Kansas Ornithological Society

BULLETIN

PUBLISHED QUARTERLY

Vol. 13 September, 1962 No. 3

NESTING SUCCESS AND COWBIRD PARASITISM IN THE EASTERN PHOEBE IN KANSAS

By Erwin E. Klaas

The Eastern Phoebe, *Sayornis phoebe*, extensively utilizes for nesting man-made bridges over small streams and rivers in Eastern Kansas. In the spring of 1961, I collected information from first broods on nesting success, cowbird parasitism, and time of breeding. A few data on clutch-size and cowbird parasitism of second broods were also taken. The following account was prepared because there is little published information on the nesting success of the Eastern Phoebe in Kansas, where the species approaches its western limit of breeding.

Observations were made along two stretches of county road totaling 69 miles in Douglas County, Kansas. The roads were traveled every 4 to 7 days for a period of two months, and all bridges were examined for nests. A total of 57 phoebe nests was found under 124 bridges; 55 nests were kept under close observation. In addition, two nests on old buildings and one nest on a rocky ledge were also used in the study of nesting success. Bridges lacking nests on the initial visits were again visited at one-week intervals to check for late nestings. The completion of the clutch, incubation period, and fledging period were calculated according to Johnston (1958:17) when these were not observed directly.

Egg-laying and Survival

The phoebe lays one egg each day until the clutch is complete and incubation starts usually on the day the last egg is laid. It is here considered that the period of incubation is 14 to 15 days and the time spent by young in the nest is 13 to 17 days. Bent (1942:144) gives the incubation period as 15 to 16 days.

In 1961, the first full clutch was completed on April 2. Most first clutches were completed between April 15 and 21. Nests were judged complete only if seen on at least two days without an increase in the number of eggs. In 58 nests in which the initial clutch was known to be complete, some 266 eggs were laid, resulting in a mean clutch-size of 4.58 eggs. The size of the clutches varied from 2 to 6. This differs slightly from other Kansan data; Johnston (1960:36) reported a mean clutch-size of 4.18 eggs for 54 temporally heterogeneous nests, with a range of from 2 to 5.

The peak time of completion of second clutches had not been reached at the termination of this study; however, 16 clutches were known to be complete. These had a total of 70 eggs and a mean clutch-size of 4.37 eggs. Thirteen other clutches had been started, and had at least one egg. Of the total of 29 second clutches started, 20 were laid in the same nest in which first broods had been raised, with apparently no new material added to the old nests. For the other nine clutches started, new nests were constructed, after the first nests had been torn down or damaged beyond repair, under the same bridge where first broods had fledged. With one exception, all nests were constructed on the end of the bridge opposite from where the first nest had been. In the exceptional instance, the old nest had been in the center of the bridge, and the new nest was constructed directly opposite the old site. Second clutches generally were started 7 to 10 days after the first brood had left the nest. The data concerning survival of eggs and young in first clutches are summarized in Table 1. The presentation of data is after the method of Walkinshaw (1961:267).

TABLE 1.
SURVIVAL OF EGGS AND YOUNG OF FIRST NESTINGS.

	Nests	Nests in which eggs hatched	Nests in which young left	Eggs laid	Number hatched	Per cent hatched	Number fledged	Per cent fledged
Non-parasitized	44	40	38	207	172	83.09	160	77.29
Parasitized	10	9	4	42	27	64.28	12	28.57
Cowbirds			5	10	5	50.00	5	50.00
Complete Total	54*	49	42	249	200	80.32	172	69.07
Cowbirds			5	10	5	50.00	5	50.00

* Four of the 58 nests under study were not used in the calculations on survival and mortality because the eggs had not hatched at the time the study was terminated.

Mortality

The over-all mortality rate for first clutches from time of clutch completion until fledging was 30.93 per cent. The causes of mortality for the first clutches are listed in Table 2. Losses owing to predation are recorded only if certain indicative signs were present, such as broken eggshells beneath the nest, or raccoon or fox tracks present where a destroyed nest was in reach of these predators. I could not always ascertain whether a fallen nest was a result of inferior construction or whether it had been knocked down by an intruder. Those causes listed as unknown were cases in which the eggs or young disappeared, leaving an intact nest and no apparent sign of disturbance.

