fall Migration (February); Winter Season (June); Spring Migration (August); Nesting Season (October); Christmas Bird Count (April); Breeding Census (December).

*The Birds of Minnesota...* By Thomas S. Roberts. The author studied the or-

nithology of the state for over half a century. This is the most comprehensive study of Minnesota bird life being composed of two volumes.

*Life Histories of North American Birds* by Arthur C. Bent. These volumes are the result of a cooperative project started in 1919 and is now nearly completed. Included are life-history notes from scattered literature and from notebooks of naturalists on every species and sub-species recorded in North America. Also, included are data on distribution taken from the files of the Fish and Wildlife Service. Nineteen volumes have been published in this series to date, however, they fast go out of print. The first one was entitled *Life Histories of North American Diving Birds* and was published in 1919. The most recent volume is called *Life Histories of North American Warblers* published in 1953.

Other sources of information, besides biology departments of colleges in your area are:

*Minnesota Museum of Natural History*, University of Minnesota, Minneapolis. Here is found an excellent natural history library, containing many of the books and periodicals referred to in this article, as well as a staff of competent field men to help you with your many natural history problems.

*Minnesota Division of Game and Fish*, Pittman-Robertson Unit, 1005 Commerce Building, St. Paul. A complete file of nesting records of all birds in the state is being developed in this office as well as banding records of game birds.

The early growth and development of bird study in Rice county was found to be an interesting research problem. Besides searching through a tremendous number of books and periodicals, interviews with many people were included. Chatting with like-minded individuals is always a source of great delight and inspiration, although not always revealing historically. But many life-long friend-

ships may be gained through these bird-chats over a cup of coffee. However, after many interviews and much coffee drinking and a lengthy process of searching through many books and periodicals it was concluded that previous studies, which had been made at several locations in the county, had determined in only a preliminary way the composition and size of the bird population. Also, it was found that very few of these had been published. Most of the information was in lists of birds or only recollections. Dr. Thomas S. Roberts, *Logbook of Minnesota Bird Life*: makes several references to Rice county. Also, several references are made to the county in *Birds of Minnesota* by T. S. Roberts.

In 1920 and in 1921 Prof. J. W. Hornbeck of Carleton College, Northfield, Minnesota published two papers in the *American Midland Naturalist* entitled: *Fall and Winter Birds of Northfield, Minnesota*, 1920-21, Vol. VII, No. 3, May 1921; and *Spring and Summer Birds of Northfield, Minnesota*, 1921, Vol. VIII, No. 3, May, 1922. These two papers were the result of six months active field work in Rice county.

In a more recent publication, O. S. Pettingill, *A Guide to Bird Finding*, west of the Mississippi (Oxford University Press, N. Y., 1953) has mentioned the following places in Rice county: Faribault, Shields Lake heron rookery, The Nerstrand Woods State Park, Carleton College Arboretum and the St. Olaf College campus.

Another publication, Morrison and Herz, *Where to Find Birds in Minnesota* (The Webb Publishing Co., St. Paul, 1950) refers to three areas in the county: Shields lake, Carleton College Arboretum and The Nerstrand Woods State Park.

Quite often our good birding areas are located just a short distance from home, not necessarily across the state. Perhaps one of these books may help you to find

one of these birding "spots" near your home.

The abundance, character and distribution of the wild animal life of a region is largely determined by its geography, topography, vegetation and climate. Therefore, in studying the bird-life of an area it is important that these subjects be considered in some detail, and should be a very interesting study-project for another group of enterprising young naturalists. Aerial photographs are now available for many areas which often reveal hidden places of biological interest and the extent of lakes and woodland. Learning the technique of studying aerial photographs is an additional experience of great value from this project. These prints may be ordered from: Chief, Aerial Photographic and Engineering Service; P.M.A.A., U. S.; Dept. of Agriculture, Washington, D. C. Your local U.S.D.A. Soil Conservation Service may have a set of these for your area and can give you the serial numbers of the more useful ones.

The region covered in this study is in the deciduous forest with some prairie. The "Big Woods" once covered an area 100 miles long from north to south and 40 miles wide at its southern end, extending north to the vicinity of St. Cloud and south to Mankato. It once covered the northeastern part of Rice county, the eastern boundary crossing a short distance east of Cannon City, continuing southward it passed east of Owatonna in Steele county, and then swung west and northwest. A remnant of the "Big Woods" still stands west of Nerstrand in Wheeling township. This area, known as the Nerstrand Woods State Park, at present consists of 467.55 acres according to *Minnesota State Park*, (a publication of the Minnesota Department of Conservation). The dominant trees are the hard maple, basswood, white and red elms, and red oaks. The commonest smaller tree is the ironwood, and the most

(Continued on page 110)

# CORMORANTS AT LAKE OF THE TH

By John Dobie



*GULL ROCK AND  
260 NOISY CORMORANTS*



*NEST OF S*



*COLONY OF CORMORANTS*

# E WOODS



TICKS



*ADULT SHIELDS THE YOUNG  
FROM BRIGHT SUN*



*LARGE YOUNG ARE ALWAYS HUNGRY*

abundant shrubs are dogwood, sumac, thorn apple and black haw. Mid-May is a good time for birding, especially for warblers.

The general upland level of Rice county is broken by the valley of the Cannon River and its tributaries and by the headwater valleys of the Zumbro River. The Straight River rises in Steele county and joins the Cannon at Faribault. The western two-thirds of the county is characterized by numerous lakes and poorly drained areas, making for an excellent habitat for water-fowl (ducks, geese and swans) and other water birds (herons, shore-birds, etc.) during migration. In this area General Shields Lake is considered one of the best places for birding. A well established Great Blue Heron rookery consisting of over 580 nests is found on an island in this lake. Recently the American Egret has become a regular summer resident on this island. The Cannon River begins at this lake at an elevation of about 1090 feet above sea level. From here it flows through Rice Lake into LeSueur county, again returning to Rice county. Before its union with the Straight River at Faribault it widens out in the form of lakes at four places, then joins the Straight River and continues in a northeasterly direction leaving the county near Northfield. The areas along the Cannon River which widen to form lakes and marshes are usually very good for water birds especially water fowl. The largest of these is Cannon Lake.

While on field trips to familiarize oneself with the plants of an area, it is well to keep an eye open for nests of birds. The nests along the road, in the garden and along your favorite foot paths, that were so well concealed all summer, suddenly become very conspicuous when the fall winds clear the leaves from the trees and bushes. How these nests were passed by so many times without being seen, never ceases to amaze one. Most biology class rooms have ac-

quired one or more birds' nests at one time or another. Often these nests accumulate and become just so much meaningless litter and are frequently tossed out. If these nests are given proper attention and storage space and are accurately identified they can be made a valuable part of a classroom museum collection. The best time to collect them is in the late fall after the leaves have fallen. No harm is done by collecting, the birds have left and very few are used the second time. A careful examination of any nest is an interesting experience and a great deal of satisfaction comes from knowing what bird built it. Several good books are available to help in identifying these nests: *Handbook of Birds of Eastern North America* by Frank M. Chapman (D. Appleton-Century Co., N. Y.) now out of print; *Birds' Nests: A Field Guide* (birds of the U. S. ranging west to the Great Plains) by Richard Headstrom, (Ives Washburn Publishing Co., N. Y.) According to *The Book of Bird Life* by A. A. Allen (D. Van Nostrand Co., N. Y., 1948) "ninety per cent of the nests found by children in Northeastern United States will belong to one of the following nine birds that are common, and whose nests are conspicuous when the leaves fall: Catbird, Chipping Sparrow, Goldfinch, Baltimore Oriole, Redstart, Robin, Song Sparrow, Red-eyed Vireo, and Yellow Warbler. The nests of birds that build on the ground are not ordinarily found except where they are occupied, and those can be identified by seeing the birds themselves." As a wise conservation measure, the collecting of birds' eggs should be discouraged as it is a waste. Encourage the photographing of eggs. A set of good kodachrome slides of the nest and eggs of each species of birds in your area, which have been accurately identified, would be of tremendous value both to your classroom work as well as a great contribution to the local ornithology of your area. A book for every camera-owning sportsman and

photographic enthusiast with answers to your many problems and questions on out-of-door picture taking is *Photography Afield* by Ormal I. Sprungman (The Stackpole Co., Harrisburg, Penn., 1951). The rudiments of photography are discussed in the excellent article *Beginners Can Photograph Birds* by Richard B. Fischer (Audubon Magazine, May-June and July-August, 1950).

Christmas vacation is field trip time to observe the winter bird population. These nation-wide, mid-winter *Christmas Counts* were originated in 1900 by the late Dr. Frank M. Chapman and have now become an American tradition in ornithology. The results from these national cooperative studies are published each year in the April issue of the Audubon Field Notes. Read: *Bird Watching . . . Hobby of the Half Century* by R. C. Beidleman (Audubon Magazine, Sept.-Oct., Nov.-Dec., 1951) for a complete story about this mid-winter hobby which is of real value to science. Complete information on making a *Christmas Bird Count* and on preparing the report is given in *Instructions for Making Bird-Population Studies* (National Audubon Society, N. Y.) at fifteen cents per copy.

A total of thirty-seven species were recorded on the *Christmas Bird Counts* in Rice county during the past three seasons. Thirteen wintering birds were seen including the Cooper's Red-tailed, Red-shouldered and Sparrow Hawks, Killdeer, Mourning Doves, Belted Kingfisher, Horned Lark, Bluebird, Cedar Waxwing, Meadowlark, Rusty Blackbird, and the Song Sparrow; nine winter visitors were observed including the Rough-legged Hawk, Tufted Titmouse, Brown Creeper, Golden-crowned Kinglet, Northern Shrike, Purple Finch, Red Poll, Slate-colored Junco and the American Tree Sparrow; among the permanent residents were the Ring-necked Pheasant, Great Horned Owl, Barred Owl, the Pileated, Red-bellied, Hairy and

Downy Woodpecker, Blue Jay, Crow, Black-capped Chickadee, White-breasted Nuthatch, Starling, English Sparrow, Cardinal and the Goldfinch.

As a part of the regular field trips a new area is introduced by giving a short, descriptive lecture in the field on the general ecology together with a brief review of the typical bird life to be found in such an area. By this occasional field-lecture method the student is better able to associate the species with its typical habitat. A simple, elementary book on the fundamentals of ecology which is an excellent introduction to conservation is *The Webb of Life*; a first book of ecology by John H. Storer (The Devin-Adair Co., N. Y., 1953). Also refer to: *Our Wildlife Legacy* by Durward L. Allen (Funk & Wagnalls Company, N. Y., 1954).

The use of the Cornell Bird Records (Cornell University Records, Cornell University Press, Ithaca, N. Y.) in connection with the regular field trips has been found very useful in teaching bird songs. It is helpful to project a kodachrome slide of each bird whose song is being played on the record. By so doing the student is able to associate the song with the bird much better. Kodachrome slides are available from several places, such as: The General Biological Supply House, 761-763 East 69th Place, Chicago, Ill.; and also from the National Audubon Society, 1130 Fifth Ave., N. Y. 28. Frequent outdoor check-up tests are given to the group to determine whether the song can be heard by the student and if the song is recognized when heard in the field. It was found that one student was not able to hear the high, thin lisp or zee, zee, zee of the Cedar Waxwing. An audiometer test was given which confirmed his inability to hear that particular note. He appeared to have no difficulty in hearing the warblers, vireos and other birds in the area that also have a comparatively high note. *A Guide to Bird Songs* by Aretus

A. Saunders (Doubleday and Co., N. Y., 1951) may be useful to help identify many of the songs of birds.

The first period in the field may be profitably spent having the student learn how to adjust and use the binoculars and how to use the field-guide. Then, peculiarly enough, the student must become acquainted with the out-of-doors and become accustomed to looking at objects that often flit past very fast and learn how to listen. All this comes with experience and constant practice. After this rudimentary introduction a few birds may be identified for practice. From then on each field trip will add to the student bird-list, and with that his enthusiasm will increase.

Many useful books are available to help one with field identification. The following two books are considered by the writer an essential part of his field equipment: *A Field Guide to the Birds* by Roger Tory Peterson (Houghton Mifflin Co., Boston, 1947); *The Ducks, Geese and Swans of North America* by F. H. Kortright (The American Wildlife Institute, Washington, D. C., 1943). Another book that is very useful and should be a part of one's ornithological library is: *A Guide to Bird Watching* by J. J. Hickey (Oxford University Press, N. Y., 1943). This is the first American book to describe the modern art of bird watching, and is especially helpful to the beginner. However, the more advanced students will also find the book of great inspiration.

Occasional week-end field trips of a one or two day duration are of great stimulation. During the past year the M.O.U. field trip committee suggested several interesting field trips to places where an abundance of birds is usually found each year, especially during migration. The mid-winter *North Shore Trip*, from Duluth to the Canadian border, is gaining in popularity each year. This is scheduled anytime between Christmas vacation and mid-February with the pos-

sibility of seeing such northern species as the old Squaw Duck, Glaucous Gull, Raven, Canada Jay, Hudsonian Chickadee, Red-breasted Nuthatch, Northern Shrike, Evening Grosbeak, and the Snow Bunting. On the week end nearest April 9 an early spring trip is taken, usually referred to as the *Sand Lake Trip*, which is considered one of the more spectacular bird-outings of the year.

The very large concentration of ducks and geese at Lake Traverse near Wheaton, Minnesota, and at the Sand Lake National Wildlife Refuge located north of Aberdeen, S. D., makes it possible to learn most species of local waterfowl very quickly. The *Shore Bird Trip* is taken on Memorial day week end to North Dakota for the purpose of seeing the vast number of migrating shore-birds, nesting waterfowl and prairie birds such as the Avocet, Western Willet, Marbled Godwit, Chestnut-collared Longspur, Sprague's Pipit, and the Lark Bunting. Places of special interest include Lidgerwood, Oakes, Wishek and Jamestown, North Dakota. The *Warbler Trip* is taken during mid-May. This is also picnic-time. Pack a big picnic lunch, put the youngsters in the car, and drive down to Frontenac, on Lake Pepin, Minnesota, during the height of warbler migration for an ornithological treat. Plan to spend the entire day thoroughly enjoying yourself in a very scenic part of southeastern Minnesota. Besides seeing the many warblers, look for the nesting Blue-gray Gnatcatcher, whose nest is usually quite easily found in one of the large trees. Also, be sure to hike out to Sand Point located directly east, through the woods, from Villa Maria (a girls' school). This sand bar extends into the lake and usually a variety of shore-birds and gulls. Hawk migration is at its peak in Duluth about the second and third week of September according to field observations made at University of Minnesota, Duluth branch. The many species of hawks that migrate through the Duluth area can be watched from

the rocky bluffs along the sky-line drive that overlooks the city. This is considered one of the finest hawking spots in the entire country.

The more bird trips that are taken the more familiar you will become with the birds, and you will want to jot down the names of those you identify on each of these daily trips. Instead of writing down these names it is easier to have a prepared check-list called a *Daily Field Card* with the names of the birds. These field trip cards may be purchased from your local bird club, the Minnesota Museum of Natural History or from the National Audubon Society. However, they are very easily prepared by using the school duplicator.

The bird population of one locality may differ a great deal from that of another locality found some distance away. This is especially true of the summer residents and transients. Some species that are considered permanent residents in the state may be only winter visitants in Rice county. Also, some species that are transient in the southern half of the state are common residents in the coniferous forests of northern Minnesota. Some birds that are common to the southern half of the state are rarely found in the northern part. What is peculiar to the Rice county bird population may not be typical of an adjoining county, and certainly not of another part of the state. Therefore, a need for a concentrated bird study in a local area is important in order to give a more complete picture of the total bird population of the state. For this reason your observations may be of great value and records should be kept.

During the past 25 years the writer has made general observations of the bird life in Rice county, however, during the years 1951, 1952 and 1953 a more intensive investigation was conducted with 204 species being recorded. During these three years 17 permanent residents were observed. These are birds that do

not migrate but remain in the area throughout the year, such as the Great Horned, Barred and Screech Owl; the Pileated, Hairy and Downy Woodpecker; Blue Jay, Crow, Black-capped Chickadee and the White-breasted Nuthatch. The Bob-white was rarely seen during the survey, a decided contrast to 25 years ago when a pair regularly nested in a field near the boyhood home of the writer in Faribault. Four birds, that are now permanent residents in the county, were originally introduced into the United States from foreign countries; the European (Hungarian) Partridge, Ring-necked Pheasant, European Starling and the English (House) Sparrow. Two species that are common in the southern states have extended their breeding range northward and are now found here; the Red-bellied Woodpecker came into the area in recent years with the first nesting date recorded on June 1, 1953. The Cardinal has been breeding here for many years.

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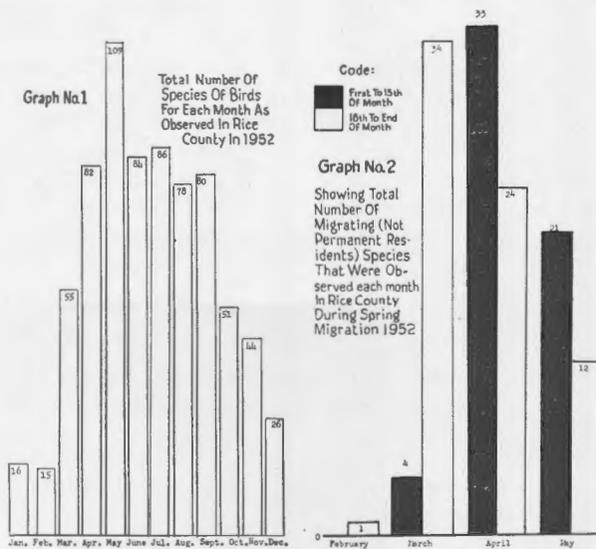
During the same three year period 82 summer residents were recorded. These are birds that normally migrate each spring and fall and nest (breed) in the area, including common species as the House Wren, Catbird, Brown Thrasher, Robin, Bluebird, Western Meadowlark and the Baltimore Oriole. Three American Egrets were seen here for the first time in 1948. Each summer this species has been increasing in number slightly and is being watched with a great deal of interest and speculation. The first nesting date was recorded in 1949 at the Great Blue Heron rookery, General Shields Lake (Audubon Field Notes, Vol. 3, No. 5, 1949, p. 236). The following three ducks were found nesting in the area: the Mallard, Blue-winged Teal and the Wood Duck.

Eighty-three birds, known as transients, pass through the county in the spring and fall to and from their northern resting grounds. All of the geese and most of the ducks, shore-birds and warblers seen in the area are transients.

Winter visitants are those birds that visit the area during a portion of the

winter, usually coming from the north, such as the Snowy Owl. However, the Tufted Titmouse is a southern bird which is extending its range northward and is now becoming a regular winter visitant in the county. The nine winter visitants have been listed earlier in this paper under Christmas bird counts.

Thirteen birds are considered rare in the county. These are birds that are rarely seen here although they might be common to the state elsewhere. The Blue-winged Warbler is extending its breeding range northward. Also, it is extending its range up the Cannon River valley in the direction of Rice county and is now nesting near Cannon Falls, Goodhue county. Four of these were observed in Northfield on June 1, 1951. The Eastern Meadowlark is common in counties to the east of Rice, but rarely found in Rice county. The Mockingbird is another southern bird that is extending its winter range northward and was seen in Faribault on Dec. 22, 1949 (Flicker, Vol. 22, No. 1, March, 1950). On April 22, 1951, a Lark Bunting was seen near Faribault. This is a bird common to the western prairies of Minnesota



and the Dakotas. The Bewick's Wren was seen in Northfield during the 1951 breeding season, from April 30 to June 1. Even though the Florida Gallinule nests regularly in the sloughs and swamps of southern Minnesota, it was recorded for the first time at Cannon Lake, near Faribault, on July 18, 1952.

Permanent records of birds in an area may be kept in various ways such as in a notebook, on 3x5 cards or by other methods adapted to meet the needs of an individual. A very useful birdfile is available from the National Audubon Society made up of 5x7 cards for the birds of northeastern United States on which may be kept all your bird notes with a space for migration and nesting and other items in one especially designed, systematic file. The cost is \$3.00 for a set of 250 cards. The more advanced student of field work may want to refer to *Natural Communities* by Lee R. Dice (Univ. of Michigan Press, Ann Arbor, Mich., 1952) for more information on how to conduct field investigations, and methods of keeping natural history records.

According to psychologists, pictures make a more lasting impression on students than a series of figures. Similarly, a simple bar graph will often mean more than a lengthy group of numbers. At the end of each month the total number of species seen in Rice county (graph 1) is shown by an upright bar which corresponds to the number of bird species recorded for the month. In the month of May, one hundred nine species were recorded for the county, suggesting that May would be a good time to be in the field observing birds.

After the permanent residents of an area are known, another graph may be

constructed indicating another trend in migration (graph 2). This does not include the permanent residents but only the new species arriving in the area each 15-day period during migration. Even though the total number of species is much greater in May, as shown in the first graph, the largest number of migratory species arrive during the latter part of March and the first part of April. This should indicate that, normally, good birding can be expected in Rice county from about March 15 through the month of May.

Remember, the best way to develop an interest in bird study is to have a bubbling, contagious enthusiasm which is so evident that others will catch the interest by an association with you. Also, an inspiring nature-study instructor must show a young naturalist how to be self-reliant. When a nest is brought in, for example, don't just identify it. That's usually the easy and quick way out. The student will gain very little by the experience because the next time a nest is found, he still won't know how to identify it by himself. Show the students where to look for this information and how to use it. Check the many references in this article and build a reference library in your classroom. Knowing what books and other materials to use and how to use them is much more sensible than trying to be a walking encyclopedia. A biology class room should be a nature reference room for student use, not just something to look at. Keep this article with your other reference books and use it as a handy source of information. Continue to add the names of other references as they are discovered.

— *Biology Teacher, Breck School, St. Paul.*

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# Seasonal Report

by

Mary Lupient

After the cold late spring, temperatures in May were normal, but the month was marked by very strong winds which delayed the migration of some species of birds and apparently blew some individuals rare to Minnesota off their course so there were several unusual records. At Madison, Mrs. C. E. Peterson caught a Black-throated Grey Warbler, a Macgillivrays Warbler and a Lazuli Bunting in one of her banding traps. Several Audubon's Warblers came to a feeder at the home of Florence and Lee Jaques, North Oaks, St. Paul, May 15. Far from its accustomed habitat a Burrowing Owl was seen near Duluth, May 27 by Ray Glassel, William Pieper and George Fisher.

