BIRD CALENDAR

of the

CLEVELAND BIRD CLUB

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Founded by Dr. Francis H. Herrick, 1905	Western Reserve University
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The cool weather of April and May continued into June, during which month it still averaged 1.1° below normal. During July and August the weather became considerably warmer, the mean for July being 4.8° above normal and for August 2.0° above normal. Likewise, the below normal precipitation continued into the summer, being 1.67 inches below normal in June and 0.84 inches below normal in July. August, however, turned out to be a rainy month with 2.93 inches more precipitation than normal occurring.

Month	Mean Temperature	Normal Temperature	Total Precipitation	Normal Precipitation
June	66.0°F.	67.1°F.	1.45 inches	3.12 inches
July	76.2	71.4	2.61	3.45
August	72.0	70.0	5.70	2.77

One of the main objects of this calendar is to record variations in the abundance of birds from year to year. If these variations can be determined in a trustworthy manner, it may be possible eventually to analyze the causes of these variations and thereby obtain a better understanding of the close interrelations of the bird and its environment. With this in mind some attempt is made in this bulletin to compare the abundance of birds during the summer of 1935 with the summer of 1934.

Dr. A.B. Williams reported an interesting census of nesting birds on a 65-acre tract of beechmaple-hemlock woods in North Chagrin Metropolitan Park:

1.	Red-eyed Vireo	30 pairs	13.	Hairy Woodpecker	3
2.	Redstart	19	14.	Black-capped Chickadee	2
3.	Wood Thrush	14	15.	Acadian Flycatcher	2
4.	Hooded Warbler	9	16.	CrestedFlycatcher	2
5.	Ovenbird	8	17.	Downy Woodpecker	2
6.	Scarlet Tanager	8	18.	Towhee	1
7.	Tufted Titmouse	7	19.	Louisiana Water-thrush	1
8.	Wood Pewee	7	20.	Robin	1
9.	Cardinal	4	21.	Phoebe	1
10.	White-breasted Nuthatch	4	22.	Barred Owl	1
11.	Yellow-throated Vireo	3	23.	Rose-breasted Grosbeak	1
12.	Black-throated Green W.	3	24.	Cowbird	present

This list totals to 133 pairs, averaging 2 pairs per acre. A similar census over the same area in 1934 produced 157 pairs for an average of 2.4 pairs per acre. Those species evidencing the most pronounced drop in nesting pairs over 1934 are hooded warbler, ovenbird, yellow-throated vireo, black-throated green warbler, Acadian flycatcher, and downy woodpecker. Only the redstart made any increase in number worthy of note.

In the Baldwin Bird Sanctuary at Gates Mill, Ohio, there are approximately 15 acres of open woods, orchards, lawns, gardens, and domestic buildings. No attempt is made to record the exact number of adult birds that nest on this area, but an effort is made each summer to find all the nests that are built by each species. The list below is for the year, 1935.

1.	Robin	56 nests	12.	Goldfinch	2
2.	English Sparrow	31	13.	White-breasted Nuthatch	1
3.	House Wren	16	14.	Crested Flycatcher	1
4.	Purple Martin	12	15.	Barn Swallow	1
5.	Chipping Sparrow	12	16.	Yellow Warbler	1
6.	Starling	10	17.	Wood Pewee	1
7.	Song Sparrow	10	18.	Black-billed Cuckoo	1
8.	Catbird	10	19.	Blue Jay	1
9.	Mourning Dove	8	20.	Flicker	1
10.	Phoebe	5	21.	Bluebird	1
11.	Cedar Waxwing	3			

The total number of nests on this area was 184, only slightly less than the number in 1934, which was 188. It is estimated this year that the number of nesting pairs was 119, while last year this number was 110. It is reasonable to conclude, therefore, that on this area, the birds were of about the same abundance as last year, approximately 7.9 pairs per acre. Considering only those species that showed a significant change of status, the English sparrow, purple martin, and phoebe increased in abundance and the song sparrow, catbird, and cedar waxwing decreased.

Mr. B.P. Bole, Jr., studied the nesting of birds on about 75 acres of white pine-hemlock woods on Little Mountain, near Chardon, during the past summer and reports the following list.