Cowbird Parasitism

One of the most important factors influencing the nesting success of phoebes was social parasitism by the Brown-headed Cowbird, *Molothrus ater*. The effect of such parasitism on nesting success is shown for 54 first clutches in Table 1. Ten nests were parasitized each by one egg and five cowbirds were fledged. No phoebes survived in the five nests in which the cowbird eggs hatched, although all the cowbirds were raised successfully. One cowbird egg did not hatch because the nest fell or was knocked down. Four cowbird eggs did not hatch because they were laid after incubation by the host had progressed for several days.

An unhatched cowbird egg was left in one nest after the first brood had fledged and a second clutch of five phoebe eggs was laid in the same nest; the cowbird egg seemingly was ignored by the phoebes.

Although a cowbird was never seen removing a phoebe egg, it is standard behavior for the laying cowbird to do so. Even so, the regularity of such behavior varies widely. In two of the four nests in which a cowbird egg appeared after incubation had started, the size of each clutch was reduced from five to three with the appearance of the cowbird egg. On the other hand, a cowbird egg was laid in each of the other two nests without a reduction in the size of the completed clutch. Mayfield (1961:165–166) reports unusually high losses of host eggs in nests of Kirtland Warblers parasitized after incubation had started. He suggests

TABLE 2.
CAUSES OF MORTALITY.

	Phoebe	Cowbird
Young pushed out of nests by young cowbird	14	
Egg probably removed by adult cowbird	5	
Predation	22	
Unhatched eggs	13	4
Nest fell down	11	1
Unknown	12	
	77	5

TABLE 3.
COWBIRD EGGS IN PHOEBE NESTS.

Phoebe eggs in 55[1] clutches not parasitized	267	
Phoebe eggs per clutch not parasitized		4.85
Phoebe eggs in 19[2] clutches parasitized	71	
Phoebe eggs per parasitized clutch		3.74
Phoebe eggs lost per parasitized clutch		1.11
Cowbird eggs in 19 parasitized clutches	20	
Cowbird eggs per parasitized clutch		1.05
Phoebe eggs lost per cowbird egg gained, 1.11/1.05		1.06

[1] Number includes 8 completed second clutches and three first clutches still under incubation.
[2] Number includes 8 completed second clutches and one first clutch still under incubation.

that these losses may be owing to strong territorial aggression by the incubating warbler. The presence of cowbird eggs and their effect on clutch-size can be calculated (see Mayfield, 1961:164). Table 3 presents data and calculations showing how many phoebe eggs are lost per cowbird egg laid. The data include 16 completed second clutches, eight parasitized and eight unparasitized. One second clutch was found with two cowbird eggs; all the others had only one each.

For 54 nests of first broods in the Eastern Phoebe, 69.07 per cent of the eggs in completed clutches resulted in fledged birds, with only 30.93 per cent total mortality. Cowbird parasitism caused about 8 per cent reduction in the number fledged or about 25 per cent of the total mortality, even though less than 20 per cent of first clutches were parasitized.

The sample is small for second clutches, but it seems that the significance of parasitism for phoebes is greatest in second clutches. Half of all second nests were parasitized by cowbirds, and this means that the mortality to phoebes would rise accordingly. Additionally, fledging success of cowbirds probably increases in second nestings of hosts such as the phoebe. Cowbirds tend to lay in second nests of phoebes at about the time that clutches are started, which, as I have noted above, is not wholly true of first nestings.

Probably there are several reasons why cowbirds do not begin laying earlier in the year, when they could take advantage of the great number of first nestings of phoebes. One reason may be that the present timing of cowbird laying results in relatively few offspring from early attempts, whereas late layings are much more successful. Also, it is true that many more species of hosts are available to cowbirds in May and June. Seemingly, cowbird eggs laid early (April) are at a selective disadvantage. Any species of potential or actual host relationship to cowbirds would thus stand to gain by moving its breeding season earlier into the year; it is here suggested that this may have been one influence in the adaptation of phoebes to breeding at temperate latitudes at a time when most migrant flycatchers are still on wintering grounds.