A record breaking heat wave burst upon us the second week in June. This was followed by a week of heavy rain that caused flash floods which damaged homes and farmlands and obstructed highways. Heavy rains fell during the first half of July to compensate for the dry spring.

Reportedly, Horned Grebes were unusually abundant everywhere in the state. Normally they migrate through eastern Minnesota in small numbers, but at least a few could be seen on nearly every lake, and in some instances exceptionally large flocks were reported. Hoellbell's Grebes in migration remained on Twin City lakes for longer than usual. Two were on Lake Nokomis in Minneapolis as late as the middle of May. Eared Grebes rarely are seen in eastern Minnesota but this season there were three records. One was seen on Lake

Harriet in Minneapolis by A. Bogren, May 18; several at Duluth May 27 by Ray Glassel, and two on Albert Lea Lake, May 19, by this writer.

Rev. F. V. Strnad reported that the Common Loon is again nesting on a small grassy island in Lake Vadnais, St. Paul. There were two young at the time of observation, June 5. A Red-throated Loon was spotted on Lake Harriet, May 20, by R. E. Cole.

American Egrets appeared in various sections again this spring; no doubt there will be nesting records. Four were seen by A. C. Rosenwinkel near St. Paul as early as April 24 after a night when the temperature fell to 26°. Margaret Lakore saw eight American Egrets on Highway 29 near Alexandria, May 7, and also a large flock of White Pelicans in the same area.

From Schroeder, Marie Aftreith sent a report of a Whistling Swan on Lake Superior, May 22. She wrote that it was very exciting to find a Mockingbird in her front yard on the same date. A Mockingbird was seen by Ray Glassel, William Pieper and George Fisher away up on the Fertile sand dunes, June 10. On the same trip they found a Great Grey Owl at the Red Lake Refuge.

Of interest is the following report of a Sand-hill Crane by Mr. and Mrs. W. R. Luwe, Mankato. It reads, "It was first seen by Dr. L. O. Johnson of Sherburne, Minnesota, in a slough a few miles north of there, April 18, and was observed through May 4. When it first arrived it appeared to be going through

a mating dance but no one ever saw another bird, though members of the Johnson family carefully and diligently endeavored to locate one. They last saw the bird May 4, though they returned each day of the week following to check on it." Mr. and Mrs. Luwe saw the crane on several occasions and took pictures of it. For many years no one in the community had seen a Sandhill Crane.

The following is an excerpt from a letter dated May 4 from Dr. A. B. Erickson, Dept. of Conservation: "Robert Benson and I visited Wheaton, Minnesota, and the Mud Lake Refuge on April 26, 1956. At this late date there were between 6000 and 7000 Blue and Snow Geese feeding in the fields around Mud Lake. We also saw several hundred Canada Geese. On April 27 in a small marsh at Graceville, Minnesota, we saw six Marbled Godwits and two Hudsonian Godwits. Water levels in many of the potholes were way down and some potholes were completely dry. Fortunately, in the Graceville area there were still a fair number of potholes with good water conditions."

Shore-bird observation was hampered by a dry spring and besides marshes and wetlands are constantly being drained by land owners. All of the species of shore-birds that normally pass through the state were seen, but the number of individuals reported in eastern and southern Minnesota was smaller than heretofore. Mrs. Ann Dodge and others reported Wilson's Phalaropes, Dowitchers, Semi-palmated Plovers and small Peeps around ponds between Carver and East Union May 4. Near Montgomery and surrounding area Dr. W. J. Breckenridge saw Wilson's Phalaropes and other shore birds. This writer saw a Buff-breasted Sandpiper and a Sanderling in the same area May 20. Upland Plovers, Dowitchers, Black bellied Plovers and several other species of shore-birds were recorded on the M.O.U. field trip at

Albert Lea, May 20. North of St. Paul, A. C. Rosenwinkel reported Northern Phalaropes, May 12, and in the same slough he found Wilson's Phalaropes, Red-backed and White-rumped Sandpipers, May 26. At Goose Lake, White Bear, about 25 Red-backed Sandpipers, two Hudsonian Godwits, two Stilt Sandpipers and a Northern Phalarope were reported by William Pieper, May 23. Rev. Strnad reported Ruddy Turnstones at Goose Lake, June 7, and Dr. Alden Risser saw a Knot at Frontenac, May 26.

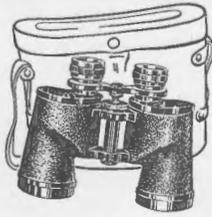
Apparently there is a dearth of cuckoos this spring for there were only two records, both Black-billed.

The migration this spring was a joy to observers. At the peaks the landscape literally teemed with warblers, vireos, flycatchers, thrushes and sparrows. The heaviest migration occurred May 11 to 22. The species that normally migrate early were delayed by cold weather and storms south of us, and strong winds here, so the early and late migrants, with some exceptions, passed through together. Contrary to their usual habit large numbers of each kind migrated in flocks at times. For example, dozens of Blackburnian Warblers could be counted within sight, May 12, and on May 16 there was an estimated 200 Yellow-throats at the Isaac Walton Bass Ponds, Minneapolis. Sometimes the wind was so strong in early May the birds were obligated to feed on the ground, a happy circumstance for observers. A Kentucky Warbler and a Brewster's Warbler were seen in Roberts Sanctuary, May 22, by Ray Glassel. Brother Theodore observed a Brewster's Warbler at Whitewater State Park for ten days; although this suggests a nesting no nest was seen nor was the bird carrying food. The last time it was seen was June 24.

In his letter dated July 5 Brother Theodore wrote the following: "There are two pairs of Yellow-crowned Night

Hérons in the spot at La Crescent this year. One nest, on the identical site of last year, same tree, same branch. I think there were five young as there were remains of five egg shells. These young are about to leave the nest. The second nest is in an elm growing right next to the ash occupied by the first nest described; nests are about ten feet apart. I don't know how many young are in this nest, but I saw two through the nest, and they are much younger. The Chats are again near Reno, and also there is a nesting Duck Hawk from all indications."

The peak migration of flycatchers was May 23. All species occurred in large numbers and later many Crested Flycatchers screamed and fought over territories. The Western Kingbird has been extending its range to the east to some degree in recent years. Goodly numbers were everywhere in the territory surrounding Anoka, June 20.



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Brewer's Blackbirds had arrived at the National cemetery at Ft. Snelling, May 3. To date there was no report of nesting, but in previous years nests of these birds were found in this area.

White-throated Sparrows migrated in flocks as usual and observers reported unusually large flocks of White-crowned and Harris's Sparrows.

A Tufted Titmouse appeared at the residence of Mr. and Mrs. George T. Ryan, Minneapolis, May 28. It remained only a day.

Orchard Orioles are again nesting near the summer home of Mr. and Mrs. William Davidson, Afton. Sheridan Flaherty stated that an adult male appeared at his home in Morris in May and one was reported by Josephine Herz near Bloomington Ferry. It stayed in the area for some time and may be nesting.

By the first of June, Dickcissels were abundant in alfalfa fields throughout the state.

Range extension in Minnesota by the Cardinal has been noted with interest, and reports of its appearance in the northern and western parts of the state were recorded from time to time. It has been reported at Grand Marais, Morris, Walker and other places. An item, dated September 9, 1955, from the Winnipeg Free Press was sent to this writer by Mrs. Grace Keith, Winnipeg, Manitoba, Canada, and is descriptive of nesting Cardinals. It reads as follows: "A pair of these rare visitors to our province successfully raised a brood of three young that have now left the nest, reported by Hector MacDonald. This is the first authentic nesting record of these charming birds in the Winnipeg area since Mrs. E. J. Humphries' three nests in 1942 and 1943."

This report covers the period May 1 to July 15 excepting some late April records which were not received in time to appear in the June number. — *Minneapolis, Minn.*

# The Canadian Lakehead

Edited by  
A. E. Allin

The severe winter of 1955-56 persisted well into April and remnants of the record 160 inch snowfall were still to be seen in mid-May. In fact, snow was still present in sheltered areas about the Lakehead and in northeastern Minnesota on May 18 when we left for the M.O.U. meeting at Albert Lea. Small streams broke up in mid-April and the Kaministiquia River was free of ice later in the month. The ice on Whitefish Lake disappeared on May 9 but many northern lakes were not ice-free until the end of the month.

Spring Peepers were calling on May 12.

On May 22, the temperature fell to 25°. The temperature during June was below normal but varied from 34° on June 1 to 96° on June 12. The early half of July was rather cool and very wet. On July 18, the temperature reached a record low of 37° and outside the cities there were reports of damage to delicate vegetables and flowers. As a result of the late spring, flowers of trees and shrubs appeared very late and missed the disastrous frosts which are often so damaging. Subsequently we anticipate a bountiful crop on the Rowans, Saskatoon, Highbush Cranberries, Pin Cherries and Chokecherries.

Despite the belated arrival of spring, 60 per cent of the migrants arrived earlier than the long-term average. These records were frequently based on individuals and the bulk of a given species may not have arrived as early as usual. Undoubtedly several recent springs have been unusually early and we have come to expect migrants earlier than longer experience justified.

There is little doubt, however, that migration was altered by the severe spring weather. A large flock of Snow Buntings was still present in Fort William on May 11 and we saw two in Cook county, Minnesota, on May 18. Redpolls were still present on May 5. The Allins observed a Northern Shrike on May 13, much later than one expects this species to remain in the region, although there are one or two May records.

Possibly the peculiar weather conditions also explained the presence of so many unexpected visitors. Some of these were western forms; others were species which occur more commonly in the south. In the former group fall the White Pelican, seen by the Robbs on May 20 and the White-fronted Geese seen by the Robbs and K. Denis on May 24. This is the fourth local record of White-fronted Geese at the Canadian Lakehead. Southern visitors which were unexpected included a Mockingbird seen on May 20 by K. Denis and Mrs. Knowles and a second seen about May 31 by Allan Oliver. There are two later reports by non-naturalists of birds which most probably were Mockingbirds. Do these southerners slip through Minnesota but become arrested by the dense forests of the North Shore?

Dr. Murray Speirs and Doris Speirs reported a Crested Flycatcher for the fourth Lakehead record. Other uncommon visitors included three Baltimore Orioles, an Indigo Bunting and three Red-headed Woodpeckers. Less rare, but not common, were two Mourning Doves seen on June 17 by Col. Dear and three Whip-poor-wills heard calling throughout late May and early June. These two species have not yet been reported breed-

ing locally. Nor has the Purple Martin, another uncommon visitor, reported on May 26, and in two separate areas on June 2. Catbirds are continuing to increase in numbers and the Brown Thrasher is now encountered several times each spring and summer. Short-billed Marsh Wrens have been located in two widely-separated areas. Bobolinks have again returned in small numbers to a favored site.

A few new species have been very scarce. The Phoebe does not seem to have recovered from the disaster of early May, 1954, and many of its old nesting sites remain unoccupied. Nor do the swallows appear to be as common as formerly with the exception of the Cliff which is now seen more and more frequently. The Bank Swallow is very scarce; few of its old colonies are occupied. This condition exists over much of Ontario. They are reported to be nesting along the Lake Erie cliffs in unprecedented numbers. Did they retreat this spring to more favorable southern areas? If so, one might expect them to be more common this season in Wisconsin and southern Minnesota. The above weather conditions fail to explain the almost complete absence of Red-breasted Nuthatches during the past winter and present breeding season.

The migration of water-fowl and shore-birds was of more than usual interest. A flock of Whistling Swans totalling about 30 birds was present through most of May. Geese were uncommon. A European Widgeon was closely observed on May 6 (A.E.A.). This is our third record of this uncommon species. The Wood Duck is a rare local visitor for which there were no local spring records, although we saw one near Grand Marais a year ago. This spring the Hantons observed one at Sibley on May 10 and another was observed in Port Arthur by S. Robb on May 11.

The shore-bird migration was spectacular. On May 26, Wilson Phalaropes

were seen in Paipoonge township by the Muries, Robbs, Joan Hebden and the Barretts, who had joined the Thunder Bay Field Naturalists for their annual spring field day. This is the first record of this species at the Canadian Lakehead. On the same day we saw great flocks of Red-backed Sandpipers, 30 Dowitchers, 12 Hudsonian Godwits and two of the rare Marbled Godwits. Individual Black-bellied and Golden Plovers were seen in the same wet field. Along the waterfront, there were the usual Least and Semipalmated Sandpipers, Semipalmated Plovers, Killdeers and Spotted Sandpipers as well as the relatively scarce Baird's and White-rumped Sandpipers. A Knot was seen by C. E. Garton on May 20. Outstanding was a flock of 55 Hudsonian Curlews seen near Dorion by the Speirs on May 23. Upland Plover returned to the fields where they have nested for the past decade. Wilson's Snipe have been scarce and to date only one Woodcock has been reported.

Peculiarly, no Ruddy Turnstones were reported. For the past three springs these noisy shore-birds have appeared in considerable numbers along the local waterfronts and have remained for a week or more. On checking our records since 1938, however, we find we have reports for only 1940, 1950, 1951, 1952, and 1953. Possibly the abnormal condition has been their presence the past three years rather than their absence in 1956.

The warbler migration was not spectacular but all our regular migrants were listed except the very rare Pine Warbler. It is unusual for the Black-throated Blue, Parula, and Orange-crowned Warblers to be reported in a single season. Our coverage of the area is apparently becoming more complete. The Connecticut Warbler was not reported at the Lakehead proper but many were heard in the adjacent Black Spruce swamps.

The sparrow migration was excellent. Slate-colored Juncos appeared in numbers on May 6. On May 9, White-throated Sparrows were common for the first time and many Harris's Sparrows and White-crowned Sparrows also appeared. We saw a Gambel's on May 10 and several were subsequently reported. Both Harris's and White-crowned Sparrows were still present on May 26. A flock of 300 Lapland Longspurs was present on May 12. Commencing May 12, there were very heavy flights of Chipping Sparrows which caused considerable damage. They lit on new-sown lawns and consumed much of the grass and clover seed. They also destroyed tens of thousands of tree seedlings in the local nursery. The occasional Lincoln's Sparrow and Clay-colored Sparrow were present in these flocks. The Lincoln's Sparrow has always seemed a rare species in Fort William and westward, but observers to the north and east of Port Arthur report it as common, and we have no difficulty hearing it when we visit suitable areas northeast of the Lakehead. Pine Siskins have been very scarce. An adult male White-winged Crossbill was seen in Port Arthur on July 11. It was either sick or exceptionally tame for we lifted it from a branch of a lilac tree without difficulty. At least a few Evening Grosbeaks have spent the summer in Sibley Park.

A most unusual record was made by the Speirs on June 14 when they saw two Red-throated Loons on Lake Superior, 15 miles west of Marathon. Agassiz reported this species in the summer of 1848 at Sault Ste. Marie. Saunders saw a female taken at Rosspport, June 20, 1911, and Garton saw two adults with two young at Rosspport, July, 1941. Nearer the Lakehead, L. S. Dear found a nest of the Red-throated Loon on a small island off Thunder Cape, July 1, 1912. It contained "two eggs on the points of hatching . . . the pair was under observation through field glasses as they remained fairly close." (L. S. Dear).

A few interesting breeding records have already been reported. On June 12, a female Pintail led a brood of eight newly-hatched young down a Fort William street. This is the fifth Lakehead record for the breeding of the Pintail. All have been since 1940, and we believe it is steadily increasing in numbers as a breeding bird. At Dorion, the Speirs reported young Canada Jays in late May and early June and at the end of the latter month, a "bob-tailed" young was reported to them. This is a very late record as they regularly nest in late March and early April. On June 24, I found an empty nest at Dorion Fish Hatchery, 15 feet from the ground, and five feet from the trunk on a horizontal branch of a Black Spruce. This nest was only a few feet from the eaves of a hatchery building.

The Speirs found a Pine Siskin's nest within 100 feet of the Jay's nest. It

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apparently contained young when we visited the area on June 24. The nest was about 20 feet from the ground and 18 inches from the tip of a small Balsam Fir. Hidden in the dense top branches it was scarcely visible from the ground. This is an additional breeding species for the District of Thunder Bay, Ontario. Elsewhere, Siskins have been reported nesting in evergreens but on horizontal branches at relatively low levels. Here they were difficult to find as they were hidden by the branches above them as well as those below.

The Speirs were located primarily in the Dorion area to study a colony of Lincoln's Sparrows which they had found a year ago. Numerous singing males were located but it was not until June 24 that a nest was found. This was in a hollow of the grasses and weeds along a well-traveled road. It contained one infertile egg and three newly-hatched young. It was so well-concealed that four naturalists failed to find it after prolonged searching despite a parent

bird flying into a very small area at regular intervals. Finally Neil Atkinson, son of the hatchery manager, found it. This is the third local breeding record for the Lincoln's Sparrow. Dr. Paul Harrington, Toronto, found a nest with four eggs at Whitefish Lake, June 13, 1955, and Colonel Dear and I found one containing four eggs in O'Connor township on June 15, 1947.

On July 11, Dr. and Mrs. Axtell of Buffalo, located a nest of the American Three-toed Woodpecker 100 miles northwest of the Lakehead on the Trans-Canada Highway. This is a rare species locally which I have seen but once and that was during spring migration. Agassiz saw one on July 13, 1848, near Pic. Dear (Transactions of the Royal Can. Inst. 49:132, 1940. Breeding Birds of the Region of Thunder Bay) states the late J. Jacob found a nest in adjacent O'Connor township, May 27, 1904, which contained four eggs. — *Regional Laboratory, Ontario Department of Health, Fort William, Ontario.*

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The Minnesota Ornithologists' Union would appreciate receiving back copies of *The Flicker* through the years 1937-1945. Our supply of these years is getting low, and the demand for them has been increasing.

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The annual business meeting and paper session of the Minnesota Ornithologists' Union will be held at the Museum of Natural History in Minneapolis on Saturday, December 1, 1956. Please consider this notice as a call for papers. Title of the paper, length of time required, equipment needed for presentation, and any other pertinent information should be sent to Dr. Dwain Warner at the Minnesota Museum of Natural History, Minneapolis 14, no later than November 10.

# Notes of Interest

ADDITIONAL MINNESOTA HERPETOLOGICAL NOTES — Field observations and collections made by the authors during the past eight years extend somewhat the information published in Breckenridge's *Reptiles and Amphibians of Minnesota* (U. of Minnesota Press, 1944). The present article is a selection of this material that may be placed on record for those interested in the herpetology of the state. The numbers following specimen records refer to the specimen numbers in the authors' preserved collection.

*Tiger Salamander, Ambystoma t. tigrinum.*

Our experience indicates that this common salamander may occur to a greater extent in the northeastern coniferous forest than stated by Breckenridge. Three larval specimens were collected in a small pool set in rock about 25 feet from Lake Superior near Little Marais, Lake county (8), and three other larvae were captured from a similar pool near the shore of Lake Superior south of Grand Marais, Cook county (505-507).

*Red-backed Salamander, Plethodon c. cinereus.*

Chisago county is added to the range of this species on the basis of specimens 543 and 544 from under logs near the bank of the St. Croix River north of Taylor's Falls.

On October 12, 1953, the author captured many adults and juveniles in Interstate Park, Polk county, Wisconsin, and across the St. Croix River near Taylor's Falls. It was noticed that the juveniles, probably hatched several months earlier, were found exclusively in moist situations, primarily under logs at the edge of small permanent ponds or streams, while the adults were found under logs on the drier hillsides, often quite a distance from water. Another visit was made to the same spots later in October in an attempt to discover whether the juveniles would hibernate under the logs at the water's edge, but no salamanders were seen.

*Four-toed Salamander, Hemidactylum scutatum.*

This tiny salamander has been found by the authors to be quite common in Interstate Park, Polk county, Wisconsin, across the St. Croix River from Taylor's Falls, Chisago county, Minnesota. Here it is found in much the same situations as the Red-backed Salamander. On this basis, we may expect this salamander to occur along the Minnesota side of the St. Croix or Mississippi Rivers, particularly near Taylor's Falls where the St. Croix has narrowed to such an extent that it may not be an effective barrier.

*American Toad, Bufo a. americanus.*

The following are county records in addition to those reported by Breckenridge: Carlton (29, 210), Dakota (141, 208, 283), Washington (209), Sherburne (320), Ramsey (332), Blue Earth (350), LeSueur (332, 353, 355, 358), and Chisago (364).

It has been our experience that the American toad will eat almost anything that crawls, hops, skips, jumps or flies, and some things that do not. One individual contained one June beetle, one fiery caterpillar hunter, several other beetles, one large lepidopteron larva, a number of other insect larvae, a very large number of ants, and even one seed from an aspen tree. Others have been found to contain centipedes, millipedes, spiders and, in one case, even three snail shells.

*Cricket Frog, Acris gryllus crepitans.*

We have not located the Cricket Frog in Minnesota outside the counties reported by Breckenridge. The habitat of this frog in southeastern Minnesota, however,

does not seem to be quite as restricted as Breckenridge reported. It appeared to us that the Cricket Frog in the Mississippi River valley of Houston county is at least as common as, if not more common than, *Rana pipiens*, the Leopard Frog. Small, meandering gravel-bottomed streams (Breckenridge, 1944) are favorite places for *Acris*; however, they were also very common in a large pasture pond which was fairly weed-choked near the edges, had a soft mud bottom and an algal scum on top. Quite a number of individuals were seen in a sewage ditch in an oak woods. Although very abundant here, we have not found the frog in similar situations in Winona county, posing an interesting problem, that of determining the factors limiting the distribution of this tiny frog.

*Swamp Tree Frog, Pseudacris nigrita triseriata.*

Present records extend the range of this sub-species into the northeastern part of the state, where they were found in rocky pools near the shores of Lake Superior or the rivers running into the lake. Additional county records: Sherburne (322), Cook (343, 344), Lake (548-551), and a sight record from Winona county.

*Spring Peeper, Hyla c. crucifer.*

The only additional county record of this species is from Winona county (447, 448), where they were taken from a small stream in Whitewater State Park during the breeding season. These frogs are notoriously hard to approach while singing, but, if the observer can accurately reproduce their call, they can be approached quite easily and the chorus will be maintained despite the intrusion.

*Common Tree Frog, Hyla v. versicolor.*

This species is also quite common in Whitewater State Park in Winona county, where it has been captured in the breeding season in both ponds and streams. Specimens 562 and 563 were taken.

*Green Frog, Rana clamitans.*

Additional county records are: Dakota (42, 345), and Dodge (sight record).

*Leopard Frog, Rana pipiens.*

Although this frog is common throughout the state, counties from which it has hitherto been unrecorded are: Traverse (46, 262), Blue Earth (49), Chisago (199, 365-367), LeSueur (356, 357, 360, 361), and Rice (sight record).