1.	Black-throated Green W.	15 pairs	17.	Mourning Dove	2
2.	Robin	11	18.	Great Horned Owl	1
3.	Phoebe	11	19.	Sharp-shinned Hawk	1
4.	Ovenbird	9	20.	Broad-winged Hawk	1
5.	Slate-colored Junco	9	21.	Ruffed Grouse	1
6.	Hooded Warbler	9	22.	Acadian Flycatcher	1
7.	Chipping Sparrow	5	23.	Blue Jay	1
8.	Red-eyed Vireo	5	24.	Rose-breasted Grosbeak	1
9.	Hairy Woodpecker	4	25.	Indigo Bunting	1
10.	Scarlet Tanager	4	26.	Song Sparrow	1
11.	House Wren	4	27.	Ruby-crowned [sic] Humming	bird 1
12.	Wood Pewee	3	28.	Yellow-throated Vireo	1
13.	White-breasted Nuthatch	3	29.	Cerulean Warbler	1
14.	Wood Thrush	3	30.	Pileated Woodpecker	1
15.	Black-capped Chickadee	2	31.	Chimney Swift	?
16.	Louisiana Water-thrush	2			

Omitting the chimney swift, there are 114 pairs recorded in the above list, making an average of 1.5 pairs per acre. No list for 1934 is available for comparison, but in 1933 there were only 88 pairs recorded. There is special interest in the great variety of species that were found in the area, a greater variety than in either of the other two areas censused. Special note should be made of the fact that the junco has been steadily increasing in numbers on Little Mountain during the last three years, until at the present

time it is tied for the fourth most abundant species. In 1933 it was tied for sixteenth place.

An interesting list of birds was seen on the August 25 trip to Presque Isle, Pa. Some thirty species were recorded among which Mr. M.B. Skaggs, the leader of the trip, reports the following: Semipalmated Plover – 30, Black-bellied Plover – 10, Killdeer – 10, Ruddy Turnstone – 2, Wilson Snipe – 2, Spotted Sandpiper – 2, Lesser Yellow-legs – 6, Knot – 1, Pectoral Sandpiper – 20, Least Sandpiper – 150, Semipalmated Sandpiper – 100, Dowitcher – 2, and Sanderling -20.

Mr. Ralph O'Reilly and Mr. John Aldrich reporting on the trip, June 16, to the Oak Openings, near Toledo, list the following unusual species: American Egret, Least Flycatcher, Brewster Warbler, Golden-winged Warbler, Yellow-breasted Chat, Canada Warbler, Mourning Warbler, Dickcissel, and Lark Sparrow. Unfortunately, neither this area nor the one above can be considered as falling in the Cleveland region.

The following miscellaneous notes reported by Mr. O'Reilly are worth attention. The Greater Scaup Duck reported by him in the last bulletin was picked up dead at Black Brook on April 7, so he had opportunity for close identification.

Cliff swallows nested at the Squire Valley View Farm again this summer. Ten birds were seen on one visit and six on another.

On September 7 he found a nest of Mourning Doves with two young that seemingly could not have hatched earlier than September 1. This is a late nesting date, but this species has been found with young in the nest rarely even into October.

From a favorable location in Cleveland Heights, the following local flocking movements were recorded: First evening movement of robins noted on July 7, a very noticeable movement on July 13. On July 18, hundreds of starlings and redwings were seen flying in separate flocks along the lake shore in a southwesterly direction. On July 25, 235 robins, 10 grackles, and 10 starlings were counted in one hour flying south; on August 9, 130 robins and 2 starlings were counted in three-quarters of an hour. On August 13 there was an increase in the proportions of grackles in the flight. Fifty night-hawks were seen moving southward on Aug. 26. It is apparent that the large robin and grackle roost that has existed on the Heights in former years was also present during 1935.

The following list is of some of the rarer species recorded during the summer:

Piping Plover (J.A.) – June 3 (1) Water-thrush (Northern & Grinnell) (O'R, D.C.K., M.E.F.) – June 2 (1) Short-tailed Marsh Wren (J.A.) – June 20 (1) King Rail (D.C.K., M.E.F) – Aug. 25 (1)

There are four records of the Dickcissel during June and July (D.C.K., M.E.F., J.A.) for a total of 30 individuals. It is of interest that all of these records are for Erie County (or adjacent Huron County), and that it is here that Ohio State botanists have recently mapped the largest patch of relic prairie in Northern Ohio – a fitting correlation between prairie vegetation and a prairie bird.