LITERATURE CITED

Bent, A. C.
1942. Life histories of North American flycatchers, larks, swallows and their allies. *Bull. U. S. Nat. Mus.*, 179:1–555.

JOHNSTON, R. F.
1958. Breeding of the brown thrasher in Kansas. *Bull. Kansas Ornith. Soc.*, 9:17–18.
1960. Directory to the bird-life of Kansas. *Univ. Kansas Mus. Nat. Hist., Misc. Publ.*, 23:1–69.

Mayfield, H. F.
1961. Vestiges of a proprietary interest in nests by the brown-headed cowbird parasitizing the Kirtland's Warbler. *Auk*, 78:162–166.

Walkinshaw, L. H.
1961. The effect of parasitism by the brown-headed cowbird on empidonax flycatchers in Michigan. *Auk*, 78:266–268.

Museum of Natural History, University of Kansas, Lawrence, Kansas, May 21, 1962.

BIRDS THAT CAME TO SEE ME

By John Breukelman

In the fall of 1952, after we had moved into a new home and started the landscaping of the yard, I suddenly realized that we had a favorable bird-watching site in our living room. In the back yard, visible through the picture window, was a variety of wild and cultivated plants—weeds, trees, and shrubbery. The area was surrounded by houses, yards with playing children, cats and dogs, power mowers, and other bird-disturbing influences, but these did not prevent many birds from coming into close viewing range. I started a daily checklist of backyard birds seen through our living room window. Then in early February, 1953, came a serious attack of flu and a full set of complications, with the result that a four-month period of convalescence made me, for the first time in my life, a shut-in.

So I became a bird-watching specialist. As others specialized in birds of prey, waterfowl, shorebirds, upland game, or colony-nesting birds, I also selected a specialty. But for me no 4:30 a.m. trips, no tramping in rain or snow, and no straining of eyes in twilight semidarkness. I specialized in birds that (1) came to see me, and (2) kept reasonable hours. Having started this specialty, I continued it, checking on a calendar the species seen each day and jotting down occasional notes of interest. Bird-watching opportunities from the living room are frequent and varied. I have spent many pleasant hours (in total time; sometimes not more than a minute or two in any one day) in this deluxe bird-watching—sitting in a comfortable chair with binoculars, bird books, notebook, and a cup of coffee (or a tall iced tea, according to season) at hand. Some kind of show is nearly always in progress—courtship antics, nestbuilding, fighting, aerial acrobatics, baby feeding, determination of peck order, or getting a brood of young out of the nest.

A bird bath supplied with fresh water is important as an attraction for many kinds of birds, but the feeders supplied with mixed grains, bread crumbs, suet, kitchen scraps, and other eatables are of most importance in bringing a variety of species to close range, convenient to watch with or without binoculars.

The backyard area that can be seen from our living room is about 35 × 125 feet. In this space, surrounded by all of the above mentioned human influences, I have