*Wood Frog, Rana sylvatica cantabrigensis.*

Breckenridge has found this species in most of the wooded parts of the state, excepting the southeastern part. Our collecting in likely spots in the southeastern hardwood forest area also failed to show the presence of the Wood Frog. Additional county records are Scott (681-683) and Chisago (sight record).

*Six-lined Racer, Cnemidophorus sexlineatus.*

The only record we have of this rare lizard in Minnesota is a specimen located in the South St. Paul high school's small collection of odds and ends. The bottle was originally labeled simply, "South St. Paul; 1930; also a skink's tail was broken off by a small boy enemy". The identification was made by the authors about 20 years after the date of capture. This record and Breckenridge's record from the St. Croix-Pierce county line in Wisconsin across the St. Croix River from Afton, Minnesota, appear to be the most northerly records for this species.

*Blue-tailed Skink, Eumeces fasciatus.*

This lizard seems to be rare in Minnesota. The only specimen in the authors' collection (483) was captured south of Granite Falls in Yellow Medicine county. Three others were seen in this locality. The habitat of these individuals was very similar to that reported by Breckenridge for the specimens he obtained in this part of the state. The habitat note for the specimen in the authors' collection reads: "In

six inch grass near partly forested granite outcroppings. The grass was quite sparse in this area. Three others were seen, one in the immediate area, two others about ten miles south of the Minnesota River. All were in sparse grass near granite outcroppings, usually in very dry areas, although in all cases permanent water could be found within a quarter of a mile."

*Black-banded Skink, Eumeces s. septentrionalis.*

Additional county records are Washington (25, 277) and Dakota (148, 276, 278, 278, 279, 306).

*Ring-necked Snake, Diadophis punctatus.*

On August 1, 1950, a female Ring-necked Snake was taken by David Haight in tall grass bordering the Whitewater River in Winona county. This individual (189) appears to be an intergrade between *D. p. arnyi* and *D. p. edwardsii*, although it is difficult to identify on the basis of one specimen. A double row of black spots border the ventral scutes, suggesting *arnyi*. Normally, the dorsal scale rows number 15 in *edwardsii* and 17 in *arnyi*. This individual had the scale rows numbering 15 in the neck region, 16 in the middle of the body, and 15 in the region of the anus.

*Fox Snake, Elaphe vulpina.*

Additional county records are: Chisago (363), and Winona (sight record).

*Common Water Snake, Natrix s. sipedon.*

Apparently this species extends up the Minnesota River at least as far as Mankato. A young specimen was found dead on the shoulder of a highway just north of the city in the fall of 1945.

One female *Natrix sipedon* captured in Dakota county July 23, 1950, contained 23 embryos.

*DeKay's Snake, Storeria dekayi.*

The authors' records suggest that this species may extend to a greater extent in the Minnesota River Valley than hitherto reported. Several trips to a dry grassy hillside near the city limits of Mankato, Blue Earth county, have disclosed several DeKay's Snakes under rocks and logs on or near the hillside. Unfortunately, none of these snakes were preserved.

*Red-bellied Snake, Storeria occipitomaculata.*

A specimen from Carlton county (298), captured July 15, contained 12 embryos, which measured 43.8 mm. in length.

*Plains Garter Snake, Thamnophis radix.*

Additional county records for this species include the following: Blue Earth (83, 166), LeSueur (153, 349, 359), Washington (43, 168, 169) and Traverse (163). Breckenridge, in 1944, reported eight records from the last two counties listed.

Two females collected in LeSueur county in July contained 8 and 29 embryos. Another taken in August from Dakota county also contained 8 embryos.

*Red-sided Garter Snake, Thamnophis sirtalis parietalis.*

Additional county records are Winona (449, 470) and Carlton (303). The Carlton county specimen gave birth to 12 young on August 16.

*Common Garter Snake, Thamnophis s. sirtalis.*

Additional county records are Sherburne (403, 413, 321, 55) LeSueur (193, 351, 354), and Anoka (558).

Two LeSueur county specimens taken in July contained 12 and 36 embryos. Others collected in July from Carlton and Sherburne counties contained 15 and 22 embryos respectively.

*Eastern Hog-nosed Snake, Heterodon c. contortrix.*

The only additional county record of this species is specimen 559 from Scott county.

*Snapping Turtle, Chelydra s. serpentina.*

Breckenridge says of this turtle that there is little doubt that it occurs throughout Minnesota, although his records are a little scanty in places, particularly the extreme northeastern and northwestern corners of the state. Wheeler (The Amphibians and Reptiles of North Dakota; Am. Midl. Nat. 38 (1): 162-190; 1947) records an individual taken from Pembina county, North Dakota, across the Red River from Kittson county, Minnesota. The authors have seen the species in Lake and Carlton counties in northeastern Minnesota, thus supporting Breckenridge's statement. Other additional county records are: Washington (35), Scott (47), Dakota (60, 379) and sight records from Winona and LeSueur counties.

*Map Turtle, Graptemys geographica.*

Many of these turtles have been seen by the authors in the St. Croix River near Stillwater, Washington county, on both the Minnesota and Wisconsin sides, and one (397) has been preserved from the Wisconsin side.

*Painted Turtle, Chrysemys picta.*

The following are records in the authors' data for counties not reported by Breckenridge: Scott (51, 108, 383), Lake (480), Wright (669), and sight records from Goodhue, Murray, Dakota, Carlton, LeSueur and Rice counties. These appeared to be typical *C. p. bellii*. Specimen number 582, captured near St. Paul, Ramsey county, has a plastron pattern characteristic of *C. p. marginata*, an extensive light border around the narrow black pattern in the center of the plastron.

Three Minnesota Painted Turtles (*C. p. bellii*), two collected in Scott county in May, the other in Lake county in June, contained 9, 17 and 17 eggs respectively.

*Spiny Soft-shelled Turtle, Amyda ferox spinifera.*

Additional county records from the authors' data include specimens captured but not preserved from LeSueur and Dakota counties.

A clutch of 22 eggs was found about 10 inches deep in sand about one foot from the Root River near Hokah, Houston county, on September 5. At the same time, several recently hatched individuals were also captured. The eggs were incubated in sand until October 29, when six of the eggs hatched and the rest were opened. Seven of these specimens ranged in size from 29-38 mm. in carapace length, averaging 33 mm. A female at Lake Washington in LeSueur county laid 22 or 23 eggs in a hollowed out depression near the mess hall of a Boy Scout camp. A steep gravel bank just north of Stillwater in Washington county appears to be a favorite site for nesting. In July, 1954, the bank showed evidence of much digging, and a number soft-shells had been seen trying to ascend the bank. — Robert M. Hedrick and John C. Holmes, Department of Biology, the Rice Institute, Houston, Texas.

\* \* \*

THE GRASSHOPPER MOUSE IN CLAY COUNTY, MINNESOTA — The grasshopper mouse (*Onychomys leucogaster* Wied) was first recorded over 50 years ago from Ottertail and Traverse counties. It was not taken again until 1951 when H. L. Gunderson trapped two of these mice in Lac qui Parle county and in 1952 obtained another from Lincoln county. In 1954 we trapped three grasshopper mice in an oat field near Baker in Clay county. Two of these specimens were saved (field nos. R60 and R77) and have been deposited in the University of Minnesota Museum of Natural History where all of the other specimens are also found. Since it has also been taken in Dickinson county, Iowa, and Pembina, Sherburne and Hankinson counties in North Dakota it is probable that it will also be found in most of the southwestern prairie counties and up the Red River Valley to the Canadian border (Swanson, G. 1945, Minnesota Department of Conservation Technical Bulletin No. 2). — Charles F. MacLeod and James R. Beer, Department of Entomology and Economic Zoology, University of Minnesota, St. Paul 1, Minnesota.

INTERESTING OBSERVATIONS FROM KANDIYOHI AND LAC QUI PARLE COUNTIES — May 16 was a rather cool day, overcast, with variable winds of 10 to 15 miles per hour from the southwest. Drizzly rain occurred intermittently throughout the morning.

I was returning to Minneapolis from Montevideo, Minnesota, by way of Willmar, making observations of pheasant sex ratios and waterfowl use of small wetlands. Other bird observations were noted along the way.

Among the latter observations were two interesting sightings. In the northeast corner of Chippewa county, two miles west of the Kandiyohi county line, along State Route 40, were 15 Hudsonian Godwits feeding in a wet, grassy depression. Five of these were red-breasted and ten were grey-breasted, with a slight rusty tinge appearing on the flanks. The second sighting consisted of 12 Hudsonian Godwits, of which four were red-breasted and the remainder grey-breasted. These were nesting in a shallow, grassy draw about one mile east of Atwater, Minnesota, Kandiyohi county. In company with the godwits were two reddish-breasted Dowitchers.

Three other observations of interest were noted on May 14 in the Ten-mile Creek Watershed (Lac qui Parle county). These were: one Least Bittern, two King Rails and 35 Harris's Sparrows. On this particular day, about 90 species of song and game birds were noted during a "windshield" survey (no walking involved). — *Harry G. Anderson, St. Louis Park, Minnesota.*

\* \* \*

ORCHARD ORIOLE IN OTTER TAIL COUNTY — In recent years, records of the Orchard Oriole in western Minnesota have been scanty. Roberts' *Birds of Minnesota* (1936. 2:307) includes old records as far north as Kittson county. The species file at the Museum of Natural History includes only a note by Breckenridge and Berthel of adult and young at Granite Falls on June 22, 1939, and a letter from Lulu E. Wagner reporting a male seen at Sabin before June 16, 1941. The northwestern contributors to Morrison, Breckenridge and Herz's *Where to Find Birds in Minnesota* (St. Paul, 1955) do not list this species. Therefore, the following observation may be of interest.

On July 16, 1955, I visited the farm of my brother, Julius Krause, in Friberg township, Otter Tail county, eight miles north of Fergus Falls. A nephew, Dale Krause, who is familiar with the birds of the area, told me of a strange bird frequently seen near the farm house during June and July. Later in the day I was able to identify a male Orchard Oriole in second year plumage, a female, and a juvenile which was completely feathered and able to fly although still showing tufts of natal down. The black chin and throat of the male were unmistakable. The greenish coloring above, the yellowish below, and the two white wing-bars marked the female. The adults took turns feeding the young one. The male sang often — a song I have heard many times in southeastern South Dakota where this species is fairly common. Although no nest was discovered, presumably the orioles had raised the young in a nearby woodlot or a grove of Chinese Elms. How generally this species nests in Otter Tail county and elsewhere in western Minnesota remains for further investigations to show. — *Herbert Krause, Dept. of English, Augustana College, Sioux Falls, South Dakota.*

A DEFORMED CHICKADEE BILL — One cold day in the middle of January, I observed a Chickadee on the window sill, with what appeared to be a little stick embedded in one of its nostrils. We watched for a few days, and although it kept rubbing its beak against the branches, the so-called stick still was there. Even though the bird managed to eat out of the side of its mouth, it was becoming quite bedraggled in appearance; in fact, we could recognize it anywhere, so we decided that we would capture "Seedy", as we named it, and see if we could help.

We borrowed a trap, and after three days, (and catching every Chickadee in the yard), Seedy finally entered, just when we were ready to give up. We discovered that its lower mandible was split, and the upper half of this split lower mandible had grown a full inch longer than the rest of its beak, so we snipped off the "extension", and thereafter it was very happily eating suet, and was able to handle sunflower seeds.

Then one day, during the first part of April, we noticed that Seedy's lower beak was growing again, and while we were waiting to see the results, Seedy disappeared. A few days later I happened to be at a neighbor's about eight short blocks west of here, and there was Seedy, with its beak a little longer than the last time we had seen it. In about a week the Chickadee was back at our feeder, so we again borrowed a trap and on April 28 captured the bird.

Its lower beak had grown a full inch again, and the upper mandible had become bent downwards, so that our Chickadee looked like a crossbill. We trimmed both upper and lower this time, and now Seedy is eating with ease once more, and we see it pounding seeds like any other Chickadee. — *Mrs. E. F. Harms, Bloomington, Minn.*

\* \* \*

MISCELLANEOUS NOTES ON RUDDY DUCKS ON THE MUD LAKE NATIONAL WILDLIFE REFUGE — Ruddy Ducks were common breeders on Mud Lake National Wildlife Refuge near Holt, Marshall county, Minnesota, during the summer of 1955. Hence there were many opportunities to observe their curious behavior. Two of these incidents were deemed worthy of passing on to others.

On June 15, 1955, a Ruddy hen and six Class I ducklings were observed by R. W. Hunt, refuge manager, in the process of crossing a dyke. The dyke was 27 feet wide and 18 inches above water level at the point of crossing. Neither the hen nor the ducklings were walking but half slid along on their bellies while pushing with their feet. The birds became frightened at Mr. Hunt's presence and instead of completing their crossing they slid along the wheel tracks on the dyke. Mr. Hunt then left the scene in order to avoid frightening the birds further.

On September 9, 1955 while in the process of completing a weekly waterfowl census, refuge biologist John Carlsen observed a hen Ruddy Duck with a brood of seven Class Ia ducklings on Headquarters Pool. These ducklings probably were not more than a day or two old at the time of observation, making their date of hatching roughly September 7. This is the latest hatching date on record for any species of waterfowl at Mud Lake Refuge. Since a period of about 60 days is required for full development of flight feathers, it is quite doubtful whether these birds ever attained flight. The freeze-up date on Mud Lake was November 1 this year. — *J. C. Carlsen, Refuge Biologist, U. S. Fish and Wildlife Service, Holt, Minnesota.*

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# *The Flicker*

VOLUME 28

DECEMBER 1956

NUMBER 4



PUBLISHED QUARTERLY BY  
**THE MINNESOTA ORNITHOLOGISTS' UNION**  
MUSEUM OF NATURAL HISTORY  
UNIVERSITY OF MINNESOTA  
MINNEAPOLIS, MINNESOTA

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## THE FLICKER

Organ of the *Minnesota Ornithologists' Union*. Published quarterly in March, June, September, and December. *The Flicker* is sent to all members not in arrears for dues. Dues for members: Active, \$2.00; Sustaining, \$5.00; Life, \$50.00; Patron, \$100 or more. All articles and communications for publications should be addressed to the editor. Subscriptions, memberships, and requests for back numbers should be sent to the treasurer.

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## THE COVER

*Black-throated Gray Warbler painted by W. J. Breckenridge*

## THE PRESIDENT'S PAGE

The December, 1956 issue of *The Flicker* was to be a memorial issue to George Friedrichs. Certain technical difficulties have forced us to postpone this until the March, 1957 issue. This issue, therefore, is somewhat unique in that the President's Page is being done by the editor.

This issue is unique in one other respect — there are many more notes of interest than we usually use in an issue. You will note that most of these notes deal with unusual records, both of migrants and nestings. It was a spring and summer of oddities true, but how many more oddities might have been reported if we had a better coverage of the state? Ornithologically, Minnesota is still unexplored. How much is known about the birds in the bog areas of the Red Lake area, the Quetico-Superior area, or even the farming country in the southwestern part of the state? Brother Theodore's fine work in the southeastern part of the state has pointed out many facets to a little known extension of range of birds previously considered rare visitors. Robert's monumental work was last printed in 1936. Twenty years has made it out of date in many respects. I believe that this issue points out a need for a new exploration, perhaps in the real sense of the word, of the birds and the birding areas of Minnesota.

The late Lewis Barrett was probably the best informed of all the Minnesota ornithologists on the birds in the various parts of Minnesota, because he traveled extensively throughout the state for the purpose of finding out what was in the various natural areas. I recently received a packet of copious and carefully taken notes on the birds of the North Shore that Lewis accumulated in his relatively few but most productive years of life. These notes, plus those of Dr. Lakela, James Beer, and my own taken over the past seven years, give me a fine basis for a detailed study of the distribution of birds in the northeastern part of the state, which I hope to pursue over the next few years. There are undoubtedly equal opportunities in other sections. Only Itasca and Gooseberry Falls of our state parks have reasonably good lists of the summer birds in Minnesota recreation areas. During recent years the wildlife refuges of the state have begun the accumulation of bird records for their particular areas. Perhaps each reader from the state could make out a list of the birds he or she has seen over the past few years with data on their frequency and distribution, and with this as a start, a resurvey of the Birds of Minnesota could be accomplished.

*Sincerely,*  
*P. B. Hofslund, Editor*

# Heron Island — General Shields Lake

by

Robert W. Hanlon

For an estimated 67 years<sup>1</sup> Heron Island, located on General Shields Lake in Rice county, Minnesota, has been utilized as a heron rookery. The island has been studied by local ornithologists regularly in recent years, particularly since use has been made of the area by American Egrets.

This island, with 2.80 acres located in Erin township and 2.48 acres in Shieldsville township, has a total area of 5.28 acres. It lies in a northwest-southeast direction and is situated in the northwest corner of General Shields Lake. The northwest tip of the island is low, though well drained, with a steady increase in elevation noted towards the southeast end of the area. The entire island is wooded, and underbrush, except where killed off by excrement from the nests, is dense. Elm is the dominant species of tree.

## Previous Study

A previous study, undertaken by Rustad in 1951 and reported in *The Flicker*, indicated 151 trees bearing from one to 24 nests with a total nest count of 573. The island average was 3.79 nests per nesting tree. All nests, apparently, were occupied by Great Blue Herons. An interesting item in this report refers to the presence of a nesting Great Horned Owl within six feet of four undisturbed heron nests in the same tree. However: “. . . when the owls flew to other parts of the five acre island

the heron there became greatly disturbed.”<sup>2</sup>

Mention is made by Rustad of egrets sighted on the lake as early as August, 1948.<sup>3</sup> In the *Audubon Field Notes* for October, 1949, Mrs. C. MacKenzie, Jr. writes: “. . . American Egrets have definitely nested on Heron Island on General Shields Lake, 10 miles northwest of Faribault, Rice county, Minnesota.”<sup>4</sup> She was sure of one nest and felt there must have been more. In conversation with Mrs. MacKenzie she affirmed the fact that one nest was actually located. This is the first proof of the nesting of egrets on Heron Island. Published accounts since that date fail to disclose the presence of other nesting egrets. Cormorants nesting on the island are, likewise, not mentioned in published records.

## Present Study

On Friday, July 20, 1956, Heron Island was visited by the writer aided by Gary Gilbertson of Mankato, Minnesota. Approach to the island was accomplished by canoe. Circling the island, it immediately was apparent that American Egrets and Double-crested Cormorants were nesting in addition to the Great Blue Herons. Upon landing, the area was divided into transects and covered thoroughly. Count was taken of the number of trees containing nests, the number of nests per tree, and the species utilizing the trees. The following chart indicates the abundance of nests:

<sup>1</sup>Orwin A. Rustad, in “Seasonal Report” by Mary Luplent, *The Flicker*, Vol. 24, No. 3, p. 120-121 (September 1952).

<sup>2</sup>Orwin A. Rustad, *loc. cit.*

<sup>3</sup>Orwin A. Rustad, “Status of the American Egret in Rice County,” *The Flicker*, Vol. 25, No. 2, p. 81-82 (June 1953).

<sup>4</sup>Mrs. C. MacKenzie, Jr., *Audubon Field Notes*, Vol. 3 No. 5, p. 236 (October 1949).

<sup>5</sup>O.S. Pettingill, Jr., in “Where to Find Birds in Minnesota” by Morrison and Herz, p. 5-6.

NESTING DENSITY ON  
HERON ISLAND

<i>Nests per tree</i>	<i>No. of trees so occupied</i>	<i>Total No. of nests</i>
1	18	18
2	15	30
3	11	33
4	10	40
5	3	15
6	5	30
7	5	35
8	4	32

Trees: 71      Nests: 233

Average number of nests per occupied tree — 3.28.

It is apparent that the density of breeding has decreased since 1951 when the island was occupied solely by Great Blue Herons. A breakdown of the 233 nests observed indicated that 214 were occupied by Great Blue Herons, 10 were occupied by Double-crested Cormorants and 9 were in use by American Egrets.

A careful search failed to disclose the presence of Great Horned Owls in the area, although they would have completed their nesting long before the date of this survey. It is also of interest to note that, although Pettingill mentions the presence of Black-crowned Night Herons nesting in the tall treetops (about 50 in 1949)<sup>2</sup>, they have never been recorded by Rustad nor were they found during the present study of the area. All Black-crowned Night Herons seen were pretty well confined in their activities to the western shore of the lake.

Associations in nesting might be of interest. The herons were found nesting alone in the trees as well as in the company of egrets and the cormorants. There is a well defined area at the south-east end of the island where nesting trees are dominated by the cormorants, oftentimes to the total exclusion of herons. The egrets, however, were never observed nesting alone; there were always herons nesting in the same trees.



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Heron Island could easily be mapped to indicate the choice of nesting sites. It was observed that the nesting intensity of the Great Blue Herons varied directly with the distance in from the edge of the island as well as with the altitude, cover remaining constant. Double-crested Cormorants, as mentioned before, were concentrated at the south-east end of Heron Lake. The American Egrets nested in the tall elms about the small pond which lies in the southeastern half of the island. This was an area of high nesting density for herons as well. The aigrettes of the adult males were generally scattered about the damp ground in this area as were other plumage feathers.

Other species observed on the island at this time were: Coot, Blue-winged Teal, Killdeer, Spotted Sandpiper, Franklin Gull, Black Tern, Mourning Dove, Pileated Woodpecker, Downy Woodpecker, Red-headed Woodpecker, Eastern Kingbird, Phoebe, Pewee, Bank Swallow, Chickadee, Brown Thrasher, Catbird, Robin, Yellow Warbler, English Sparrow, Western Meadowlark, Redwing, Baltimore Oriole, Goldfinch. The only mammal encountered during the visit was a woodchuck.

#### Summary

1. Heron Island, in General Shields Lake, Rice county, Minnesota, was found to support a population of nesting Great Blue Herons, American Egrets and Double-crested Cormorants when the area was studied on July 20, 1956.

2. 214 heron nests, 10 cormorant nests and 9 egret nests were counted. The 71 occupied trees contained a total of 233 nests, an average of 3.28 nests per occupied tree.

3. Neither Great Horned Owls nor Black-crowned Night Herons were discovered on the island.

4. Herons nested alone, with the cormorants and with the egrets. Cormorants nested alone and with herons. Egrets nested only with herons, never alone.