Another rare record is that of the parula warbler seen on several occasions by Mr. James Bruce during June and July at Gates Mills. No nest was found. The fololwing records are for the last stragglers of the northward spring migrations: Yellow-bellied Flycatcher (J.A.) – June 3 (1) Gray-cheeked Thrush (O'R) – June 2 (4) Olive-backed Thrush (O'R) – June 2 (8) Wilson Warbler (J.A.) – June 3 (1) Black-poll Warbler (B.T.B) – June 1 (5)

There is also an early note on the fall warbler migration in the record of one Blackburnian Warbler on Aug. 19 (A.B.W.).

The following people contributed records to this number of the bird calendar:

John W. Aldrich	S. Charles Kendeigh
B.T. Barnes	Ralph O' Reilly, Jr.
Benjamin P. Bole, Jr.	Merit B. Skaggs
M.E. Foote	Arthur B. Williams
Dale C. Kellogg	

A total of 122 species are reported in this calendar. This is 23 species less than were recorded over the similar period last year. Only 2 species, orchard oriole and dickcissel, are recorded for the first time during the year in this bulletin. This brings the year's list, up-to-date, to 210 species, 9 less than were recorded in 1934 at this time.

The following table gives the total number of trips by all observers and also an approximation of the total time spent in the field, mileage covered, habitat, etc.

		June	July	August
Number of trips		20	16	10
Observers per trip		1.8	1.8	2.0
Hours per trip		3.9	5.1	4.8
Miles on foot per trip		4.1	4.1	5.2
Miles per hour		1.0	1.0 [sic]	1.1
Percentage of time in	denser woods	48	46	71
« « «	' open country	27	22	22
« « «	' marshes	14	14	5
« « «	' along lakes and streams	11	18	2

The amount of field activity by Cleveland observers during this last summer was considerably less than during the spring, but this was to be expected. However, the decrease of 17 in the total number of trips for the three months over the number taken during 1934 is more regrettable. However, the total number of trips for 1935 up to the end of August is still considerably ahead of the number over the similar period in 1934, being 317 and 263, respectively. Credit for the largest amount of field activity during the last summer should be given to Dr. A.B. Williams who reported on 17 trips. Credit for the longest list of species observed in the Cleveland region should be given to Mr. John Aldrich who recorded 87 species.

It is our hope that in this calendar we eventually will be able to compare not only the abundance of birds from year to year but also from locality to locality over the state. With this latter aim in mind we enlisted the active cooperation of Dr. Lawrence B. Hicks during the past summer, for comparing the status of birds in his region around Zanesville, Ohio, with ours

					June	July	August
Number of	of trip	s		13	14	10	
Observers per trip					2.6	1.9	1.4
Hours pe	r trip	_			11.0	9.2	7.3
Miles on foot per trip					9.2	6.1	4.6
Miles by auto per trip				145	105	70	
Miles per hour					0.8	0.7	0.6
Percentag	ge of t	ime	in	denser woods	25	30	35
"""" open country			60	55	50		
"	"	"	"	marshes	5	5	5
"	"	"	"	along lakes and streams	10	10	10

around Cleveland. He sends the following record of activity of himself and assistants during the last three months.

Several factors must be taken into consideration in comparing the indices of abundance for the Zanesville and Cleveland regions in the tables that follow. The first factor of importance is approximately twice the number of hours spent in the field per trip by the Zanesville observers. It will be remembered that the index of abundance is obtained by multiplying together the average number of individuals of a species seen per trip per month by the percentage of all the trips for the month on which the species was recorded. In addition, in the tables below, the indices obtained for each month are averaged to obtain the index for each species for the summer as a whole. If the duration of the trips average twice as long, the number of individuals that will be recorded of each species should be approximately twice as great. Likewise, as Dr. Hicks says, with longer trips a larger number of species will be recorded which will boost the percentage of trips during the month on which any species will be recorded. Assuming that the longer trips doubles the number of species recorded in addition to doubling the number of individuals seen, (which will not be exactly true) an increase in the size of the index figure four times would result.

Another, even greater, source of discrepancy between the two set of data below is in the much greater use of the automobile by the Zanesville people so that a vastly greater amount of territory and favorable spots are covered. For the most part, we have advised our Cleveland observers not to record in their trip lists species and individuals seen en route by auto, except in case of rare species or early or late migrants, and even these might well be separately notated. We suggest that in the future this rule be adhered to even more strictly in order to make various lists more comparable. Because of this factor, the Zanesville and Cleveland data do not lend themselves to close comparison. The Zanesville indices average about 25 times higher than the indices for Cleveland. If we assume that the total bird population in the two areas to be the same, rough comparative figures can be obtained by dividing the Zanesville indices by 25. However, the total population in the two areas may not be the same because of the apparently greater prevalence of such flocking species as the starling, grackle, cowbird, purple martin, etc., in the latter region.