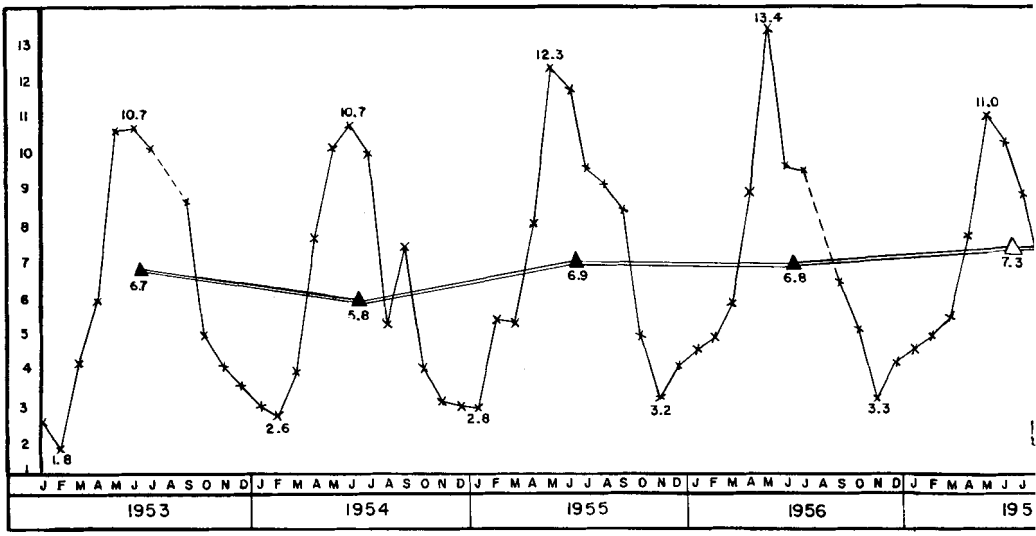


Figure 2. The average number of species of birds seen per day in each month from January 1953, to March 1962. Dotted lines span the missing Augusts of 1953, 1956, 1959, and 1961. The open circles for the period from October 1957, to April

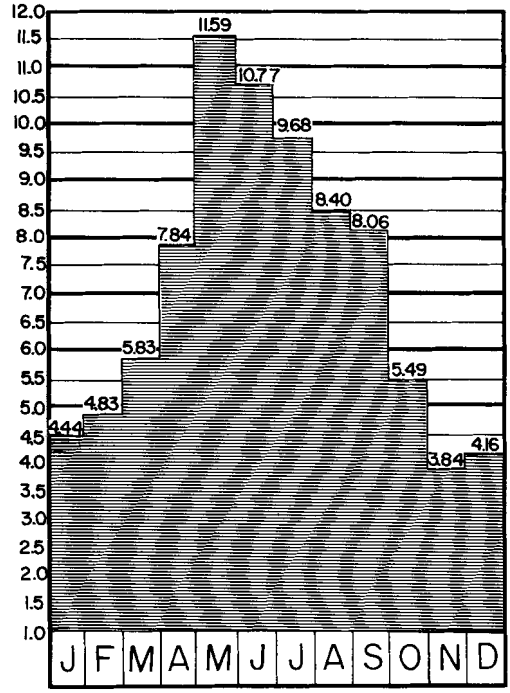
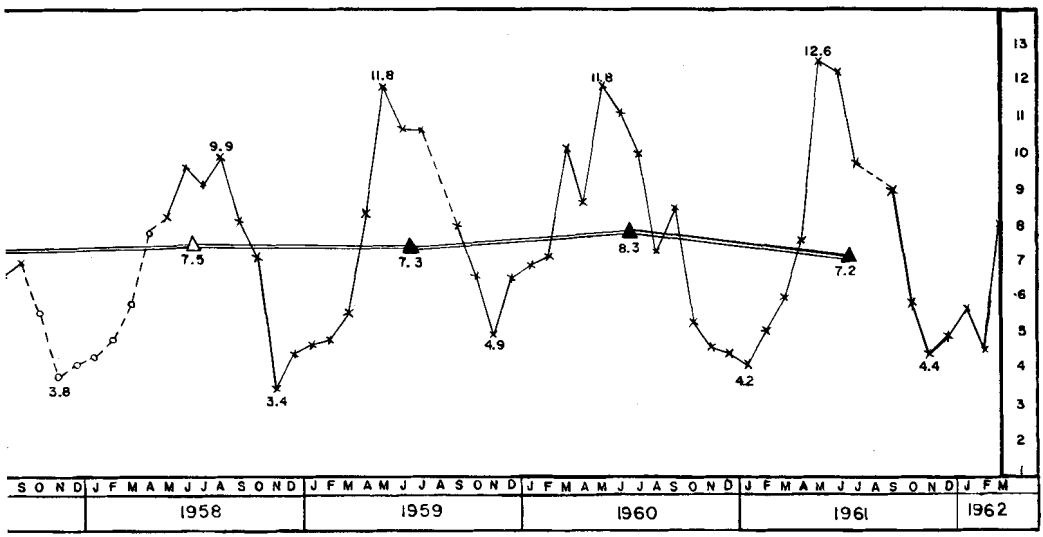


FIGURE 1. The average number of different species of birds seen per day in each "composite" month, from September 1952, to March 1962, inclusive.