5. Intensity of nesting of the herons varied directly with the distance in from the island edge and with the altitude. Cormorants were concentrated at the southeast end of Heron Island and egrets nested about the small pond in the southeastern half of the island. — *St. Augustine's College, Nassau, Bahamas.*

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#### LEWIS L. BARRETT

With the death of Lewis L. Barrett on Sunday, September 23, 1955 the Minnesota Ornithologists' Union has lost a good friend and an untiring worker. Mr. Barrett served in many capacities and was a past president and member of the Policy committee. *The Flicker* will carry a memorial in a later issue.

\* \* \*

The latest life member of the M.O.U. is Mrs. Lewis L. Barrett, who has established the membership in the memory of the late Lewis Barrett.

# Minnesota Nesting Records, 1955

Edited by  
Burton S. Guttman

Records of the 1955 nesting season are unfortunately much poorer than they have been in the past few years. There is some decrease in the number of species reported on, but, more important, a very marked decrease in the number of observers. This is most unfortunate, because the ability of a science such as field ornithology to draw reasonable generalizations about its subject-matter depends upon the ability of a large number of workers to consistently turn in accurate, detailed reports. Information about the nesting of one pair of Parula Warblers in one county during one season may be interesting, but it becomes far more valuable when compared with similar reports on many more pairs over a ten-year period. If science is a game played by man against the forces of confusion, some of us are apparently trying to help the other side.

The most interesting report of the year comes from Brother Theodore of St. Mary's College, concerning the nesting of Yellow-crowned Night Herons in the LaCrescent river bottoms, Houston county. He also reports the Bell's Vireos, but this has now become almost a commonplace and does not generate the excitement that it did a few years ago.

Others reporting this year are: Whitney Eastman, A. C. Rosenwinkel, John Pratt, John Hall and Mrs. E. W. Joul.

On the theory that detailed reports serve no purpose, the material has been condensed and only the most interesting and important information is here presented. The original reports are on file and may be consulted by anyone needing more details. An attempt has been made, wherever possible, to give the length of incubation period, etc., so far as this was

observed, rather than a mere collection of dates. The following abbreviations hold:

n — nest or nests

e — egg or eggs

y — young

pr — pair

a — adult or adults

ip — incubation period; numbers give possible length in days.

COMMON LOON — 4 July, Hubbard Co., 2y half grown; Eastman; 17 July, Carver Co., a and 2y, Pratt; 2 June, 2a feeding 2y, Ramsey Co.; Rosenwinkel.

PIED-BILLED GREBE — 16 June, a with 4y, a with 2y, Ramsey Co.; Rosenwinkel. 4 July, two families: 2y, 4y half grown, Hubbard Co.; Eastman.

GREAT BLUE HERON — 2 May, 300 n, S.E. of Hastings, Dakota Co.; Rosenwinkel and Hall.

AMERICAN EGRET — Among heron nests in above colony. 23 April, 2a on n; 2 May, almost 100 a on n; Rosenwinkel and Hall.

GREEN HERON — 5 July, 4 y, Winona Co.; Theodore.

AMERICAN BITTERN — 8 July, 4y, Winona Co.; Theodore.

YELLOW-CROWNED NIGHT HERON — 24 June, 5y, Houston Co.; Theodore.

MALLARD — 14 May, 10 e and strange e, ip 14-28, n empty 11 June, Hennepin Co.; Rosenwinkel. 21 May, 8y; 28 May, 12y, Hennepin Co.; Rosenwinkel. 16 June, a with 5y, Ramsey Co.; Rosenwinkel.

BLUE-WINGED TEAL — 15 June, 3 groups of 11y, 9y, 9y, Ramsey Co.; Rosenwinkel. 16 June, a with 8y, Ramsey Co.; Rosenwinkel.

- WOOD DUCK — 22 June, 3 broods of 8y, 4y, 6y, Wright Co.; Rosenwinkel. 14 Aug., 5 full grown; 8 Sept., 8 full grown, Hennepin Co.; Eastman. 3 June, a and 7y; 17 June, a and 4y, a and 5y, Hennepin Co.; Pratt.
- RING-NECKED DUCK — 4 July, 7y, Hubbard Co.; Eastman.
- RUDDY DUCK — 21 Aug., a and 5y, Hennepin Co.; Eastman.
- HOODED MERGANSER — 24 June, 4 females, 36y, Houston Co.; Theodore.
- RED-BREASTED MERGANSER — 2 July, 7y, Houston Co.; Theodore.
- RED-TAILED HAWK — 10 April, a and n, Big Stone Co.; Pratt. 6 July, 2y, Winona Co.; 8 July, 2y, Winona Co.; Theodore.
- RED-SHOULDERED HAWK — 1 April, a on n; 25 April, n empty; Hennepin Co.; Pratt. 10 July, 2 immatures out of nest, Winona Co.; Theodore.
- BROAD-WINGED HAWK — 8 May, on n; minimum ip 26, Hennepin Co.; Eastman.
- BALD EAGLE — 15 July, n, Cook Co.; Eastman (?).
- SPARROW HAWK — 5 July, 3y, Winona Co.; Theodore.
- RUFFED GROUSE — 4 July, a and 8y, Hubbard Co.; Eastman.
- BOB-WHITE — 28 June, 1y, Winona Co.; Theodore.
- RING-NECKED PHEASANT — 10 July, a with 9y, Winona Co.; Theodore.
- COOT — 11 June, 3 broods of 3y, 1y, 2y, Hennepin Co.; Rosenwinkel.
- KILLDEER — 28 June, 2n: 4y, 3y, Winona Co.; Theodore.
- SPOTTED SANDPIPER — 10 July, 2n: 4y, 3y, Winona Co.; Theodore.
- MOURNING DOVE — 6 June, 2y, Winona Co.; Theodore. 16 May, y leaving n, Ramsey Co.; Rosenwinkel. 24 April, a on n, 2e, ip 21-25, 2y 19 May; Hennepin Co.; Pratt. 21 May, a on n, ly; a left nest 29 May; Hennepin Co.; Pratt.
- BLACK-BILLED CUCKOO — 8 July, 3y, Winona Co.; Theodore.
- WHIP-POOR-WILL — 26 June, 2y, Winona Co.; Theodore.
- NIGHT HAWK — 26 June, 2pr, 4y; 20 July, 2y; Winona Co.; Theodore.
- CHIMNEY SWIFT — 26 June, 3pr, 11y, Winona Co.; Theodore.
- RUBY-THROATED HUMMINGBIRD — 5 July, a on n, Hubbard Co.; Eastman.
- BELTED KINGFISHER — 29 June, 4y, Winona Co.; Theodore.
- FLICKER — 8 June, 4y, Winona Co.; Theodore.
- RED-HEADED WOODPECKER — 9 June, 4y, Winona Co.; Theodore. 5 June, feeding young, Hennepin Co.; Eastman.
- RED-BELLIED WOODPECKER — 24 June, 4y, Houston Co.; Theodore.
- YELLOW-BELLIED SAPSUCKER — 24 June, 4y, Houston Co.; Theodore.
- HAIRY WOODPECKER — 24 June, 2y, Houston Co.; Theodore.
- DOWNY WOODPECKER — 24 June, 4y, Houston Co.; Theodore.
- EASTERN KINGBIRD — 11 June, 4y, Winona Co.; Theodore.
- WESTERN KINGBIRD — 3 July, 1a on nest, Becker Co.; Eastman.
- CRESTED FLYCATCHER — 23 June, 2y, Winona Co.; Theodore. 3 July, feeding young, Clearwater Co., Eastman.
- PHOEBE — 14 July, 3y, Winona Co.; Theodore. 7 Aug., feeding 1y out of n, Clearwater Co.; Joul. 21 April, a feeding y in n, St. Croix Co., Wis.; Rosenwinkel. 7 May, 5e, ip 7-14, y out of n 28 May; 11 June, 2nd batch of 5e; 10 July, 3rd batch! of 4e; Hennepin Co.; Rosenwinkel. 24 April, 2e; 8 May, 5e; 4 June, 5y left n; Hennepin Co.; Eastman. 5 July, laying 2nd batch of e, Hubbard Co.; Eastman.
- EASTERN PEWEE — 10 June, 4y, Winona Co.; Theodore.

- LEAST FLYCATCHER — 3 July, a on n, Hubbard Co.; 5 July, a feeding y out of n, Hubbard Co.; Eastman.
- HORNED LARK — 9 June, 4y, Winona Co.; Theodore.
- TREE SWALLOW — 26 June, feeding y, Hennepin Co.; Eastman. 26 June, 4y, Winona Co.; Theodore. 24 June, Houston Co., 4y; Theodore.
- BANK SWALLOW — 7 Aug., feeding 1y in n, Hubbard Co.; Joul. 28 June, about 80 pr, Winona Co.; Theodore.
- ROUGH-WINGED SWALLOW — 26 June, 3pr, 12y, Winona Co.; Theodore.
- BARN SWALLOW — 10 June, 2pr, 8y, Winona Co.; Theodore. 21 May-14 Aug., 44n, 166e, 157y, average of 3.77e and 3.57y per n, Hennepin Co.; Pratt.
- CLIFF SWALLOW — 30 June, 40 pr, Winona Co.; Theodore. 6 Aug., 1n, a feeding 2y in n, Clearwater Co.; Joul.
- PURPLE MARTIN — 8 June, 20 pr, Winona Co.; Theodore.
- BLACK-CAPPED CHICKADEE — (no date), 6y, Winona Co.; Theodore. 9 April, pr building n cavity, taking turns packing loose wood and carrying it away, Ramsey Co.; Rosenwinkel.
- TUFTED TITMOUSE — 4 July, 2pr, 7y, Fillmore Co.; 24 July, 4y, Winona Co.; Theodore.
- WHITE-BREASTED NUTHATCH — (no date), 4y, Winona Co.; Theodore. 30 April, a feeding y in n, Ramsey Co.; Rosenwinkel.
- HOUSE WREN — 26 June, feeding y in box, Hennepin Co.; Eastman. 6 June, 3pr, 16y, Winona Co.; Theodore.
- CAROLINA WREN — 4 July, 4y, Fillmore Co.; Theodore.
- LONG-BILLED MARSH WREN — 10 June, 6y, Winona Co.; Theodore.
- CATBIRD — 6 June, 4y, Winona Co.; 29 June, 4y, Winona Co.; Theodore. 10 July, n, 4e; 14 July, e gone, a near n; Rosenwinkel.
- BROWN THRASHER — 19 June, a feeding 7 feathered y, Hennepin Co.; Eastman. 5 June, 4e on ground, Hennepin Co.; Eastman. 6 June, 4y, Winona Co.; Theodore.
- ROBIN — 6 June, 4y, Winona Co.; Theodore. 8 July, a feeding 2y, nearly grown, Hennepin Co.; Eastman. 21 May, 2e, ip9, left 14 June, Hennepin Co.; Pratt. 1 July, 2nd brood leaving n; 18 May, leaving n; 20 May, 3y leaving n; 2 May, building n; (4n altogether); all Ramsey Co.; Rosenwinkel. 4 May, a on 4e; hatched 20 May, 4y; Mille Lacs Co.; Rosenwinkel.
- WOOD THRUSH — 10 June, 4y, Winona Co.; Theodore.
- BLUEBIRD — Winona Co., 3n; 10 June, 2pr, 8y; 11 June, 2pr, 8y; 13 July, 4y; Theodore. 3 June, pr feeding 4y out of n, Washington Co.; 11 June, pr feeding 3y out of nest, Dakota Co.; Rosenwinkel.
- BLUE-GRAY GNATCATCHER — 21 May, pr finishing nest, St. Croix Co., Wis.; Rosenwinkel.
- CEDAR WAXWING — 3 July, feeding y in n, Hubbard Co.; Eastman. 23 July, 2pr, 8y, Winona Co.; Theodore.
- YELLOW-THROATED VIREO — 24 June, 4y, Houston Co.; Theodore. 5 July, 3y, Winona Co.; Theodore.
- RED-EYED VIREO — Winona Co., 2n; 23 June, 3y; 27 June, 4y; Theodore.
- BELL'S VIREO — Winona Co., all separate: 19 July, 3pr, 11y; 12 July, 2pr, 6y; 15 July, 3pr, 12y; 17 July, 3y; 22 July, 4 pr, 13 y; Theodore.
- WARBLING VIREO — 10 June, 2pr, 7y, Winona Co.; Theodore.
- PROTHONOTARY WARBLER — Houston Co., 24 June, 3pr, 11y; 11 July, 4y; Theodore.
- BLUE-WINGED WARBLER — 23 June, 4y, Winona Co.; Theodore.
- YELLOW WARBLER — 4 July, 2n with y, Hubbard Co.; Eastman. Winona Co., 10 June, 2pr, 9y; 13 June, 2pr, 6y; Theodore.

MAGNOLIA WARBLER — 16 July, 2pr feeding 2y, 3y, out of n, Lake Co.; Rosenwinkel.

MYRTLE WARBLER — 17 July, 3pr feeding 2y, 3y, 2y, out of n, Lake Co.; Rosenwinkel.

BLACK-THROATED GREEN WARBLER — 7 Aug., feeding 2y Cowbirds, out of n, Clearwater Co.; Joul. 16 July, 2pr feeding 2y, 2y, out of n, Lake Co.; Rosenwinkel.

CERULEAN WARBLER — 24 June, feeding y, Houston Co.; Theodore.

BLACKBURNIAN WARBLER — 17 July, 2pr feeding 2y, 2y out of n, Lake Co.; Rosenwinkel.

OVENBIRD — 23 June, 3y, Winona Co.; Theodore.

MOURNING WARBLER — 16 July, pr of a apparently feeding y, n not found, Lake Co.; Rosenwinkel.

NORTHERN YELLOW-THROAT — Winona Co., all separate: 8 June, 4y;

10 June, 4y; 27 June, 3pr, 8y; Theodore.

YELLOW-BREASTED CHAT — 11 July, 4pr, 13y, Houston Co.; Theodore.

REDSTART — 24 June, 6pr, 20y, 1u with Cowbird e, Houston Co.; Theodore.

ENGLISH SPARROW — 8 July, several y in old Robin's n; Grackle took naked, screaming y as 20 sparrows sat by, but did not attack; Hennepin Co.; Eastman.

BOBOLINK — 16 July, 8pr, 23y, Winona Co.; Theodore. 17 July, disturbed scolding male, n not found, Lake Co.; Rosenwinkel.

EASTERN MEADOWLARK — 10 June, 3pr, 12y, Winona Co.; 15 July, 4y, Winona Co.; Theodore.

WESTERN MEADOWLARK — 4 July, 10pr, 31y, Winona Co.; 15 July, feeding 4y, Winona Co.; Theodore.

YELLOW-HEADED BLACKBIRD — 25 June, 2pr, 8y, Houston Co.; Theodore.

RED-WINGED BLACKBIRD — 10 June, 3pr, 12y, Winona Co.; Theodore. 21 May, n with 1e, Hennepin Co.; Pratt. 9 July, pr feeding 2y out of n; Rosenwinkel.

ORCHARD ORIOLE — Winona Co., all separate: 7 June, 2n, 3y, 4y; 8 June, 3y; 6 July, 4y; Theodore.

BALTIMORE ORIOLE — 13 June, pr feeding y, Houston Co.; Eastman. 5 July, a on n (not a hanging n), Hubbard Co.; Eastman. Winona Co., all separate: 6 June, building n, later 4y; 9 June, 2pr, 8y; 10 June, 4y; 11 June, 2 pr, 8y; Theodore.

SCARLET TANAGER — Winona Co., all separate: 10 June, 4y; 26 June, 4y; 23 June, 3y; 23 July, 2pr, 7y; Theodore.

CARDINAL — 10 June, 3y, Winona Co.; Theodore. 23 April, a on n, Dakota Co.; 13 June, 2nd brood, n with 2y, 2 sterile e, Washington Co.; Rosenwinkel.

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- ROSE-BREADED GROSBEAK — 9 June, 4y, Winona Co.; Theodore. 31 May, building n, Hennepin Co.; Pratt. 26 July, a feeding grown y, Hennepin Co.; Eastman.
- INDIGO BUNTING — Winona Co., 3n: 6 June, 1n destroyed by roadside spraying; 10 June, 4y; 10 June, 3y; Theodore.
- DICKCISSEL — Winona Co.: 16 July, 4pr, 15y; 26 July, 5pr, 18y; Theodore.
- PURPLE FINCH — 5 July, a feeding y, Hubbard Co.; Eastman.
- GOLDFINCH — 20 July, 4n: 4y, 6e, 5e, 6y, Winona Co.; Theodore.
- TOWHEE — 6 July, 3y, Winona Co.; Theodore.
- GRASSHOPPER SPARROW — Winona Co., 2n: 10 June, pr feeding y; 7 July, 4y; Theodore.
- HENSLOW'S SPARROW — 20 July, 6pr, 20y, Winona Co.; Theodore.
- VESPER SPARROW — 10 June, 3y, 4y, Winona Co.; Theodore.
- LARK SPARROW — 11 July, 4y, Winona Co.; Theodore.
- CHIPPING SPARROW — 14 July, a feeding 4y in n, Lake Co.; Pratt. 3 June, 4e, 1 Cowbird e; 17 July, pr feeding 4 grown y, Lake Co.; Rosenwinkel. Winona Co., all separate: 10 June, 4y; 10 June, 3pr, 11 y; 18 June, a feeding Cowbird; 12 July, 3y; Theodore.
- CLAY-COLORED SPARROW — 17 July, 2pr feeding 2y, 3y, out of n, Lake Co.; Rosenwinkel.
- FIELD SPARROW — Winona Co., all separate: 10 June, 4y; 11 July, 4y; 23 July, 3y; Theodore.
- SWAMP SPARROW — 10 June, feeding y, Winona Co.; Theodore.
- SONG SPARROW — 17 July, a feeding 3y out of n, Lake Co.; Rosenwinkel. Winona Co., all separate: 11 June, 4y, 3y; 15 June, 4pr, 10y; Theodore.
- *The Avifaunal Club, Minneapolis*

#### THE NORTH SHORE TRIP

The annual meeting of the Minnesota Ornithologists' Union and the Thunder Bay Field Naturalists' Club will be held Saturday, February 23, 1957 at 5:00 p.m. C.S.T. This year's meeting will be held in the Grand Marais high school gymnasium and will follow a banquet served by the Congregational Ladies Aid of Grand Marais.

The field trip will start at 8:00 a.m. from the J. K. Bronoel home, 2010 East First Street, Duluth and will proceed from there to the John Bero residence at 3645 East Fourth Street. The last stop before leaving on the North Shore road will be at the Lester bridge on London road.

This is the occasion of the winter field trip up the North Shore to see winter birds and to meet our Canadian friends for a banquet and social get-together. This year's program will feature Mrs. William Kerfoot of the Gunflint Trail area.

#### *Reservations*

Transportation: Consult your local bird club chairman if you need to arrange for transportation.

Banquet: Individual or club reservations for the banquet should be made with Mrs. A. M. Fenstad, Grand Marais, Minnesota. Banquet tickets are \$2.00.

Room: Friday night — Duluth has a number of fine hotels and motels. Consult your local chairman to find out where your own group expects to stay. Saturday night — Make your reservations early as the skiing season is in full swing at this time. The Shoreline and East Bay Hotels have been the usual stopping places in Grand Marais.

# Helminth Parasites Reported from Vertebrates in Minnesota

by  
Theron O. Odlaug

In a recent number of *The Flicker* (1954, vol. 26:59-65), Odlaug reported an annotated bibliography of papers relating to the parasites of birds of Minnesota; the present paper completes the listing with parasites of the remaining vertebrate groups, the fish, amphibia, reptiles and mammals. This report is concerned primarily with the helminth parasites and has not included such ectoparasites as fleas, ticks, lice, bots and certain parasitic larval diptera (Olsen and Fenstermacher, 1943; Erickson, 1944; Fenstermacher, 1934).

## PARASITES OF FISH

Small-mouth bass ( <i>Micropterus dolomieu</i> )			
<i>Clinostomum marginatum</i> metacercaria	Muscles, fins	1 Bass Lake	Riley, 1918
<i>Diplostomum cuticula</i> metacercaria	Ibid.	Ibid. and 1 Twin Lakes	Ibid.
<i>Echinorhynchus thecatus</i>	Intestine	Homer	Van Cleave, 1920
Large-mouth bass ( <i>Huro salmoides</i> )			
<i>Diplostomum cuticula</i> metacercaria	Muscles, fins	1 Bass Lake 1 Twin Lakes	Riley, 1918
Northern brown bullhead ( <i>Ameiurus nebulosus</i> )			
<i>Clinostomum marginatum</i> metacercaria	Muscles		Erickson, 1944
<i>Haplobothrium globuliforme</i>	Liver	Homer	Essex, 1929
<i>Sellacotyle mustelae</i> metacercaria	Muscles	Itasca and Kandiyohi Co.	Wallace, 1935
Big-mouth buffalo fish ( <i>Ictiobus cyprinella</i> )			
<i>Spartoides wardi</i>	Intestine	Lake Pepin	Hunter, 1929
<i>Monobothrium ingens</i>	Ibid.	Ibid.	Hunter, 1927
Buffalo-fish ( <i>Ictiobus urus</i> )			
<i>Capingens siugularis</i>	Stomach	Ibid.	Ibid.
Channel catfish ( <i>Ictalurus punctatus</i> )			
<i>Megalonia ictaluri</i>	Intestine	Stillwater and St Paul	Surber, 1928
Tadpole madtom ( <i>Schilbeodes mollis</i> )			
<i>Alloglossidium corti</i>	Intestine	Shakopee	Crawford, 1937
Fathead minnow ( <i>Pimephales promelas</i> )			
<i>Opisthorchis tonkae</i> metacercaria	Muscles		Wallace, 1940
<i>Amphimerus elongatus</i> metacercaria	Ibid.		Ibid.
Northern sand shiner ( <i>Notropis deliciosus</i> )			
<i>Amphimerus elongatus</i> metacercaria	Muscles	Isanti Co.	Wallace, 1939
Carp sucker ( <i>Carpionodes thompsoni</i> )			
<i>Spartoides mardii</i>	Intestine	Lake Pepin	Hunter, 1929
Northern pike ( <i>Esox lucius</i> )			
<i>Neascus esocis</i>	Scales	Lake Itasca	Calindo (unpub.)
<i>Diplostomum cuticula</i>	Muscles	1 Bass Lake	Riley, 1918
<i>Triacnophorus robustus</i>	Intestine		Hjortland, 1928
<i>Clinostomum marginatum</i> metacercaria	Muscles, fins	Beltrami Co.	Schulling, 1939
Walleyed pike ( <i>Stizostedion vitreum</i> )			
<i>Bothriocephalus cuspidatus</i>	Intestine	Ely	Essex, 1928
<i>Neascus bulboglossus</i>	Muscles	Lake Itasca	Chandler, 1951
Northern cisco ( <i>Leucichthys artedi tullibee</i> )			
<i>Triacnophorus robustus</i>	Intestine	Ely	Hjortland, 1928
<i>Clinostomum marginatum</i> metacercaria	Muscles, fins	Beltrami Co.	Schulling, 1939
1 Mahnomen Co.			