Still another source of error in comparing these two lists lies in the difference in the percentage of time spent in different habitats. At Zanesville, the greatest relative amount of time was spent in open country, at Cleveland in the denser woods.

The ranking of the species in descending order of approximate abundance has been made in the tables below for both Cleveland and Zanesville regions and this may have the greatest value in comparing the two lists.

There will be some special interest to Cleveland bird students in noting among the species records the species recorded in Zanesville but not in Cleveland the following:

Black Vulture, Carolina Chickadee, Bewick Wren, Mockingbird, White-eyed Vireo, Prothonotary Warbler, Worm-eating Warbler, Prairie Warbler, Kentucky Warbler, Summer Tanager, and Bachman Sparrow. Species found at Cleveland but not at Zanesville are indicated in the following tables:

BIRDS OF THE DENSER WOODS

Index of Abundance (Average of June, July, Aug				erage of June, July, August)
	Species	1934	nd Region 1935	1935
1.	Red-eved Vireo	351.7	475.2	(4) 1261.4
2.	Wood Pewee	121.9	220.1	(8) 540.4
3.	Redstart	63.5	103.7	(25) 14.1
4.	White-breasted Nuthatch	93.8	103.5	(14) 199.0
5.	Tufted Titmouse	97.3	97.2	(3) 1336.7
6.	Cardinal	67.0	93.2	(1) 1919.3
7.	Hooded Warbler	79.0	89.5	(26) 6.4
8.	Wood Thrush	115.4	75.3	(9) 402.6
9.	Scarlet Tanager	69.6	62.8	(15) 168.1
10.	Ovenbird	102.1	56.8	(18) 130.2
11.	Downy Woodpecker	47.7	45.6	(7) 775.7
12.	Black-capped Chickadee	77.4	45.1	(2) (Carolina Chickadee - 1555.0)
13.	Crested Flycatcher	19.3	30.9	(11) 387.9
14.	Hairy Woodpecker	11.6	28.9	(20) 122.9
15.	Towhee	24.5	28.5	(6) 780.4
16.	Black-throated Green W.	26.4	28.5	0.0
17.	Blue Jay	48.0	28.5	(13) 246.7
18.	Acadian Flycatcher	25.5	21.6	(12) 357.1
19.	Yellow-throated Vireo	12.9	8.2	(19) 126.0
20.	Rose-breasted Grosbeak	13.7	5.7	0.0
21.	Cerulean Warbler	4.4	3.0	(17) 150.0
22.	Barred Owl	1.3	2.9	(27) 0.2
23.	Yellow-billed Cuckoo	1.6	1.2	(16) 151.9
24.	Carolina Wren	1.5	1.0	(5) 964.1
25.	Veery	7.9	0.9	0.0
26.	Woodcock	1.3	0.7	(23) 25.1
27.	Black-billed Cuckoo	0.5	0.5	(22) 27.6
28.	Pileated Woodpecker	0.4	0.5	(24) 17.3
29.	Blue-gray Gnatcatcher	0.0	0.4	(10) 393.5
30.	Louisiana Waterthrush	0.1	0.1	(21) 80.1
	Grand Average	49.6	55.3	404.7

An analysis of these records by species shows 13 to be more abundant in 1935 than in 1934 to a greater or lesser extent, 14 less abundant, and 3 about the same. The increase of the cardinal noted in the spring calendar is evident here but the blue jay, on the contrary, has dropped. Of the six species showing a decided drop in abundance in the North Chagrin area studied by Dr. Williams, 4 also show a decrease in this table – ovenbird, downy woodpecker, Acadian flycatcher, and yellow-throated vireo. Of the other 2 species, the black-throated green warbler is higher but to an insignificant degree. The hooded warbler also shows a higher index in 1935 than in 1934 in the average for all three summer months, but if June and July alone are considered which more nearly approximates the true breeding season,

the index for 1935 (89.3) is lower than the index for 1934 (106.6), this agreeing with the North Chagrin figures.