Common white sucker (*Catostomus commersonni*)

Sellacotyle mustelae metacercaria	Muscles	Itasca and Kandyohi Co.	Wallace, 1935
Clinostomum marginatum metacercaria	Muscles, fins	Beltrami Co.	Schulling, 1939

Western mudminnow (*Umbra limi*)

Sellacotyle mustelae metacercaria	Muscles	Itasca and Kandyohi Co.	Wallace, 1935
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Yellow perch (*Perca flavescens*)

Diplostomum cuticula	Muscles, fins	Bass Lake and Twin Lakes	Riley, 1918
Diplostomum scheuringi	Eyes	Lake Itasca	Chandler, 1951
Neascus bulboglossus	Skin and fins	Ibid.	Ibid.
Neascus pyriformis	Skin	Ibid.	Ibid.
Neascus longicollis	Skin	Ibid.	Ibid.
Neascus ellipticus	Muscles	Ibid.	Ibid.
Cryptogonimus chyll	Muscles	Ibid.	Ibid.
Clinostomum sp.	Muscles, fins	Lake Bemidji	Elliott, 1944
Clinostomum marginatum	Muscles	Beltrami Co.	Elliott & Rusert, 1949
	Muscles	St. Croix R.	Surber, 1928
	Muscles	Northern Minn.	Erickson, 1944
	Muscles, fins	Beltrami Co.	Schulling, 1939
	Muscles	Lake Itasca	Chandler, 1951
	Muscles	Lake Itasca, Leech Lake	Chandler, 1951 & Warren, 1953
Apophallus itascens			
Sellacotyle mustelae metacercaria	Muscles	Itasca and Kandyohi Co.	Wallace, 1935

Northern rock bass (*Ambloplitis rupestris*)

Clinostomum marginatum	Muscles, fins	Beltrami Co.	Schulling, 1939
Cryptogonimus chyll	Muscles	Lake Itasca	Chandler, 1951

Black bass (*Micropterus salmoides*)

Proteocephalus ambloplites	Intestine	Pelican Lake	LaRue, 1914
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Sunfish (*Lepomis* sp.)

Clinostomum marginatum metacercaria	Muscles, fins	Beltrami Co.	Schulling, 1939
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Killifish (*Fundulus diaphanus*)

Neascus bulboglossus	Muscles	Lake Itasca	Chandler, 1951
Neascus pyriformis	Muscles	Lake Itasca	Chandler, 1951

PARASITES OF AMPHIBIA

Leopard frog (*Rana pipiens*)

Loxogenes arcanum	Encysted on viscera	St. Paul	Osborn, 1912
	Ibid.	Lake Minnetonka, Glenwood Lake	
	Ibid.	Nevis	Crawford, 1938
Gorgoderina attenuata	Urinary bladder	Bemidji	Odlaug, 1948
Gorgoderina amplicava	Urinary bladder	Bemidji	Cort, 1912
	Ibid.	Duluth	Cort, 1912
Haematoloechus complexus	Lungs	Ibid.	Odlaug, 1955
Haematoloechus medioflexus	Ibid.	Ibid.	Ibid.
Clinostomum attenuatum metacercariae	Muscles	Ibid.	Ibid.
	Lymph spaces	St. Paul	Osborn, 1909
Mesocercaria minnesotae	Ibid.	Osseo	Swanson, 1937
Neodiplostomum minnesotensis metacer.	Ibid.	Ibid.	Ibid.
Diplostomum cochleare metacercariae	Ibid.	Ibid.	Ibid.
Fibricola cratera metacercariae	Ibid.	Minneapolis	Cuckler, 1941
Alaria intermedia mesocercariae	Ibid.	Ibid.	Ibid.
Alaria marciae mesocercaria	Muscles	Minneapolis	Cuckler, 1941
Rhabdias ranae	Lungs		Walton, 1929

Pickrel frog (*Rana palustris*)

Oswaldocruzia pipiens	Intestine		Walton, 1929
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Swamp tree frog (*Pseudacris triseriata*)

Fibricola cratera metacercariae	Muscles	Edina	Cuckler, 1941
Polystoma sp.	Hyla sp. Intestine		Riley, 1927

Green frog (*Rana clamitans*)

Haematoloechus complexus	Lungs	Duluth	Odlaug, 1955
Gorgoderina attenuata	Urinary bladder	Ibid.	Ibid.
Crepidobothrium saphena	Intestines	Ibid.	Ibid.

Mink frog (*Rana septentrionalis*)

Gorgoderina amplicava	Urinary bladder	Ibid.	Ibid.
Phyllodistomum americanum	"Ambystoma punctatum" Urinary bladder	St. Paul	Osborn, 1903

## PARASITES OF REPTILES

### Garter snake (*Thamnophis sirtalis*)

<i>Dracunculus ophidensis</i>	Serous & connective tissue	Minneapolis	Brackett, 1938
<i>Fibricola cratera metacercaria</i>	Muscles	Ibid.	Cuckler, 1941
<i>Alaria intermedia mesocercaria</i>	Ibid.	Ibid.	Ibid.

### Ribbon snake (*Thamnophis sauritus*)

<i>Fibricola cratera metacercaria</i>	Muscles	Minneapolis	Cuckler, 1941
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### Water snake (*Natrix sipedon*)

<i>Fibricola cratera metacercaria</i>	Muscles	Ibid.	Ibid.
<i>Dracunculus ophidensis</i>	Serous & connective tissues	Ibid.	Brackett, 1938

### Spiny soft-shelled turtle (*Amyda spinifera*)

<i>Ophlotaenia testudo</i>	Intestine	Lake City	Magath, 1924
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## PARASITES OF MAMMALS

### Cottontail rabbit (*Sylvilagus floridanus*)

<i>Cysticercus pisiformis</i>	Mesenteries	Northern Minn.	Erickson, 1944
<i>Cittotaenia pectinata</i>	Intestine	Southern Minn.	Erickson, 1947
<i>Cittotaenia variabilis</i>	Ibid.	Ibid.	Ibid.
<i>Cittotaenia perplexa</i>	Ibid.	Ibid.	Ibid.
<i>Multiceps</i> sp.	Ibid.	Ibid.	Ibid.
<i>Taenia pisiformis</i>	Ibid.	Ibid.	Ibid.
<i>Passalurus nonanulatus</i>	Ibid.	Ibid.	Ibid.
<i>Passalurus ambiguus</i>	Ibid.	Ibid.	Ibid.
<i>Dermatoxys veligera</i>	Ibid.	Ibid.	Rozycki, 1941
<i>Obeliscoides cuniculi</i>	Stomach	Ibid.	Ibid.
<i>Physaloptera</i> sp.	Ibid.	Ibid.	Ibid.
<i>Trichostrongylus affinis</i>	Intestine	Ibid.	Ibid.
<i>Trichostrongylus calcaratus</i>	Ibid.	Ibid.	Ibid.
<i>Trichuris leporis</i>	Caecum	Southern Minn.	Rozycki, 1941
<i>Nematodirus arizonensis</i>	Intestine	Ibid.	Ibid.
<i>Longistriata noviberiae</i>	Ibid.	Ibid.	Ibid.

### Snowshoe rabbit (*Lepus americanus*)

<i>Obeliscoides cuniculi</i>	Stomach	Cushing	Aldous, 1936
	Ibid.		Rozycki, 1941
	Ibid.	Lake-of-the-Woods Co.	Manweiler, 1938
<i>Dirofilaria scapiceps</i>	Tarsal bursa	Lake Alexander	Erickson, 1944
	Ibid.	Lake-of-the-Woods Co.	Manweiler, 1938
		Baudette, Lake, Lake-of-the-Woods, Morrison Co.	Highby, 1943
<i>Euparyphium mellis</i>	Stomach	Lake Alexander	Erickson, '40, '44
<i>Protostrongylus boughtoni</i>	Intestine		Green & Shillinger, 1935
<i>Trichostrongylus affinis</i>	Caecum	Lake Alexander & northern Minn.	Rozycki, 1941 & Erickson, 1944
<i>Trichostrongylus calcaratus</i>	Ibid.	Ibid.	Ibid.
<i>Nematodirus leporis</i>	Intestine	Ibid.	Rozycki, 1941 & Erickson, '40, '44
<i>Dermatoxys veligera</i>	Ibid.	Lake Alexander	Erickson, '40, '44
<i>Multiceps packii coenurus</i>	Heart muscle	Lake Mille Lacs	Erickson, '29
<i>Multiceps</i> sp.	Muscles	Aurora	Christenson, '29
<i>Trichuris leporis</i>	Caecum	Lake Alexander	Erickson, 1944
<i>Nematodirus triangularis</i>	Intestine	Lake Alexander	Rozycki, 1941
<i>Passalurus nonanulatus</i>	Ibid.	Ibid.	Erickson, 1944
<i>Trichuris leporis</i>	Ibid.	Ibid.	Ibid.
<i>Taenia pisiformis</i>	Ibid.	Ibid.	Ibid.
<i>Cittotaenia pectinata</i>	Ibid.	Ibid.	Ibid.
<i>Cittotaenia variabilis</i>	Ibid.	Ibid.	Ibid.

### Moose (*Alces alces*)

<i>Echinococcus granulosus</i> cyst	Lungs	St. Louis and Cook Co.	Riley, 1933 and Fenstermacher, 1934
<i>Monezia benedini</i>	Small intestine	Grand Marais	Jellison, 1936
<i>Dictyocaulus hadweni</i>	Lungs	Northern Minn.	Fenstermacher, 1934
<i>Cysticercus tenuicollis</i>	Liver	Ibid.	Ibid.
<i>Cysticercus</i> sp.	Lungs	Ibid.	Ibid.
<i>Fascioloides magna</i>	Liver	Ibid.	Ibid.
<i>Paramphistomum cervi</i>	Rumen	Ibid.	Ibid.
<i>Nematodirella longispiculata</i>	Intestine	Ibid.	Ibid.
<i>Monezia</i> sp.	Ibid.	Ibid.	Ibid.
<i>Setaria labatio-papillosa</i>	Ibid.	Ibid.	Ibid.

Caribou (*Rangifer caribou*)

<i>Dictyocaulus viviparus</i>	Lungs	Red Lake	Erickson & Highby, 1942
<i>Setaria cervi</i>	Body cavity	Ibid.	Ibid.
<i>Monezia expansa</i>	Intestine	Ibid.	Ibid.

Coyote (*Canis latrans*)

<i>Echinococcus granulosus</i>	Intestine		Riley, 1939
<i>Taenia pisiformis</i>	Ibid.	Lake-of-the-Woods & St. Louis Co.	Erickson, 1944
<i>Taenia rileyi</i>	Ibid.	Ibid.	Ibid.
<i>Taenia krabbei</i>	Ibid.	Ibid.	Ibid.
<i>Taenia hydatigena</i>	Ibid.	Ibid.	Ibid.
<i>Multiceps packli</i>	Ibid.	Ibid.	Ibid.
<i>Alaria mustelae</i>	Intestine	Ibid.	Ibid.
<i>Filaroides osleri</i>	Tracheal tumors	Ibid.	Ibid.
<i>Ancylostoma caninum</i>	Intestine	Ibid.	Ibid.
<i>Physaloptera rara</i>	Stomach	Ibid.	Ibid.

Red fox (*Vulpes fulva*)

<i>Uncinaria polaris</i>	Intestine		Riley & Fitch, '21
<i>Belascaris marginata</i>	Ibid.		Riley, 1921
<i>Trichocephalus depressusculus</i>	Ibid.		Ibid.
<i>Alaria canis</i>	Ibid.	Lake, St. Louis Koochiching, Itasca Co.	Erickson, 1944
<i>Paragonimus kellicotti</i>	Lungs	Ibid.	Ibid.
<i>Multiceps serialis</i>	Intestine	Ibid.	Ibid.
<i>Taenia pisiformis</i>	Ibid.	Ibid.	Ibid.
<i>Toxascaris leonina</i>	Ibid.	Ibid.	Ibid.
<i>Toxocara canis</i>	Ibid.	Ibid.	Ibid.
<i>Trichostrongylus sp.</i>	Ibid.	Ibid.	Ibid.
<i>Physaloptera rara</i>	Stomach	Ibid.	Ibid.

Gray fox (*Urocyon cinereoargenteus*)

<i>Alaria canis</i>	Intestine	Redwood Falls and S.S. Minn.	Erickson, 1944
<i>Multiceps packli</i>	Ibid.	Ibid.	Ibid.
<i>Taenia pisiformis</i>	Ibid.	Ibid.	Ibid.
<i>Physaloptera rara</i>	Stomach	Ibid.	Ibid.

Timber wolf (*Canis lupus*)

<i>Echinococcus granulosus</i>	Intestine	Cook Co.	Riley, 1933
Ibid.	Ibid.	Superior National Forest	Stenlund, 1955
Ibid.	Ibid.	Between Red Lake & Lake-of-the Woods	Erickson, 1944
<i>Taenia hydatigena</i>	Ibid.	Superior National Forest	Stenlund, 1955 & Erickson, 1944
<i>Uncinaria stenocephala</i>	Ibid.	Between Red Lake and Lake-of-the Woods	Ibid.
<i>Multiceps packli</i>	Ibid.	Between Red Lake and Lake-of-the Woods	Erickson, 1944
<i>Taenia pisiformis</i>	Ibid.	Ibid.	Ibid.
<i>Diocotylus renale</i>	Kidneys	Ibid.	Ibid.
<i>Filaroides osleri</i>	Intestine	Ibid.	Ibid.

Bobcat (*Lynx rufus*)

<i>Taenia rileyi</i>	Intestine	Iron Range Beltrami & Cook Co.	Erickson, 1944
<i>Toxocara cati</i>	Ibid.	Ibid.	Rollings, 1945
<i>Taenia pisiformis</i>	Ibid.	Ibid.	Ibid.
<i>Multiceps sp.</i>	Intestine	Virginia Beltrami & Cook Co.	Erickson, 1944
<i>Toxascaris leonina</i>	Ibid.	Ibid.	Rollings, 1945
<i>Toxocara sp.</i>	Ibid.	Ibid.	Ibid.
<i>Taenia taeniaeformis</i>	Ibid.	Ibid.	Ibid.
<i>Taenia hydatigena</i>	Ibid.	Ibid.	Ibid.
<i>Taenia monostephanos</i>	Ibid.	Ibid.	Ibid.
<i>Taenia krabbei</i>	Ibid.	Ibid.	Ibid.
<i>Physaloptera praeputialis</i>	Stomach	Ibid.	Ibid.
<i>Spirocerca sanguinolenta</i>	Ibid.	Ibid.	Ibid.

Porcupine (*Erethizon dorsatum*)

Monoecocestus americanus	Intestine	Itasca Park	Freeman, '49, '52
Dipetalonema arbuta	Body cavities	Northern Minn.	Highby, 1943
Dirofilaria spinosa	Subcutaneous tis.	Ibid.	Highby, 1942
Ibid.	Ibid.	Pine Co.	Jellison, 1933
Dipetalonema diacantha	Mesenteries	Ibid.	Ibid.
Wellcomeia evoluta	Intestine	Ibid.	Ibid.
Microfilaria	Peritoneal fluid	Ibid.	Ibid.
Cestodes	Intestine	Ibid.	Ibid.

Raccoon (*Procyon lotor*)

Ascaris columnaris	Liver	Blue Earth	Olsen & Fenstermacher, 1938
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Star-nosed mole (*Condylura cristata*)

Brachylaima condylura	Intestine	Duluth	Odlaug, 1952
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Woodchuck (*Marmota monax*)

Obeliscoides cunicull	Stomach	Itasca Park & Carver Co.	Wallace, 1942
Citellina marmotae		Carlton Co.	Rausch & Tiner, 1948

Badger (*Taxidea taxus*)

Alaria taxideae	Intestine	White Bear Lake	Swanson, 1932
Ibid.	Ibid.		Swanson & Erickson, 1946

Beaver (*Castor canadensis*)

Stichorchis subtriquetrus	Caecum	23 counties	Erickson, 1944
Stephanoproides lawi	Intestine	Ibid.	Ibid.
Travassosius americanus	Stomach	Ibid.	Ibid.
Castorstrongylus castoris	Ibid.	Ibid.	Ibid.

Mink (*Mustela vison*)

Paragonimus kellicotti	Lungs		Wallace, 1931
Sellacotyle mustelae	Intestine	Itasca, Anoka, Hennepin Co.	Wallace, 1935

Striped skunk (*Mephitis mephitis*)

Alaria taxideae	Intestine		Swanson & Erickson, 1946
Alaria minnesotae	Ibid.	Itasca Park	Chandler, 1954
Chlamydothroca itascensis	Stomach	Ibid.	Ibid.
Crenosoma microbursa	Bronchii		Wallace, 1941

Spotted skunk (*Spilogale putorius*)

Alaria taxideae	Intestine		Swanson & Erickson, 1946
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Short-tailed weasel (*Mustela erminea*)

Alaria taxideae	Intestine		Swanson & Erickson, 1946
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Long-tailed weasel (*Mustela frenata*)

Alaria taxideae	Intestine		Swanson & Erickson, 1946
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Red squirrel (*Tamiasciurus hudsonicus*)

Andrya primordialis	Intestine	Bemidji	Douthitt, 1914
Citellinema bifurcatum	Ibid.	Ibid.	Dikmans, 1938

Fox squirrel (*Sciurus niger*)

Citellinema bifurcatum	Intestine	Fillmore, Cook, Hennepin Co.	Rausch & Tiner, 1948
Boehmiella wilsoni	Ibid.	Carver Co.	Ibid.

Gray squirrel (*Sciurus carolinensis*)

Citellinema bifurcatum	Intestine	Fillmore, Cook, Hennepin Co.	Rausch & Tiner, 1948
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Thirteen-lined ground squirrel (*Citellus tridecemlineatus*)

Hymenolepis diminuta	Intestine	Ramsey Co.	Rausch & Tiner, 1948
Rictularia citelli	Ibid.	Ibid.	Ibid.
Spirura infundibuliformis	Ibid.	Ibid.	Ibid.
Physaloptera sp.	Stomach	Ibid.	Ibid.

Least chipmunk (*Eutamias minimum*)

<i>Boehmiella wilsoni</i>	Intestine	Fillmore, Cook Hennepin Co.	Rausch & Tiner, 1948
<i>Syphacia</i> sp.	Caecum and large intestine	Cook Co.	Ibid.
<i>Syphacia eutamii</i>	Ibid.	Grand Marais	Tiner, 1948

Eastern chipmunk (*Tamias striatus*)

<i>Moniliformis</i> sp.	Intestine	Cook Co.	Rausch & Tiner, 1948
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Pocket gopher (*Geomys bursarius*)

<i>Andrya macrocephala</i>	Intestine	Brainerd, Thief River Falls	Douthitt, 1914
<i>Andrya translucida</i>	Ibid.	Brainerd	Ibid.
<i>Anaplocephala variabilis</i>	Ibid.	Thief River Falls, Mpls., Bemidji	Ibid.
<i>Anaplocephala infrequens</i>	Ibid.	Bemidji, Brainerd	Ibid.
<i>Cittotaenia</i> sp.	Ibid.	Brainerd	Ibid.
<i>Oochoristica</i> sp.	Ibid.	Ibid.	Ibid.
<i>Hymenolepis</i> sp.	Ibid.	Ibid.	Ibid.

Meadow jumping mouse (*Zapus hudsonius*)

<i>Subulura unguilatus</i>	Caecum	Hinckley	Erickson, 1938
<i>Spirocerca zapi</i>	Stomach, small intestine	Ibid.	Ibid.

Northern white-footed mouse (*Peromyscus leucopus noveboracensis*)

<i>Syphacia samorodini</i>	Caecum, small intestine	Hinckley, St. Paul	Erickson, 1938
<i>Aspiculuris americana</i>	Caecum, large intestine	Ibid.	Ibid.

Canadian deer mouse (*Peromyscus maniculatus gracilis*)

<i>Syphacia samorodini</i>	Caecum, small intestine	Hinckley, St. Paul	Ibid.
<i>Aspiculuris americana</i>	Caecum, large intestine	Ibid.	Ibid.
<i>Choanotaenia peromysci</i>	Small intestine	Hinckley	Ibid.
<i>Hymenolepis</i> sp.	Ibid.	Ibid.	Ibid.
<i>Moniliformis</i> sp.	Ibid.	Ibid.	Ibid.

Common meadow mouse (*Microtus pennsylvanicus*)

<i>Longistriata dalrymplei</i>	Small intestine		Dikmans, 1935
<i>Schistosomatum douthitti</i>	Hepatic portal vein	Minneapolis	Penner, 1940
<i>Paranoplocephala</i> sp.	Intestine	Pine, Hennepin Ramsey, Anoka Co	Erickson, 1938
<i>Quinqueserialis hassalli</i>	Caecum	Cass Lake	Harwood, 1939

Meadow mouse (*Microtus* sp.)

<i>Taenia taeniaeformis</i>	Liver	Anoka Co.	Erickson, 1938
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Red-backed mouse (*Clethrionomys gapperi*)

<i>Paranoplocephala</i> sp.	Caecum	Anoka Co.	Erickson, 1938
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Short-tailed shrew (*Blarina brevicauda*)

<i>Fibricola cratera</i>	Intestine		Cuckler, 1940
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Brown rat (*Rattus norvegicus*)

<i>Fibricola cratera</i>	Intestine		Cuckler, 1940
<i>Schistosomatum douthitti</i>	Hepatic portal vein	Minneapolis	Penner, 1940

Little brown bat (*Myotis lucifugus*)

<i>Myotittrema asymmetrica</i>	Intestine	Lake Minnetonka	Macy, 1940
<i>Limatulum gastroides</i>	Ibid.	Minneapolis	Macy, 1935
<i>Plagiorchis micracanthos</i>	Ibid.	Ibid.	Macy, 1931
<i>Urotrema shillingeri</i>	Ibid.	St. Peter	Penner, 1941

Big brown bat (*Epitescus fuscus*)

<i>Plagiorchis micracanthos</i>	Intestine	Minneapolis	Macy, 1931
<i>Acanthatrium micracanthum</i>	Ibid.	St. Paul	Macy, 1940

Pipistrelle (*Pipistrellus subflavus*)

<i>Acanthatrium pipistrelli</i>	Intestine	St. Peter	Macy, 1940
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White-tailed deer (*Odocoileus virginianus*)

<i>Fascioloides magna</i>	Liver	Kato	Erickson, 1943
Ibid.	Ibid.	St. Croix Park	Erickson & Burcalow, 1954
Ibid.	Ibid.	13 central & northern counties	Olsen & Fenstermacher, 1943
<i>Cysticercus tenuicollis</i>	Liver, mesenteries	Ibid.	Ibid.
<i>Echinococcus granulosus</i> cysts	Lungs	Ibid.	Ibid.
<i>Setaria</i> sp.	Mesentery	Ibid.	Ibid.
<i>Oesophagostomum</i> sp.	Large intestine	Ibid.	Ibid.
<i>Dictyocaulus viviparus</i>	Lung	Ibid.	Ibid.

Muskrat (*Ondatra zibethica*)

<i>Schistosomatum douthitti</i>	Spleen, liver, blood vessels	Minneapolis	Penner, '38, '40
<i>Fibricola cratera</i>	Intestine	Lake Minnetonka	Penner, 1940
<i>Capillaria ransomi</i>	Ibid.	Fort Snelling, Ft. Snelling, Mpls., Long Meadow Lake, Upper Grass Lake	Ibid.
<i>Nudocotyle novicia</i>	Small intestine, bile duct	Lake Minnetonka	Ibid.
<i>Echinostoma revolutum</i>	Intestine	Upper Grass Lake	Ibid.
<i>Echinostoma coalitum</i>	Ibid.	Minneapolis	Ibid.
<i>Echinostoma callawayensis</i>	Ibid.	Ibid.	Ibid.
<i>Echinostoma armigerum</i>	Ibid.	Ibid.	Ibid.
<i>Echinoparyphium contiguum</i>	Ibid.	Fort Snelling	Ibid.
<i>Echinoparyphium recurvatum</i>	Ibid.	Ft. Snelling, Lake Minnetonka, Long Meadow Lk., Upper Grass Lk.	Ibid.
<i>Notocotylus quinqueserialis</i>	Caecum	Edina, Ft. Snelling, Long Meadow Lake, Blue Lake, Lake Minnetonka, Upper Grass Lake	Ibid.
<i>Notocotylus urbanensis</i>	Large Intestine	Fort Snelling, Lake Minnetonka, Lake Waconia	Ibid.
<i>Plagiorchis proximus</i>	Intestine	Fort Snelling	Ibid.
<i>Hymenolepis evaginata</i>	Ibid.	Edina & Mpls.	Ibid.
<i>Trichuris opaca</i>	Ibid.	Fort Snelling, Upper Grass Lk., Lake Minnetonka	Ibid.
<i>Alaria mustelae metacercaria</i>	Lungs	Fort Snelling, Lake Minnetonka	Ibid.
<i>Pseudodiscus zibethicus</i>	Caecum	Fort Snelling, Lake Minnetonka	Ibid.
<i>Taenia tenuicollis</i>	Liver	Lake Minnetonka	Ibid.
<i>Cladotaenia</i> sp.		Edina	Ibid.
<i>Psilostomum ondatrae</i>	Stomach	St. Paul	Penner, 1940
<i>Opisthorchis tonkae</i>	Bile duct	Fort Snelling	Ibid.
<i>Amphimerus pseudofelineus</i>		Ibid.	Ibid.
<i>Apophallus brevis</i>	Intestine	Ibid.	Ibid.
<i>Paragonimus kellicotti</i>	Body cavity	Ibid.	Ibid.
<i>Plagiorchis muris</i>	Intestine	Ibid.	Ibid.
<i>Mediogonimus ovilacus</i>	Pancreatic duct	Ibid.	Ibid.
<i>Taenia taeniaeformis</i>	Liver	Edina, Upper Grass Lake, Lake Minnetonka	Ibid.
<i>Capillaria ransomia</i>	Intestine	Lake Chisago	Barker, 1915
<i>Echinoparyphium contiguum</i>	Ibid.	Ibid.	Ibid.
<i>Notocotylus quinqueserialis</i>	Caecum	Ibid.	Ibid.
<i>Catantropis fimbriata</i>	Intestine	Ibid.	Ibid.
<i>Plagiorchis proximus</i>	Ibid.	Ibid.	Ibid.
<i>Hymenolepis evaginata</i>	Ibid.	Ibid.	Ibid.
<i>Trichuris opaca</i>	Ibid.	Ibid.	Ibid.
<i>Fibricola cratera</i>	Ibid.	Ibid.	Ibid.
<i>Wardius zibethicus</i>	Ibid.	Ibid.	Ibid.
<i>Anomotaenia telescopica</i>	Ibid.	Ibid.	Ibid.
<i>Trichostrongylus fibertius</i>	Ibid.	Ibid.	Ibid.
<i>Nudocotyle novicia</i>	Small intestine		
	bile duct	Ibid.	Barker, 1916
<i>Opisthorchis tonkae</i>	Bile duct, gall bladder, pancreas	Lake Minnetonka	Wallace & Penner, 1939
<i>Fibricola cratera</i>	Intestine		Cuckler, 1940
<i>Capillaria hepatica</i>	Liver	Long Meadow Lake	
<i>Schizotaenia variabilis</i>	Intestine	Ely	Erickson, 1944
<i>Schizotaenia americana</i>	Ibid.	Ibid.	Olsen, 1939

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- *Department of Biology, University of Minnesota, Duluth Branch.*

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## Heron Island — G

Rice County

By Orville

Young Great Horned Owls  
in nest. Photograph taken  
May 1, 1952.

Aerial view in winter  
of the 5.28 acre island  
and the adjacent lake  
shore area to the north-  
west. Photo by Forrest  
Lee.



View of the island from  
the west shore of General  
Shields Lake. Sandbar ex-  
tension from the north-  
west corner of island (left  
side of photo) makes ac-  
cess from shore possible  
by use of hip boots.



# General Shields Lake

, Minnesota

A. Rustad

Great Blue Heron nest with eggs as seen from the Great Horned Owl nest. May 1, 1952.



A portion of the Great Blue and American Egret nesting area in center of the island.



Turn to page 130 for the article on *Heron Island* — *General Shields Lake* by Robert Hanlon.

# Seasonal Report

by

Mary Lupient

A two months' trip through California last summer was the happy experience of your reporter. In August shore birds migrated along the Pacific Coast. There were familiar species traveling southward including Willets that rose in beauty and hundreds of Sanderlings, Yellow-legs and Sandpipers fed in quiet waters. I was gladdened by the Wandering Tattlers that followed the surf to snatch a few morsels before skipping back to avoid the next wave. Flocks of Black Turnstones chatted companionably in low voices while they hunted for food on seaweed covered rocks after the tide went out. By the road near the coast Long-billed Curlews stood sedately and without fear of the passing traffic. Near Pacific Grove along the ocean there is what is called The Seventeen Mile Drive. Here the rare Monterey Cypress grows and at one place a small peninsula juts out and far out from it two ocean currents meet creating dozens of Neptune's Horses with flying manes that race in and crash to a halt at the cliffs of the peninsula. Erosional remnants of the cliffs remain out from shore in the form of huge rocks and on these hundreds of seals and water birds basked in the sun. Only a few of the birds I saw have been mentioned but numbers of species can be seen during the migration season along the Pacific Coast.

Two weeks of my vacation were spent at the Audubon Camp in the Sierras where the Water Ouzel dwelled along the streams, where the fairy bells of the Hermit Thrush's song rang in serene measured phrases and where the migrating Rufous Hummingbirds tarried to sip from columbines growing profusely in mountain meadows. The White-crowned Sparrow sang through daylight hours

and the Golden Eagle wheeled above its eyrie among the crags of Mt. Lincoln.

We climbed some of the mountains and at the snow line the strange exotic Snow Flower was just pushing through the earth about August 1. This plant is parasitic and is said to grow only in the California mountains. It has a broad flat stem over an inch wide which is about as wide as the lily-like flower. The whole plant is bright red. We climbed to bare mountain peaks where acres of wild flowers grew in giant rock gardens.

At this camp one may study the life zones from the Transition to the Arctic Alpine. I was happy, however, to return to the green hills and fields of Minnesota where the summer weather was reportedly mild with a good deal of precipitation which unfortunately produced hordes of mosquitoes until late in September. It was an exceptionally pleasant autumn with intermittent cool and warm weather. In the Twin Cities an all time high record of 85 was set for October 12. There was light frost in northern sections in early September and at times in October, but no frost at all in southern sections to date of this writing, November 4. The fall foliage was bright and beautiful, made more so by the contrasting green fields which because of the rainfall were not their usual brown. Snow fell in International Falls, September 14, earliest in 43 years. However it soon melted. October was characterized by high winds and changeable weather.

Six White Pelicans spent more than two weeks at a small lake on the outskirts of St. Paul, reported by Paul Murphy. They probably were attracted by a flock of tame geese living on the lake, and their long stay was due to the

fact that food was plentiful. Also the weather was mild. They were unafraid and reportedly allowed snapshots to be taken at a distance of ten feet. Lester Badger reported about 325 White Pelicans near Henderson, September 15.

American Egrets were present in the Mississippi River lowlands during the summer suggesting there may have been some nestings. After nesting season was over a migration of egrets came to the same area as evidenced by the report of about 150 seen by Mr. and Mrs. George Ludcke September 20.

A large concentration of Sandhill Cranes occurred in Polk county the first week in October.

Blue and Snow Geese were in flight over Anoka county, October 23, reported by Dana Struthers. Canada Geese were seen by Mrs. A. D. Corniea over Cedar Forest, October 18.

Most hunters got their bag limit of local ducks the opening day, but otherwise the shooting was poor until the first week in November when the northern flight began. Wood Ducks were so scarce that the Minnesota Division of Game and Fish circulated a letter asking hunters to avoid shooting them.

The first reported Hooded Mergansers had arrived at the Hill Farm by October 10.

Grouse shooting was poor in the first part of the season. Ring-necked Pheasants were plentiful in western and south-western sections of the state.

The M.O.U. sponsored their annual field trip to Duluth to observe the hawk migration on September 22 and 23. Rainy weather and unfavorable wind combined to reduce the flight a good deal on that week end. Sharp-shins was the predominating species. In various localities many hawks were found shot during hunting season.

Due to so much precipitation in the summer months the water level was high and muddy shore lines were covered by growing vegetation. Early returning shore birds in eastern Minnesota were absent from their usual haunts. Several

small flocks of Yellow-legs and Small Peeps had arrived in Grant county, July 17. Shore birds were seen near Henderson by Mrs. Josephine Herz, at Minnesota Point by Duluth observers and three Northern Phalaropes at Goose Lake were reported by R. E. Cole. Several small flocks of Upland Plovers, about 20 in all, were observed by Lee Jaques near Hugo in late August, a very interesting report as they are rarely found in numbers. Thirty Golden Plovers were reported south of Benson, November 4 by Al Grewe.

Thousands of Franklin's Gulls were reported feeding over Lake Harriet by Karen and Whitney Eastman October 5. Several hundreds of Franklin's and Bonaparte's Gulls spent about four weeks over river lowlands near Shakopee and a few lived for some time in the Mississippi Valley near Ft. Snelling. In all cases their characteristic soaring flight was high as they fed on insects.



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An injured Saw-whet Owl was sent to the museum in October by Mrs. C. E. Peterson, Madison. It subsequently died and was made into a skin. A Long-eared Owl was seen in Minneapolis on the West River Blvd. by Mrs. Sally Wangenstein, October 23.

Although there were some late stragglers, the migration of perching birds was about normal. There was a heavy migration of sparrows and warblers September 21 and another of vireos, White-throated Sparrows and fly-catchers October 1. The first observation of migrating Myrtle Warblers and Slate-colored Juncos was at O'Brien State Park September 19. The heaviest noted migration of juncos was at the Hill Farm October 10. The peak migration of sparrows going south was the third week in October and Tree Sparrows in goodly numbers were down to the Twin City area by October 15. On October 20 at Talcot Lake State Game Refuge, hundreds of Harris's Sparrows were seen by Karen and Whitney Eastman. They saw also two Barn Swallows resting on wires on the same date. A few Tree Swallows were still around over the Minnesota River the last week in October. There was a light migration of Golden-crowned Kinglets and Brown Creepers October 18. Robins flocked in very large numbers in early October but by the last of the third week of the month they were mostly gone. Bluebirds were abundant over the countryside throughout October which is a gladdening fact. As usual there were myriads of blackbirds in great flocks. One flock was pursued from place to place in the woods near Purgatory Creek by a Sharp-shinned Hawk. It was not successful during observation.

Snow Buntings had arrived on the North Shore near Little Marais on October 24 reported by Theo. Zickrick.

This writer was startled to see an American Three-toed Woodpecker on a tree trunk in her back yard, September 13 during a light migration of other

woodpeckers. It stayed only a few minutes. On October 20 a Carolina Wren the Minnesota River the last week in hundreds of Harris's Sparrows were seen by Karen and Whitney Eastman. They saw also two Barn Swallows resting on wires on the same date. A few Tree Swallows were still around over came to the same yard. Sheridan Flaharty, Morris, said one came to his feeder October 29. He also had a male Cardinal which is not often seen so far west.

A Tufted Titmouse was seen by Larry Hanson in Robert's Sanctuary, Minneapolis, October 18, and one was seen by Mrs. E. W. Joul near her home in Minneapolis October 10. On October 3 she saw a Winter Wren in the same area.

Mrs. K. L. Sueker, Glen Lake, watched a Clarke's Nutcracker for ten minutes in her back yard, October 12.

In Grant county, July 17, an American Magpie was observed by this writer which, due to the date, suggests a possible nesting.

Several records regarding the "anting" of birds have appeared in various ornithological publications in the past few years. The following interesting item was sent by Mrs. C. E. Peterson, Madison, though the observation was made by a neighbor. On several consecutive mornings about 9:00 a.m. four or five Bronzed Grackles came to a black walnut tree. Their chatter called his attention to their activity which proved to be as follows: Each bird removed a good sized section of the green husk of the walnut attached to the tree and "anted" with it as described in the July 1956 Geographic magazine. His interest in this article led to his own observations.

In closing this report I want to pay tribute to the memory of my friend George Friedrich and express my appreciation of his constructive aid in its early history to the printed *Flicker*. — *Minneapolis, Minn.*

# The Canadian Lakehead

Edited by  
A. E. Allin

The year 1956 will be remembered for its cool early summer; conditions improved but little in the later months. July was very cool and the average temperature for August of 70.9° was 2.1° below average. The temperature exceeded 80° on only six days. Although it rained on 15 days, total precipitation was only 50 per cent of normal. Nor was September an improvement. There was some precipitation on 24 days although the total rainfall of 3.52 inches was only .25 inches above average. It was the second coolest September on record with a mean temperature of 48.6° or 5° below normal. The temperature rose above 70° on only two occasions and above 60° on ten days. Record lows of 23° were reached on September 20 and 21. During October, nature attempted to compensate for the cool preceding months. On October 4, the temperature set a new October record of 77.7° and it again rose to 76° on October 13. Strong winds, frequently from the south and east, predominated and may well have had an effect on the migration pattern. There was little precipitation but the latter part of the month was cloudy.

We have previously referred to the fact that the late spring delayed the development of vegetation and possibly prevented a freezing of flower buds as so frequently happens. Consequently there is a terrific crop of fruit of many varieties. The Highbush Cranberry, Hawthorn and Mountain Ash are heavy with their red berries; hillsides are white with the fruit of the Snowberry. Although frost-bitten, the blue fruits of Chokecherry and Blueberry persist. There is an abundant crop of fruit on the Bearberry, providing food for Ruffed Grouse as successful hunters can attest.

There is also a particularly heavy crop of cones on the Spruce, of keys on the Manitoba Maples and samaras on the Black Ash. In the cities, Cottoneaster, Barberry, Rowans and Ornamental Crabs, Manitoba Maples and Black Ash are heavy laden with their fruit and should attract and hold resident species and winter visitors.

As further evidence of the warm October we saw a Bell's Turtle on October 4 and a Garter Snake on October 14. A Little Brown Bat was active on Whitefish Lake on October 13. Dragonflies were seen on October 20 and on the same day Black Flies and Mosquitoes were common and annoying. Milbert's Tortoise-shells were flying about our Michelmas Daisies on October 7. Common Buttercups, Shepherd's Purse, Dandelions and the Aster, *A. cileolatus*, were still in bloom on October 31.

Despite the activity of club members, the summer months provided few items of interest. The Indigo Bunting is a rare summer resident which has been found breeding on only one occasion — June, 1938 at Whitefish Lake when Col. Dear and I discovered a nest containing two eggs. This year Indigo Buntings were reported on June 2, June 17, July 16 and 22. The Red-headed Woodpecker which has become very rare locally was seen on four occasions, the last on September 15. Two Mourning Doves were seen on September 30 at Middle Falls by Dr. and Mrs. Hogarth. Minnesota naturalists will be interested and pleased to know that this species was removed from the Ontario game-bird list as a result of protests of Ontario naturalists following the open season declared in 1955. Although the Ruby-throated Hummingbird is not uncommon at the Lake-

head, it has not yet been found breeding. Sight records as late as September 17 and 22 were of interest.

As usual, migration began with the southward movement of the shore-birds. On August 10, C. E. Garton reported White-rumped Sandpipers in the Sibley Peninsula. Until recently, this bird was considered an accidental visitor. Probably it had been neglected as we now encounter it frequently on both spring and fall migration. Within a few days, shore-birds became very common and Lesser and Greater Yellowlegs, Solitary and Pectoral Sandpipers and Dowitchers were reported in succession. The peak was probably reached in late August and early September. We failed to find numbers of Golden Plover as sometimes happens but 12 were seen in Fort William on October 4 as well as one Black-bellied Plover. During the past few years the occasional phalarope has been reported in the fall. Each has been considered a Northern by the observers concerned. On September 2, phalaropes identified as Wilson's were reported. Since none of the observations have been made under ideal conditions it seems desirable that specimens be collected. The only spring record of phalaropes for the area was the pair of Wilson's Phalaropes seen in Paipouge township on May 26, 1956.

The Horned Grebe is a not uncommon fall migrant, but we were surprised to find them on Lake Nipigon as early as August 28. They were frequently seen on Whitefish Lake during September. A Ring-billed Gull seen August 28 on Lake Nipigon was an unexpected find as there is no definite evidence this species nests in the region although increasing numbers now regularly visit us in spring. The Bonaparte Gull is another uncommon visitor but a small flock was present along the waterfront for several weeks in late summer.

As usual, special efforts were made to locate migrating hawks in early September but again our efforts ended in fail-

ure. On the morning of September 14, we drove from Duluth to Fort William. Between showers it was evident a definite migration of hawks was in progress along Highway 61. Approximately 200 Broad-wings were seen between Duluth and Two Harbors. By the time we reached Grand Marais we had seen 40 Sharp-shinned Hawks, 2 Cooper's, 1 Marsh, 1 Pigeon and 10 Sparrow Hawks. None were seen north of Grand Marais. Subsequently hawks have been scarce at the Canadian Lakehead — a few Sparrow Hawks, a Goshawk at Whitefish Lake on September 29 and a Red-tailed Hawk on October 21. Two American Rough-legged Hawks were seen on October 27. As usual the occasional Bald Eagle appeared at Whitefish Lake the latter part of October.

Owls have been uncommon during the past season. A Barred Owl sat in a shade tree on a Fort William street all day October 22. We saw the first Short-eared Owl of the year on October 31. Several Saw-whet Owls were reported during the month. Although it is remote from the Lakehead and from Minnesota we must protest the reported clearing of "The Jungle" along Toronto's eastern waterfront. For many years Saw-whets have concentrated there in the fall in great numbers and more have been banded there than in all the rest of North America.

The fall migration of small land birds has been very poor with few definite movements recorded. There are a few exceptions. Robins were present in huge flocks as early as mid-August. Flocks of moderate size were again present on October 14, 21, and 27. These may have come from the far north. Other thrushes were very scarce. Bronzed Grackles were present in large flocks in mid-August and were abundant during the latter half of September. Redwings are frequently abundant in the wild rice beds of Whitefish Lake, but this year none were seen. Rusty Blackbirds are usually common there throughout October, but

this year few were noted although they were abundant throughout the surrounding country following their appearance on October 6. Warblers apparently filtered through the region without any major flight being recorded and no rarities were reported. A few Myrtles and Palms were still present in mid-October. Like the blackbirds we missed the usual numbers of Myrtle Warblers we have become accustomed to expect at Whitefish Lake where they feed on the insects throughout the vast beds of Wild Rice.

Similarly the migration of sparrows was far from spectacular. Few White-crowned or White-throated Sparrows were seen, and only a few Harris's were recorded. Slate-colored Juncos were migrating on September 29 and were common from October 4 to October 18. Tree Sparrows appeared on October 7 and were relatively common throughout October. Large flocks of Lapland Longspurs were reported, commencing September 27 which is a few days later than usual. Many were in much brighter plumage than would be expected at that season. Possibly Horned Larks were more common than usual. The majority were yellow-faced birds apparently belonging to the Northern race, but a few seemed to be Hoyt's which is the only race we have collected here in the fall. Peculiarly the Prairie form has not yet reached our Lakehead area, either as a migrant or as a summer resident. The Snow Bunting is another frequenter of our Wild Rice beds but it too, was absent there in 1956 although small flocks appeared on the shores of Lake Superior as early as October 20.

The status of the Ruffed Grouse is debatable. Some observers, including professional biologists, feel that it is not yet common following the recent crash. Others, including ourselves, think it should be considered common in most areas, although it may still be locally scarce. The cold wet spring may account for many covies being small. It

may also explain why many young birds were still very small in early October. Probably these were second clutches where the first was lost. One hunter removed a 14-inch Garter Snake from the crop of one grouse! The Spruce Grouse is undoubtedly scarce this season and few of the introduced Hungarians have been reported. No Sharp-tailed Grouse have been noted, although they were supposedly common 70 miles west of the Lakehead last spring. A "Ptarmigan" was reported along the Atikokan Highway but in view of the partially albino Ruffed Grouse described in these columns a year ago, I feel a sight record is not sufficient unless confirmed by experts.

The pattern of waterfowl migration has been unusual. This is likely a result of the very mild October with predominating southerly and easterly winds. This postulation fails to explain the unprecedented appearance of one drake and two hen Redheads on the local waterfront on August 13, and the appearance in late August of a few Green-winged Teal. A Ruddy Duck observed on the occasion of our joint Field Day, September 2, was one of a handful of fall records for this species.