The increase in abundance this year of the redstart is very evident both here and in the North Chagrin data. The decrease of the chickadee, noted in the spring calendar, is maintained. Considering the forest birds as a whole, on the basis of the above table, their abundance this year is about the same or slightly greater than 1934, but considering the forest birds by species, the majority of them either showed no increase at all this year or an actual decrease. This conclusion is in harmony with that given for forest birds in the last bulletin. A comparison of the ranking of species in regard to abundance with their ranking in the Zanesville region brings out several points of interest.

BIRDS OF THE OPEN COUNTRY

		Index of Al	oundance (Averag	e of June, J Zane	uly, August)
	Species	1934	1935	22410	1935
1.	Robin	353.9	2139.2	(8)	4426.0
2.	Starling	101.7	916.5	(1)	63694.3
3.	Song Sparrow	182.6	314.2	(14)	2813.3
4.	Goldfinch	104.3	211.7	(6)	4711.6
5.	Bronzed Grackle	44.7	168.0	(4)	6244.4
6.	Barn Swallow	83.4	163.5	(5)	5752.3
7.	Mourning Dove	73.9	139.7	(10)	3760.0
8.	Purple Martin	64.7	135.5	(2)	22887.2
9	Chimney Swift	26.3	130.8	(11)	3127.3
10.	Field sparrow	63.8	128.4	(9)	4075.0
11.	House Wren	45.6	108.9	(31)	661.1
12.	Bob-white	91.1	101.7	(15)	2787.7
13.	Crow	54.7	97.3	(7)	4452.0
14.	Cedar Waxwing	5.6	72.7	(29)	456.5
15.	Kingbird	36.3	69.7	(25)	1143.4
16.	Meadowlark	33.7	61.5	(18)	1964.3
17.	Northern Flicker	25.4	53.0	(26)	1080.7
18.	Yellow Warbler	7.0	50.2	(33)	221.1
19.	Catbird	37.1	48.6	(27)	910.8
20.	Bluebird	26.1	42.9	(16)	2436.3
21.	Cowbird	17.4	37.4	(12)	2958.3
22.	Chipping Sparrow	11.2	33.5	(24)	1221.8
23.	English Sparrow	?	32.0	(3)	13007.3
24.	Phoebe	4.8	26.0	(23)	1365.3
25.	Nighthawk	14.3	24.9	(28)	780.1
26.	Bobolink	12.5	24.5	(36)	115.4
27.	Killdeer	29.5	24.5	(19)	1902.1
28.	Indigo Bunting	18.2	21.7	(17)	2359.7
29.	Savannah Sparrow	0.0	17.7	· · · ·	0.0
30.	Ruby-throated Hummingbird	1 17.9	12.6	(34)	183.2
31.	Baltimore Oriole	1.7	11.9	(40)	63.3
32.	Prairie Horned Lark	13.5	9.9	(30)	419.5
33.	Vesper Sparrow	36.4	9.2	(13)	2852.3
34.	Red-headed Woodpecker	14.0	8.8	(41)	61.3
35.	Grasshopper Sparrow	13.0	7.6	(20)	1875.0
36.	Dickcissel	1.9	7.6	. ,	0.0

		Clevelar	nd Region	Zane	Zanesville Region	
	Species	1934	1935		1935	
37.	Henslow Sparrow	4.7	5.1	(38)	95.6	
38.	Ring-necked Pheasant	0.5	4.4	(46)	6.1	
39.	Turkey Vulture	19.8	4.3	(21)	1636.0	
40.	Yellow-breasted Chat	0.1	3.2	(22)	1372.7	
41.	Cliff Swallow	0.0	2.8	(39)	79.8	
42.	Warbling Vireo	0.5	2.8	(37)	107.6	
43.	Migrant Shrike	4.1	2.0	(44)	18.2	
44.	Blue-winged Warbler	34.8	1.8	(45)	11.5	
45.	Sparrow Hawk	0.6	1.2	(35)	147.9	
46.	Red-tailed Hawk	0.1	0.9	(43)	25.6	
47.	Broad-winged Hawk	0.0	0.7	(48)	0.7	
43.	Red-shouldered Hawk	1.7	0.5	(49)	0.2	
49.	Sharp-shinned Hawk	0.0	0.5	(47)	1.9	
50.	Brown Thrasher	0.8	0.2	(32)	340.3	
51.	Orchard Oriole	0.0	0.2	(42)	51.4	
	Grand Average	34.7	107.7		3340.5	

The increase in the number of open country birds noted for the spring in the last bulletin continued during the summer to even a more notable extent. The grand average of the indices for all species in 1935 is nearly 3 times what it was for 1934, but this probably gives an exaggerated idea of the relative abundance during the two years. Of the 51 species in the above table, only 3 show a markedly lower index of abundance in 1935 – vesper sparrow, turkey vulture, and bluewinged warbler. The decrease of song sparrows, catbirds, and cedar waxwings, suggested above in the nesting census at the Baldwin Bird Sanctuary lacks confirmation here, as all three species show higher indices in 1935.