We have learned to expect a heavy flight of Ring-necked Ducks about October 1, accompanying severe weather disturbances so common at that period. This year the latter were lacking and, although numbers of Ring-necks appeared, they were not abundant. Rather than decreasing in numbers throughout the month, as they have done in recent year, they increased and we saw several thousand on Whitefish Lake on October 31. These were very fat birds, some at least weighing two pounds. This approaches the maximum weights we observed in these birds in 1944 when some at the end of the season exceeded two pounds in weight. There are few, if any, records in the literature of Ring-necked Ducks in excess of this size.

Lesser Scaup appeared on September 29. They were uncommon throughout October although they are usually our most common diver. We did not identify any Greater Scaup but these are readily overlooked. The first Buffleheads were seen on October 18. American Golden-eyes appeared in their usual numbers. The Mergansers were scarce.

Pond ducks were relatively common until mid-September, the majority having probably been raised in the district. A very heavy flight of Mallards accompanied by some Black Ducks, arrived on October 28. These were evidently northern birds as they showed little of the usual sagacity of these species when they have had contact with man. The first flight of Canada Geese was reported on October 9 and there was a second major movement about October 21. The majority of Snow Geese probably went through the area about October 9. Apparently some disturbing influence upset their usual habits as both Snow Geese and Canadas were seen in small numbers on local fields and lakes to an extent not usually noted. Coot were uncommon. A few appeared on Whitefish Lake on September 29. They were also present in numbers on October 28.

It may be of interest to note that 13 tons of Wild Rice were collected at Whitefish Lake. This was green and immature as the collectors were given until the opening of duck shooting, noon September 15, to complete their harvest-

ing. The primitive methods of the Indians who harvested the rice is wasteful but permits much of the crop to remain in the marshes to feed our migrating waterfowl. The collectors gathered from a radius of several hundred miles for this harvest which is of some economic importance.

The Thunder Bay Field Naturalists Club held two successful fall Field Days. Over Labor Day week end we were joined by 44 members of the M.O.U. and their friends. A dinner was held on Saturday evening. Sunday was spent in the field and many interesting observations were made. Many of the visitors remained for Monday and spent the day in sight-seeing and birding. It was with deep regret that we learned Lewis Barrett, who had attended this gathering as well as our May Field Day, would be absent from future gatherings here and in Minnesota. The sympathy of Lakehead naturalists is extended to Mrs. Barrett and her family.

The second fall Field Day was held on October 27, when club members traveled to the Dorion area to visit the "Bat Cave" on Cavern Lake. Some 350 Little Brown Bats and one Big Brown Bat were found hibernating there. One Little Brown Bat carried a band which had been attached to it on the occasion of a similar trip in 1948! Other bats were found hibernating in a neighboring abandoned mine shaft. — *Regional Laboratory, Ontario Department of Health, Fort William, Ontario.*

# Notes of Interest

THE 1955 CHRISTMAS CENSUS — Because only six reports on the 1955 Christmas census were received by the editor, this year's summary will be treated as a note of interest rather than an article as has been the practice in previous years. — P. B. H.

**Duluth, Minnesota.** (Lake Superior shoreline, Fond du Lac to Knife River, Duluth, Minnesota Point; city parks 10%, sand dunes 5%, streets, highways and inland 85%. — Jan. 2; 8 a.m.-4 p.m. Cloudy; temp. 22 to 30; wind calm; 16-20 in. snow in forest. Fourteen observers in 10 parties. Total party-hours, 60 (45 on foot, 15 by car); total party-miles, 150 (40 on foot, 110 by car). Mallard 1; Am. Golden-eye, 177; Buffle-head, 2; Old-squaw, 397; Red-br. Merganser, 2; Rough-legged Hawk, 1; Ruffed Grouse 2; Ring-necked Pheasant, 1; Glaucous Gull, 1; Herring Gull, 1046; Ring-billed Gull, 1; Barred Owl, 1; Pileated Woodpecker, 1; Hairy Woodpecker, 9; Downy Woodpecker, 36; Canada Jay, 1; Blue Jay, 21; Am. Crow, 2; Black-capped Chickadee, 161; Brown-capped Chickadee, 1; White-breasted Nuthatch, 3; Red-breasted Nuthatch, 24; Bohemian Waxwing, 14; Northern Shrike, 1; Starling, 337; House Sparrow, 107; Purple Grackle, 3; Evening Grosbeak, 42; Pine Grosbeak, 51; Common Red-poll, 7; Pine Siskin, 6; Red Crossbill, 9; Slate-colored Junco, 1; White-throated Sparrow, 2; Snow Bunting, 28. Total 36 species; about 2503 individuals.

— Joe Antonio, Joe Bronoel, Margaret Brown, Robert Cohen, Dick Evans, Flora Evans, O. A. Finseth (compiler), Henry Gilbert, Lloyd Hackl, John Hale, P. B. Hofslund, Catherine Lieske, Evelyn Palmer, Mrs. Pappas.

**Minneapolis, Minn.** (7½-mile radius centering on the Minneapolis Golf Course and extending to the junction of hwy. 55 and 101, Robbinsdale, Edina, Hopkins, and including Theodore Wirth Park and Roberts Bird Sanctuary; town suburbs 45%, open farmland 25%, deciduous woodlots 17%, lakes, marshes, and creeks 8%, city park and golf course 5%). — Jan. 2; 8 a.m. to 5 p.m. Cloudy; temp. 24° to 29°; wind WSW, 6 to 12 m.p.h.; very light snow in a.m., 10" of snow on ground; portion of Miss. River open. 14 observers in 6 parties. Total party-hours, 41½ (14½ on foot, 27 by car), total party-miles, 274½ (281½ on foot, 246 by car). Mallard, 74; Shoveller, 1; Am. Golden-eye, 72; Sparrow Hawk, 1; Ring-necked Pheasant, 481; Horned Owl, 1; Pileated Woodpecker, 1; Red-headed Woodpecker, 1; Hairy Woodpecker, 17; Downy Woodpecker, 31; Blue Jay, 295; Am. Crow, 39; Black-capped Chickadee, 180; Tufted Titmouse, 1; White-breasted Nuthatch, 82; Brown Creeper, 3; Am. Robin, 2; Bohemian Waxwing, 1; Cedar Waxwing, 94; Gray Shrike, 1; Common Starling, 250; House Sparrow, 4591; Red-winged Blackbird, 2; Cardinal, 21; Purple Finch, 47; Common Redpoll, 37; Am. Goldfinch, 90; Slate-colored Junco, 115; Oregon Junco, 1; Am. Tree Sparrow, 62; Snow Bunting, 253. Total 31 species; 6848 individuals.

Jeremy Berman, Delwin Cahoon, Kathie Dean, Mr. and Mrs. Geo. Fisher, J. S. Fitcher (compiler), Ray Glassel, Burton Guttman, Elizabeth Jerabek, Norrie Jones, William Nelson, William R. Pieper, Charles F. Wright, Kris Wright (Avifaunal Club).

**Minneapolis, Minn.** (7½-mile radius from Camden Park to Anoka on both sides of the Mississippi River; open farmland 55%, town suburbs 25%, deciduous farm woodlots 15%, deciduous river banks and valleys 2%, marshes and sloughs 2%, sand dunes 1%). — Dec. 31; 8 a.m. to 5 p.m. Clear; temp. 12 to 24; wind S, 10 m.p.h. 12 inches of snow; Rice Creek had open water, Mississippi River open in spots below Coon Creek Dam. 8 observers in 4 parties. Total party-hours, 20½ (5 on foot, 15½ by car), total party-miles, 174 (7½ on foot, 166½ by car). Mallard, 6; Black Duck, 1; Am. Golden-eye, 178; Red-tailed Hawk, 1; Rough-legged Hawk, 1; Sparrow Hawk, 1; Ring-necked Pheasant, 203; Horned Owl, 1; Snowy Owl, 1; Belted Kingfisher, 1; Red-headed Woodpecker, 1; Hairy Woodpecker, 4; Downy Woodpecker, 12; Blue Jay, 117; Am. Crow, 59; Black-capped Chickadee, 28; White-breasted Nuthatch, 15; Cedar Waxwing, 15; Common Starling, 114; House Sparrow, 263; Cardinal, 7; Purple Finch, 5; Common Redpoll, 230; Am. Goldfinch, 8; Slate-colored Junco, 78; Am. Tree Sparrow, 146. Total, 26 species; 1496 individuals.

— Lewis L. Barrett, Ruth Hopkins, Ruth Lender, Mr. and Mrs. Boyd M. Lien (compiler), Charles F. Wright, Kris Wright, Gavin Wright (Minneapolis Bird Club).

**Minneapolis, Minn.** Area 5 miles wide beginning at intersection of Minnehaha Pkwy. and Lyndale Ave. S. extending south to Minnesota River, both sides of river to Savage on one side and Auto Club on the other. Includes Lake Nokomis, Cedar Av. and village of Bloomington. December 27, 1955. Snow about 12 in. deep, cloudy, temp. 26 to 35, wind S.E. 21 m.p.h. Residence 5%, open country 85%, deciduous woods 10%. Ring-necked Pheasant, 41; Starling, 1; Mockingbird, 1; Red-winged Blackbird, 2; Crow, 7; English Sparrow, 300; Cardinal, 4; Blue Jay, 6; Slate-colored Junco, 41; Black-capped Chickadee, 18; Downy Woodpecker, 3; Hairy Woodpecker, 1; White-breasted Nuthatch, 7; Red-bellied Woodpecker, 1; Tree Sparrow, 200; Redpoll, 26; Mallard, 5; Black Duck, 1; Robin, 1; Pileated Woodpecker, 1; Rusty Blackbird, 6; Wilson's Snipe, 2. 22 species, 675 individuals.

— Mary Lupient (compiler), Dorothy Legg.

**Plainview, Minn.** (17 miles between Plainview and Mississippi River; open farmland 85%, wooded river banks 15%). Dec. 28, 10:30 a.m. to 4 p.m. Overcast with some freezing drizzle; temp. 26, wind S.E. 10-15 m.p.h. Mississippi River open in spots. 2 observers in 1 party. Total party-miles about 40. Mallard, 30; Black Duck, 2; Green-winged Teal, 1; Lesser Scaup, 2; Red-tailed Hawk, 2; Red-shouldered Hawk, 1; Rough-legged Hawk, 1; Bald Eagle, 1; Mourning Dove, 1; Red-bellied Woodpecker, 1; Blue Jay, 7; Black-capped Chickadee, 10; White-breasted Nuthatch, 3; Starling, 18; House Sparrow, 48; Tree Sparrow, 103; Cardinal, 9; Purple Finch, 1; Goldfinch, 21; Slate-colored Junco, 4; Song Sparrow, 1. Total, 22 species; 268 individuals.

— *Dr. and Mrs. D. G. Mahle.*

**St. Cloud.** (22 m. N., 12 m. W. St. Cloud, including the campuses of St. Benedict's College and St. John's University.) Dec. 26, 1955. Temp. 20, wind N.E. 5-8 m.p.h. Golden-eye, 167; Slate-colored Junco, 10; Brown Creeper, 1; Am. Merganser, 14; Crow, 5; Blue Jay, 20; House Sparrow, 370; Pheasant, 2; Mallard, 20; Northern Shrike, 1; Black-capped Chickadee, 108; White-breasted Nuthatch, 22; Red-breasted Nuthatch, 1; Hairy Woodpecker, 4; Downy Woodpecker, 4; Starling, 8; Pileated Woodpecker, 1; Cardinal, 3; Goldfinch, 5; Snowy Owl, 2. Total, 20 species; 768 individuals.

— *H. Barker, Janet Borsheim, H. Goehring, Mr. and Mrs. George Lehrke, Mrs. Alys Misho, Monica Misho.*

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**FISH EATING A BLACK TERN** — One Sunday morning last summer, Dr. Paul Larson was cruising on Lake Minnetonka. The water was perfectly calm near the Yacht Club and while he moved slowly along he noticed a Black Tern dipping into the water, feeding on something just below the water surface.

While he was watching the tern feeding and at about a distance of 20 feet, the tern swooped, touched the water, and at that instant a large fish broke the surface and taking the tern in its mouth, dragged it under. The fish evidently ate the bird whole, because the bird did not come to the surface after the fish struck.

I have heard accounts of kingfishers being found in the stomachs of Northern Pike but this is the first time I have heard an actual eye witness account of a bird being captured in the air by a fish. — *Jim Wilkie, Continental Machines Co., Savage, Minnesota.*

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**AN UNUSUAL DAY OF MIGRANTS** — The annual May Day count of bird migration was held by the Duluth Bird Club on May 26, 1956. Besides bringing a high count of over 130 species, the unusual occurrence of migrants made this a noteworthy day. Despite the late date, Canada Jays were still migrating, and two Snow Buntings were still present. There was a mixture of migrating warblers and shorebirds of both those we expect earlier in the season and those which make their first appearance around this date. But most unusual of all were the rare birds which we consider as being western forms that were found on Minnesota Point on this one day. The first to be noted was an unusual sandpiper with a group of Least and Semi-palmateds. Comparison between the three species indicated that this was a Western, although sight identifications of this species are difficult under any circumstances. Later a Willet was discovered, only the second record for this area. During the course of the morning such rare (for the northeastern part of the state) birds as the Eared Grebe and the Yellow-headed Blackbird were also reported. The most unusual occurrence was brought to my attention the next morning when William Piper and several other birders from Minneapolis discovered a Burrowing Owl on the Minnesota Point recreation grounds. A later check revealed that Miss Mira Childs had seen the same species in this area on the previous day. This is the first record of *Speotyto cunicularia* for the northeastern section, the species occurring regularly, but uncommonly in the western part of the state. While not as spectacular as the Audubon and Black-throated Gray Warblers reported elsewhere in this issue, these primarily western forms still add to the mystery of the unusual conditions that prevailed in the migration of birds this spring in Minnesota. — *P. B. Hofslund, Biology Dept., University of Minn., Duluth Branch.*

RED-TAIL EATS COTTONTAIL — February 3, 1956. Sec. 31, T. 106 N., R. 17 W. Dodge county, Minnesota. Upon seeing a Red-tailed Hawk standing in an awkward, uncomfortable position partly under the branches of a small plum tree, I thought he had just finished killing some prey animal and was trying to pull it out into the open. He stood more or less erect, but rather leaning back upon his tail with feet thrust out in front and head tucked against his breast. When I walked out along the fence line to investigate he flew heavily away, and I realized his odd stance must have been due to an overfull belly. Remains of a freshly killed and eaten Cottontail were there under the tree. Tracks in the fresh snow showed that the rabbit, surprised while foraging along the railroad right-of-way, had run to take cover beneath the very sparse sapling. The Red-tail apparently reached in under the branches and grasped him. The rabbit put up considerable but not effective resistance. His pelvic girdle with hind legs attached, the intestines, much of the skin, and the skull remained. No doubt, at one sitting, the hawk had consumed the back, foreparts, viscera, and all the meat of the head, including tongue, cheeks and lower jaw. Fresh, unfrozen blood indicated the episode had begun little more than an hour or so previously. — *Wm. H. Longley, Minn. Division of Game and Fish, Kasson, Minn.*

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WHISTLING SWAN OBSERVATIONS — Donald H. Ledin, pilot biologist, and Clare L. Johnson, game biologist, recorded the following Whistling Swan observations, while doing aerial photography work on April 10, 1956:

	Area	County	Township	Range	Sections	No. of Swans
1.	Swan Lake,	Nicollet	110	28-29	.....	410
2.	Linden Lake,	Brown	108	30	20	55
3.	Heron Lake,	Jackson	103-104	37	.....	42
4.	Klinker Marsh,	Murray	107	43	9,10	60
5.	Wood Lake,	Yellow Medicine	114	39	10,15	13
6.	Marsh Area,	Yellow Medicine	115	40	6	30
7.	Lake Minnewaska,	Pope	125	38-39	.....	55

— Total 665

— *Clare L. Johnson, Game Biologist, Minn. Div. Game and Fish.*

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ANNUAL M.O.U. SPRING FIELD TRIP — The annual spring field trip of the Minnesota Ornithologists' Union was held at Albert Lea, Minn., on May 19 and 20, 1956.

About 75 members from various affiliated clubs and from Canada were in attendance. Field trips to Big Island and other points of interest were made during the two-day meet. The weather was ideal and 141 species were observed in the vicinity of Albert Lea. Box lunches were provided by the Albert Lea Audubon Society and dinner was served in the Westminster hall of the Presbyterian church.

Dr. P. B. Hofslund reported as chairman of the Hawk Protection committee. Dr. Hofslund and Dr. Breckenridge discussed the need for more legislation at this time. It was the opinion of Dr. Hofslund that protection of all hawks would make it easier to educate the public in their conservation.

Dr. Breckenridge reported for the State Bird committee and stated that he was resigning as chairman of that committee. He said that it was impossible at the present time to get any unanimity on any particular bird and suggested that efforts be dropped.

Mrs. Harvey Putnam reported as membership chairman. She stated that she

had not accomplished all that she expected to do during the past year. She suggested that each club choose a membership chairman to cooperate with her in a membership drive and urged each member to bring in one new member and also to seek life memberships wherever possible.

President Hanlon pleaded for continued efforts for increased memberships and stated that we still had critical times ahead of us. Certain recommendations were to appear in the next issue of the Flicker and members should avail themselves of same.

Boyd Lien reported on field trips of the M.O.U. He called on Dr. Allin for a preliminary report of the trip to Fort William and Port Arthur over Labor day week end. Dr. Hofslund stated that the hawk migration through Duluth was at its height during the second and third weeks of September, with possibly larger flights during the third week.

Dr. Hofslund announced that the Wilson Club had accepted an invitation to hold its meeting in Duluth next year. The dates to be about June 13 to 16. Arrangement committees will comprise members of the M.O.U., U.M.D. and Duluth Bird Club inasmuch as it was a joint invitation from those bodies.

Mr. Hanlon advised that the annual meeting and paper session of the M.O.U. will be held in Minneapolis the first week end in December at the museum.

The subject of dumping refuse in Mother Lake in Minneapolis was discussed by Lewis Barrett and the secretary was instructed to write the Department of Conservation protesting this abuse and asking that the marsh be declared a natural area and signs posted to prohibit further dumping.

President Hanlon announced that he was leaving the state in the fall to accept a position in the Bahamas and regretted that he would be unable to complete his term of office.

Charles Flugum, vice president, stated that he was sorry to see Mr. Hanlon leave and that he would do everything possible to carry on the good work that Bob had started.

Mr. Hanlon thanked the Albert Lea Audubon Society for their fine hospitality, excellent dinner and the manner in which the meeting had been conducted.

The following observations were made in the Albert Lea area:

Eared Grebe	Hairy Woodpecker
Great Blue Heron	Arkansas Kingbird
American Bittern	Alder Flycatcher
Baldpate	Tree Swallow
Wood Duck	Barn Swallow
Canvas-back	Blue Jay
Ruddy Duck	White-breasted Nuthatch
Broad-winged Hawk	Catbird
Ring-necked Pheasant	Wood Thrush
Semipalmated Plover	Willow Thrush, Veery
Upland Plover	Cedar Waxwing
Greater Yellow-legs	Blue-headed Vireo
Least Sandpiper	Warbling Vireo
Herring Gull	Tennessee Warbler
Forster's Tern	Yellow Warbler
Black Tern	Myrtle Warbler
Great Horned Owl	Chestnut-sided Warbler
Ruby-throated Hummingbird	Palm Warbler
Red-bellied Woodpecker	Mourning Warbler

Canada Warbler  
Bobolink  
Red-winged Blackbird  
Bronzed Grackle  
Cardinal  
Dickcissel  
Grasshopper Sparrow  
Harris's Sparrow  
Lincoln's Sparrow  
Pied-billed Grebe  
Green Heron  
Mallard  
Blue-winged Teal  
Redhead  
Lesser-Scaup Duck  
Red-tailed Hawk  
Sparrow Hawk  
Sora Rail  
Killdeer  
Spotted Sandpiper  
Lesser Yellow-legs  
Long-billed Dowitcher  
Ring-billed Gull  
Common Tern  
Mourning Dove  
Nighthawk  
Belted Kingfisher  
Red-headed Woodpecker  
Downy Woodpecker  
Crested Flycatcher  
Least Flycatcher  
Bank Swallow  
Cliff Swallow  
Crow  
Brown Creeper  
Brown Thrasher  
Olive-backed Thrush  
Bluebird  
Starling  
Red-eyed Vireo  
Black and White Warbler  
Orange-crowned Warbler  
Magnolia Warbler  
Black-throated Green Warbler  
Bay-breasted Warbler  
Oven-bird  
Northern Yellow-throat  
Redstart  
Western Meadowlark  
Baltimore Oriole  
Cowbird  
Rose-breasted Grosbeak

Goldfinch  
Vesper Sparrow  
White-crowned Sparrow  
Swamp Sparrow  
Double-crested Cormorant  
Black-crowned Night Heron  
Gadwall  
Shoveler  
Ring-necked Duck  
Buffle-head  
Red-shouldered Hawk  
Hungarian Partridge  
Coot  
Wilson's Snipe  
Solitary Sandpiper  
Pectoral Sandpiper  
Semipalmated Sandpiper  
Franklin's Gull  
Caspian Tern  
Black-billed Cuckoo  
Chimney Swift  
Flicker  
Yellow-bellied Sapsucker  
Kingbird  
Phoebe  
Horned Lark  
Rough-winged Swallow  
Purple Martin  
Black-capped Chickadee  
House Wren  
Robin  
Gray-cheeked Thrush  
Ruby-crowned Kinglet  
Yellow-throated Vireo  
Philadelphia Vireo  
Golden-winged Warbler  
Nashville Warbler  
Cape May Warbler  
Blackburnian Warbler  
Black-poll Warbler  
Grinnell's Water-thrush  
Wilson's Warbler  
English Sparrow  
Yellow-headed Blackbird  
Brewer's Blackbird  
Scarlet Tanager  
Indigo Bunting  
Savannah Sparrow  
Chipping Sparrow  
White-throated Sparrow  
Song Sparrow

— J. K. Bronoel, Secretary

### COOPER'S HAWK PREYING UPON A WINTER PHEASANT FLOCK —

Just after dawn on February 3, 1956, when I arrived to watch a pheasant flock which I had kept under observation during much of the winter in Ashland township, Dodge county, I noticed an immature Cooper's Hawk perched above the plum thicket which served as an alternate roost for the flock. After the hawk and three worrying crows left, I counted 25 hen pheasants in the thicket. A few yards away in a cattail-grown road ditch, the other roost, were a dozen male pheasants. Later in the day, at 3:30 p.m., I flushed the birds, hens and roosters, from the cattails, and they flew to the neighboring woodlot 300 yards away. Within a half hour most of them had returned. At 4:15 a hen in an obvious hurry leaped from a hawthorn in the woodlot and almost immediately took wing, but she seemed to crash into an invisible wall, falling to the snow in a whirl of brown feathers. The suddenness of the crash and the disappearance of the hen behind a slight snowdrift left me with the feeling that I had only imagined seeing a hawk strike the hen. I hurried over the intervening small field to see if I could find any actual signs of an attack.

Just inside the edge of the woodlot and within a circle of elder stems jutting from the snow lay a hen pheasant surrounded by a wreath of loose feathers. But this was long dead, at least over-night, half-eaten and frozen solid. Then I saw the more recent victim at the base of the hawthorn a few feet away. Her head sagged limply to the snow as I started forward. She expired as I carried her to the car.

In about ten minutes the Cooper's Hawk appeared from within the grove, alighting well up in tree close to the kill and craning his neck looking for the hen or perhaps for me. Soon he sped away, to return after seven minutes. This time he landed where the hen had fallen. Soon he flew again to the corner of the woodlot and landed under a fallen tree from which I had just flushed three or four pheasants. There were a handful of pheasant feathers under the tree.

Examination of the hen showed that in one quick strike the hawk's talons had cut jugular veins on both sides of the neck, one just below the jaw and the other just above the scapula. A third talon had pierced a vein under the right wing in the axillary region. Another had pierced the muscle of the neck at the base, nearly entering the spinal column. The crop was ripped, and there was a hole in the skin between the wings on the back. Death was probably caused by clotting in the right lung.

This hen had been in trouble before. Her right leg had been severed at the heel, probably by a hay mower. Four of her tail feathers were missing. That her winter diet was satisfactory was indicated by her weight of 30 ounces, plus three ounces of corn in her crop.

This flock of pheasants, actually two flocks until they merged in late winter, numbered 73 birds, approximately. Seven hens were lost between mid-January and April 1. One was hit by an auto, and six were apparently killed by a hawk. None of the birds were in the plum thicket or in the thick growth of cattails where they spent much of their time, day and night. One was killed in a sandbar willow thicket. Three were killed in a willow and spruce shelterbelt. Two were killed in the grazed hawthorn woodlot. Known losses to other flocks under observation were three birds (two hens and one cock) out of 110 pheasants approximately. One of these was killed by an auto, one by a dog, and one by unknown causes. — *Wm. H. Longley, Division of Game and Fish, Kasson, Minnesota.*

STRANGE ACTIONS OF A PINNATED GROUSE — At 5:55 a.m. April 4, 1956, a crewman at the North Central Airlines office at the Hibbing Airport called me to say that "Herman" was back.

"Herman" is a Pinnated Grouse that appeared at the Hibbing Airport in May, 1955, and each morning attacked the incoming North Central Airlines planes. The grouse made a daily appearance until Dec. 2, 1955, when it mysteriously disappeared. It was not seen again until April 4, 1956. At that time I went to the airport to watch the show.

Arriving at the field at 6:30 a.m. we saw the grouse out in mid-field. A few minutes later the plane came in, approaching the field, the grouse became active and started running back and forth in the center of the airfield. As the plane worked its way down the maze of runways to the hangar the grouse seemed to get more and more worked up. Its horns came up, the yellow sacs on its neck puffed up, and it started hopping around. When the plane came to a halt in front of the hangar the bird, about a city block away, started to come toward the aircraft. It was in no particular hurry; it would fly 10 feet, walk 100 feet, and fly 10.

When about 50 feet away from the plane the bird really went into a war dance as if challenging the plane to a duel. As the plane rolled back onto the runway the grouse flew out after it.

The bird did not make another appearance for about a week. Then there was another absence of about three days. As the weather warmed up the bird again appeared regularly.

Last year the ritual was dreaded by North Central pilots as the bird had little fear of propellers. Following one particular incident when the grouse was caught in the prop wash the bird has learned a little caution but his courage has not diminished.

When the bird first appeared last year it was thought that he had a mate nearby, but no one at the field has ever seen it.

It was with amazement that the field employes noticed "Herman" this spring. Besides being afflicted with a mania for chasing airplanes "Herman" has for neighbors at the airfield a Great Gray Owl, a pair of Great Horned Owls and at least one Long-eared Owl. — *Ray Naddy, Hibbing, Minnesota.*

*Editor's Note:* "Herman" later this spring met the fate that eventually comes to all Pinnated Grouse that try to battle airplanes. — *P. B. H.*

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A SECOND LITTLE BLUE HERON IN MINNESOTA — On August 17, 1956, while canoeing down a "gut" running from the Mississippi River into the Weaver Marshes I floated past an assemblage of herons which included two Great Blue Herons, two Black-crowned Night Herons, four American Egrets, two Green Herons, and an immature Little Blue Heron (*Florida caerula*). The latter two species were perched on low snags overhanging the water. The plumage of the Little Blue Heron was entirely white, its legs dull green, and its bill largely black. In the good light and close range at which the bird was observed while it perched and as it flew when the canoe floated past within 30 yards, there was no possibility of mistaking any of its distinguishing features. The location of this observation was in Section 9, Township 109 North, Range 9 West. The first Little Blue Heron reported in this state was seen by this observer in the Whitewater Game Refuge (in Section 10, T. 108 N., R. 10 W.) on May 21, 1953, and recorded in *The Flicker* 25(4):149. — *Wm. H. Longley, Game Biologist, Minn. Division of Game and Fish, Kasson.*

AUDUBON WARBLERS AT NORTH OAKS FARM — After a week end at Frontenac where we found the most satisfactory migration of warblers we had ever seen (hundreds staying near the ground where they could be watched with ease instead of flitting about high in trees and hiding in leaves most of the time) we returned to our home in North Oaks Farm north of St. Paul. On Tuesday, May 15, we saw another unusual sight — two male Audubon Warblers, and a nondescript bird with them which was probably the female.

They were in the branches of a budded oak, only a few feet from us, just outside our living room window, so that we were able to watch them, without using field glasses, for 10 or 15 minutes. At first we did not know what they were. They were "flashier" than Myrtles, with bright yellow throats and large white wing patches; the yellow spot on the top of the head was very brilliant.

After looking for them in our Peterson's *Guide* and not finding them, we discovered them in Pough. When we had identified them as Western Warblers we located them in Peterson's *Western Guide*. Then we looked them up in Roberts, where we found only one record for Minnesota. Dr. Breckenridge believed that their appearance and that of a Black-throated Gray Warbler, reported on the same date and also a western warbler, may have been accounted for by the high winds that swept eastward over that week end. — Francis Lee Jaques, Florence Page Jaques. St. Paul, Minn.

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BLACK-THROATED GRAY WARBLER IN MINNESOTA — While tending my banding traps on May 14, 1956, I found a tiny warbler fluttering continuously in my Brenkle's Water Trap. As I approached the trap, I readily noted the bright yellow spots on the head as the bird bobbed up and down and pushed against the top meshes of hardware cloth trying to escape.

Momentarily, I realized a new bird to be added to my Minnesota list of warblers, but I did not realize at the time that it was a new species for Minnesota.

I removed the bird from the trap, banded it and placed it in a carrying cage for further study. A black cloth was thrown over the cage and the bird remained quiet during the time I sought a name for the newcomer.

In my excitement, I hurriedly scanned through several western field guides but still without an answer. Finally the book of Chapman's, *The Warblers of North America* (1923), solved my problem: "Black-throated Gray Warbler, *Dendroica nigrescens* (Townsend). Distinguishing characters. The general gray color, black or black and white throat and entire absence of yellow, except the spots before the eye, readily distinguishes this species." In addition, *The Handbook of Birds of Western United States* by Bailey, 1924: "Remarks. The yellow spot over the lores is diagnostic." *The Checklist of North American Birds*, 1931, states that this bird "Breeds in the Transition Zone from Southern British Columbia, Nevada, northern Utah, and northwestern Colorado south to northern Lower California, southern Arizona, and southern New Mexico. Winters in southern Lower California and in Mexico from Durango to Michoacan, Vera Cruz, and Oaxaca. Accidental in Mass."

Knowing that this individual was simply a lost bird that could not possibly be extending its breeding range into Minnesota and that its chances of returning to its normal range were slight, I collected the bird and sent it to the Minn. Museum of Natural History at the University of Minnesota. It is now No. 12245 in that collection. It proved to be a female. The accompanying illustration of this bird was prepared by Dr. W. J. Breckenridge. — Mrs. Charles E. Peterson, Madison, Minn.

LARK BUNTING AT SALT LAKE, MINNESOTA — On 11 July 1956, while riding along the east shore of Salt Lake, Lac qui Parle county I saw a male Lark Bunting fly in front of the car and perched on a nearby fencepost. The bird was very wary when approached and flew immediately to a nearby cornfield where it disappeared. The bird was very motley in appearance and was no doubt in the early stages of the postnuptial moult. The area where the bird was seen is located about one mile east of the Minnesota-South Dakota state line. No other Lark Buntings were seen in the immediate vicinity nor were any others seen throughout the day during a trip through southwestern Minnesota in Chippewa, Yellow Medicine, Lincoln and Lyon counties. — *Robert B. Janssen, Indianapolis, Indiana.*

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A GLOSSY IBIS AT WEAVER, MINNESOTA — On October 6, 1956, and again on the following day, a Glossy Ibis was observed as it waded within a short distance of the highway in Section 23, T. 109 N., R. 11 W. (5th P.M.) about one mile south of Weaver, Minnesota. The bird was watched at about 50 yards with a 20-power telescope while it moved about "knee-deep" in the water, feeding with its bill just below the surface. After about five minutes had passed, a shot rang out nearby, causing the ibis to be alert for a few moments, after which it flew a few yards, and finally flying across the highway to another pond, it began to feed again. On October 7, Dr. Wm. E. Green of the Upper Mississippi River Wildlife Refuge found the bird in the same place and photographed it.

No white area was discernible on the face, and thus the bird was either a juvenile White-faced Glossy Ibis or an Eastern Glossy Ibis. The latter has never been recorded in Minnesota. At the end of the last century the White-faced Glossy Ibis was recorded several times, with two nests being found at Heron Lake in each of two years (1894 and 1895) and the date seen was in 1910, according to *Birds of Minnesota* by Dr. Roberts. — *Wm. H. Longley, Game Biologist, Minnesota Division of Game and Fish, Kasson.*

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RED-THROATED LOONS OFF WISCONSIN POINT — At the time of the writing of "Birds of Minnesota" little was known of the occurrence of the Red-throated Loon in Minnesota except that they were occasionally seen on Lake Superior. In the last few years this bird has been seen more frequently on Lake Superior and has been reported from some of the lakes near Minneapolis and the Mississippi River at Sartell. Last spring a number of them were found dead on the shores of Lake Superior, and several skeletons were present on Wisconsin Point all summer.

It was a pleasure indeed to find live birds in the bay off Wisconsin Point on several of the field trips to the lake from Audubon Camp of Wisconsin during the summer. Of special note I believe is the observation of two downy young with an adult in the bay on June 29, 1956. These birds were seen by several staff members of Audubon Camp and myself during most of the afternoon, first with six power binoculars and later with a twenty power spotting scope.

This observation cannot of course be called valid as far as Minnesota nesting birds are concerned since it was made from the Wisconsin shore and no specimens were collected. It is of interest I believe and if bird watchers in the Lake Superior region keep looking for broods, in the future we perhaps may add this species to the list of birds nesting in Minnesota. — *Al Grewe, Instructor in Birds, Audubon Camp of Wisconsin.*

AVOCETS IN SOUTHWESTERN MINNESOTA — Among the many thousands of shorebirds that frequent the sloughs and marshes of southwestern Minnesota during the warmer months, one of the largest and the most showy of them all is the Avocet. Its large size, the "recurve" of its bill, its prominent black and white coloration, and its long blue legs make it one to stand out in a crowd. A most interesting bird it is also, unfortunately, not commonly seen in Minnesota.

Only a few scattered spring observations have been noted in recent years. According to Dr. Arnold B. Erickson of the Minnesota Conservation Department, no nesting Avocets had been reported in Minnesota prior to this year.

On June 20, 1956, while working on a marsh area that had been acquired by the conservation department as a part of the "Save the Wetlands" project, I observed four Avocets that gave every appearance of being nesting birds. I was accompanied by Mac Zeigler of Hot Springs, Arkansas, and the marsh was one of a group purchased by the state approximately three miles northwest of the village of Balaton in Lyon county. About 300 feet from the north shore of the marsh is a small island and the first bird was observed there. As soon as our appearance was noted it set up a great outcry and flew overhead circling as close as 25 feet away. It was soon joined by three others who also let it be known that they didn't approve of our intrusion. At times they alighted on the shore about a hundred feet away where they continued to fuss at us and at each other.

On July 12, while accompanied by Roger Lehmann of the conservation department, Avocets were again observed on a marsh of the group located about one-quarter mile from the site of the June observation. We had stopped our car on a gravel road cutting across one end of the marsh and had walked only a few feet away when an Avocet flew up from the edge of the water and alighted on the road a short distance away. There it put on a wounded bird act trying to lead us away. Looking to the marsh, however, we saw an adult swimming behind four young that were about half the size of the old bird. The color of the young appeared to be the same as that of the adults. The old bird in the water also tried the wounded bird maneuver while the young spread out and swam toward rushes on the far side of the marsh.

On August 7 a single Avocet was observed on this same marsh. At that time I was accompanied by Arlin Anderson, also of the conservation department. At first the Avocet was feeding near the road, but during our attempt at picture taking it flew to the far side of the open water area where it continued feeding. With its head bobbing to and fro it waded nearly belly deep and frequently immersed its head and neck. — *Hiram C. Southwick, Area Game Manager, Division of Game and Fish, Slayton, Minn.*

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BURROWING OWLS — While making a roadside census of pheasants in Traverse county, Minnesota, on August 8, 1956, I came upon a pasture in which there were five Burrowing Owls. It was my impression that three of the birds were juveniles, although I am not positive of that. Two of the owls disappeared into a burrow and the others remained above ground.

The pasture was closely grazed and was as bare as a city lawn. This pasture is located south of Wheaton in the SE  $\frac{1}{4}$ , Sec. 18, T. 125, R. 46.

The observation of the owls was my first on this species in almost eight years of traveling in west-central Minnesota as a game biologist.

In the same pasture with the owls were three Richardson ground squirrels, which in Minnesota are found only along the western edge. — *Robert I. Benson, Game Biologist, Minnesota Dept. of Conservation, Glenwood, Minnesota.*

#### YELLOW-CROWNED NIGHT HERONS RETURN TO HOUSTON COUNTY

— On June 12 I checked the Yellow-crowned Night Herons at La Crescent River bottoms. Nest number 1 was in the same tree in the exact spot and position of last year and contained four young about a week old. After a week's absence the area was rechecked and nest number 2 was located in an elm located about six feet from the swamp ash containing the first nest. Four egg shells beneath the nest indicated four young which was verified at a later date. On July 2, John Fitcher of Avifaunal Club located a third nest which he thought had been used but could see no young birds. On July 12, my nephew Paul D. Voelker, and I found there were four birds in nest number 3. On the same day we located a fourth nest a short distance away with four young. Nest number 3 was located in an oak and nest number 4 in an elm. All were about 50 to 60 feet above the ground. Further check of the area produced no more nests. Apparently some of the young of last year returned to nest near their parents of last year. This year's colony netted four pair of nesting adults with 16 young. A check on July 17 showed the first group of young had left the nest, the other three nests still occupied, but the young about ready to leave. All had left nests by August 2. — *Brother I. Theodore, F.S.C., Winona.*

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**BREWSTER'S WARBLER AT WHITEWATER STATE PARK** — On June 5 the Brewster's Warbler was first observed singing and feeding near the upper end of the golf course at Whitewater. He was seen and watched every day by Mr. and Mrs. Robert E. Rulison of Evanston, Illinois and myself from June 5 to June 10. Since I was in LaCrosse from June 12 to June 23, I had no further opportunity to observe, but Richard Barthelmy saw him every day from June 10 to June 24. I arrived back at Whitewater on June 24 and although I watched for about 18 hours on Sunday and Monday I saw no further sign of the bird. Subsequent checks by Mr. Barthelmy and I produced no sight of the bird. I saw him several times with what was apparently a Blue-winged Warbler female, but cannot be sure that he was mated at all, since I never saw any evidence of feeding. There were several pairs of Blue-wings nesting near by. Since the bird was seen daily from June 5 to June 24 it is possible that there had been nesting activity. In all events what happened to bring about the complete disappearance after June 24? — *Brother I. Theodore, F.S.C., Winona.*

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**YELLOW-HEADED BLACKBIRDS IN WINONA AND WABASHA COUNTIES** — Two colonies of Yellow-headed Blackbirds, both numbering about 20 pair were located in southeastern Minnesota in late June. One colony near St. Mary's College in Winona, was in a slough along Goodview road. The other colony was on Sand Prairie, near Kellogg, in Wabasha county. Both colonies were very successful. In both marshes there were Least Bittern and at Kellogg also an American Bittern. — *Brother I. Theodore, F.S.C., Winona.*

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**RED-SHAFTED FLICKER** — On April 2, 1956, while driving on State Highway No. 29 three miles north of the city of Benson in Swift county, Minnesota, State Game Warden Kermit Peterson and I saw a Red-shafted Flicker. After the first sighting the bird alighted on a fence post beside the road. We stopped the car and flushed the flicker to confirm the identification.

The habitat in which this bird was seen is the open farm land typical of southwestern Minnesota.

The exact location of the observation is SW $\frac{1}{4}$ , Sec. 17, T. 122, R. 39. — *Robert I. Benson, Game Biologist, Minnesota Dept. of Conservation, Glenwood, Minnesota.*

PROBABLE BURROWING OWL RECORD FOR CENTRAL MINNESOTA —

While doing field work on his farm five miles southeast of St. Cloud, Minnesota, my father, J. E. Hibbard, made repeated observations of what he was sure was a Burrowing Owl. Between April 9-12, 1956, a small owl was noted near a badger hole on the edge of a sandy field. Once or twice he saw it fly out of the hole and the other times it was standing nearby. On at least one close observation he noticed the characteristic "head bobbing" of this species. He is familiar with the common owls of the area including the Short-eared, the only other owl likely to be encountered on the ground, and stated that this bird had a much narrower wing spread and that its body was approximately the size of a Sparrow Hawk. On April 14 the writer checked the area where this bird was seen but it had apparently moved on. — *Edmund A. Hibbard, Windsor, North Dakota.*

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TURKEY VULTURE NESTING IN ST. LOUIS CO., MINN. — On June 18, 1956, Arthur Appledorn, forester with the Minn. Division of Forestry, found a Turkey Vulture nest with two eggs. The nest was located under a desk-sized granite boulder held up by several smaller boulders. The nest area was about three feet square and about 1½ feet high.

The general location was along a boulder ridge in White Pine, Red Pine, Aspen and Birch woods.

On June 18 the nest was visited by Edwin Erickson, senior timber appraiser for the forestry division. The nest then contained two young. It was visited again on June 21 by Erickson and on June 30 by Erickson and Archie Wold of Hibbing, who took pictures.

On July 7 it was visited by Breckenridge, Erickson, and Gunderson who found one young dead and no trace of the other young. — *Harvey L. Gunderson, Minnesota Museum of Natural History.*

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BELL'S VIREO IN WINONA COUNTY — Although three of the areas where I had found the Bell's Vireo nesting last year were obliterated by the new highway 61, I still found the birds nesting in seven areas in the immediate vicinity of Winona and St. Mary's College. In one case where the new road took away their nesting area they moved further up the side-hill. Four of the areas were the same as previous years and for the first time John Fitcher reported a pair on Prairie Island. I saw them at a later date. — *Brother I. Theodore, F.S.C., Winona.*

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RAVENS NESTING IN NORTHERN MINNESOTA — On June 12, 1956, game wardens Robert Jacobsen and Lawrence Downey observed two ravens' nests with young on the south shore of Kekekabic Lake, Lake county, T65N R7W S36. The nests were located in crevices in a steep cliff and were inaccessible except by rope from above. Five young ravens were seen, one of which was captured and placed in the Conservation Department exhibit at the State Fair. Later, refuge patrolman Frank Baltich Jr. reported two more nests on cliffs on Wisini Lake just south of Kekekabic. These nests were also in crevices and were first noted because of the white droppings on the cliff. — *Milt Stenlund, Regional Game Manager, Ely.*

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NEST OF MARBLED GODWIT IN CLAY COUNTY — On June 8, 1956 I found a nest of the Marbled Godwit with four eggs about two miles north of Muskoda. It was placed in a tuft of grass, small but sufficient to conceal the sitting bird quite effectively, on a ridge near the edge of an old part of a gravel pit. The farther end of the pit was still actively in use. — *O. A. Stevens, Fargo, N. D.*

# Book Page

LOGIER, E. B. S. AND TONER, G. C. CHECK-LIST OF THE AMPHIBIANS AND REPTILES OF CANADA AND ALASKA. CONTRIBUTIONS OF THE ROYAL ONTARIO MUSEUM OF ZOOLOGY AND, PALAEOLOGY, TORONTO, NO. 41, 1955, 88 PAGES, 77 MAPS.

This is the latest of a long series of scientific contributions from this well-known Ontario institution. The senior author has long been noted as an authority on the reptiles and amphibians of Ontario in particular, and of the Dominion as a whole. The junior author is an amateur naturalist who has contributed much to our knowledge of the lower phyla of Ontario vertebrates. The present brochure lists all the reptiles and amphibians known to occur in Canada and Alaska with a brief note as to their range. Representative locality records for the various provinces and territory are given for each form. The 77 sketch maps indicating the general range and individual records are invaluable. Invariably a publication of this nature brings to light knowledge of local groups which had not previously been made known to authorities on the subject. New knowledge extends the range of known species and new forms may be added. One such record is of local interest. The range of the Red-spotted Newt as given in this brochure does not extend west of Lake Nipigon. We have in our own collection specimens of this species which were forwarded to Logier since this contribution appeared. These have been identified as the subspecies *louisianensis*, the form which is found in Minnesota. It occurs at least as far west as Atikokan. The 13 pages of "literature cited" is a valuable adjunct to the subject matter of this contribution. — A. E. Allin

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