In the Cleveland region, the four most abundant species are, in order, robin, starling, song sparrow, and goldfinch. At Zanesville, the first four are starling, purple martin, English sparrow, and bronzed grackle. The robin, at Zanesville, ranks eighth, the song sparrow fourteenth, and the goldfinch sixth. All four most abundant species at Zanesville are conspicuous flocking birds easily identified at considerable distances even from an automobile, and it appears probable that their apparent abundance in relation to other specie is exaggerated.

BIRDS OF THE MARSH

		Index of Abundance (Average of June, July, August)			
		Clevelar	nd Region	Zanesville Region	
	Species	1934 1935		1935	
1	Red-winged Blackbird	135.6	254.1	(1) 8752.0	
2.	Northern Yellow-throat	69.3	38.3	(2) 892.1	
3.	Great Blue Heron	6.8	18.2	(4) 19.6	
4.	Long-billed Marsh Wren	19.2	14.9	(7) 11.3	
5.	Black Tern	1.3	6.5	(10) 4.8	
6.	Green Heron	18.0	6.0	(3) 347.0	
7.	Marsh Hawk	2.2	3.4	(9) 5.5	
8.	Black Duck	28.1	3.2	0.0	
9.	Alder Flycatcher	5.8	2.0	(6) 11.7	
10.	Blue-winged Teal	0.3	1.1	(5) 16.0	

		Cleveland Region		Zanesville Region	
	Species	1934	1935	1935	
11.	Tree Swallow	1.0	0.6		0.0
12.	American Bittern	1.2	0.5	(13)	1.3
13.	Black-crowned Night Heron	0.1	0.3	(8)	8.0
14.	Virginia Rail	3.7	0.3	(12)	1.5
15.	Mallard	0.4	0.3	(14)	1.3
16.	Florida Gallinule	1.3	0.2		0.0
17.	Coot	0.5	0.1		0.0
18.	Least Bittern	0.5	0.1	(11)	2.1
Grand Average		16.4	19.5	559.7	

Of the 18 species of marsh birds listed in the above table, 12 species show a decline in numbers over 1934 and 6 species an increase. If the red-winged blackbird were omitted the average index for all marsh birds would be lower than in 1934. Perhaps this could be explained by the general drying up of marshland all over middle western North America during 1934. The red-wings are less dependent upon a wet marsh for food and so were not harmed by the drying up of the marshes. On the basis of their larger index of abundance for 1935, they may even have benefited.

		Index of Abundance (Average of June, July, August)				
		Cleveland Region		Zane	Zanesville Region	
	Species	1934	1935		1935	
1.	Bank Swallow	15.3	65.2	(1)	678.6	
2.	Spotted Sandpiper	22.9	24.3	(4)	126.0	
3.	Common Tern	9.7	22.9		0.0	
4.	Herring Gull	104.5	18.6		0.0	
5.	Belted Kingfisher	5.0	15.7	(3)	190.2	
6.	Rough-winged Swallow	1.0	4.5	(2)	416.2	
7.	Ring-billed Gull	38.0	3.3		0.0	
8.	Bonaparte Gull	22.9	0.5		0.0	
9.	Bald Eagle	0.5	0.2	(5)	0.7	
	Grand Average	24.4	17.2		156.9	

BIRDS OF THE OPEN LAKE, LAKESHORE, AND STREAMS

Greater difficulty is experienced in obtaining reliable indices of abundance of these lake and stream birds than of any others reported in the bulletin. The reason for this is that many of the species are apt to be concentrated in local areas and scarce in others, so that unless these various areas are visited with equal consistency year after year the indices will vary accordingly. It would appear from the table that the two species of swallow had increased in abundance while the three species of gulls had decreased, but this needs confirming evidence.