1958, were taken from the composite values calculated for Figure 1. The triangles show the annual averages. The smallest average for a month was 1.8 species per day in February 1953; the largest was 13.4, in May 1956.

TABLE 1.

CHECKLIST OF SPECIES OBSERVED IN ORDER OF FREQUENCY, AND MONTHS IN WHICH EACH WAS OBSERVED, SEPTEMBER 1952, TO MARCH 1962, INCLUSIVE.

1.	House sparrow	2,393	Every month
2.	Cardinal	1,859	Every month
3.	Robin	1,851	Every month
4.	Mourning dove	1,181	March to October
5.	Blue jay	1,174	Every month
6.	Starling	1,049	Every month
7.	Chimney swift	1,042	April to October
8.	Common grackle	841	January, March to November
9.	House wren	754	April to October
10.	Catbird	587	April to October
11.	Black-capped chickadee	483	Every month
12.	Purple martin	401	March to October
13.	Baltimore oriole	373	April to September
14.	Brown thrasher	339	January to September
15.	Slate-colored junco	311	October to April
16.	Downy woodpecker	263	January to November
17.	Hairy woodpecker	141	Every month
18.	Tufted titmouse	140	November to July
19.	Nighthawk	129	March, May to October
20.	Flicker	110	Every month
21.	Wood thrush	110	April to July
22.	Cowbird	86	March to October
23.	Yellow-billed cuckoo	67	May to September
24.	Harris sparrow	56	December to March
25.	Red-bellied woodpecker	46	November to May, September
26.	Orchard oriole	46	May to July
27.	Eastern kingbird	44	May to August
28.	Warbling vireo	43	April to July
29.	Yellow warbler	42	April to June, October
30.	Tree sparrow	38	January to March
31.	Chipping sparrow	38	March to May
32.	Ruby-throated hummingbird	36	May to October
33.	American goldfinch	34	January, April to November
34.	Brown creeper	34	November to January, March, April
35.	Olive-back (Swainson) thrush	34	May
36.	Brewer blackbird	32	April to June, September
37.	Ruby-crowned kinglet	30	April, May, October to December
38.	Crow	30	September to June
39.	Orange-crowned warbler	28	April, May, October
40.	Lincoln sparrow	27	April, May, September, October
41.	Pigeon	24	October to January, March to May
42.	Song sparrow	24	March to May
43.	Clay-colored sparrow	24	April, May, December
44.	Oregon junco	23	January, March, November
45.	Myrtle warbler	23	April, May, October
46.	Killdeer	21	March, May, June, September
47.	Bewick wren	17	April, October, September, December
48.	Carolina wren	17	March to May, July, November
49.	Yellowthroat	14	April, May, July
50.	Bluebird	12	January, February, May, October, December
51.	Redwing blackbird	12	March to May, July
52.	Least flycatcher	11	May
53.	Rusty blackbird	11	March, April
54.	Cedar waxwing	9	January to April, November
55.	Eastern phoebe	8	July, August

TABLE 1.—*Continued*

56.	Golden-crown kinglet	6	April, October, November
57.	Gray-cheeked thrush	6	May
58.	Mockingbird	6	January, May, December
59.	Red-headed woodpecker	5	May, June
60.	Lapland longspur	5	February, March
61.	White-crowned sparrow	5	April, May, October
62.	Yellow-bellied sapsucker	5	November, December
63.	Eastern meadowlark	4	March, May
64.	Bell vireo	3	May, September
65.	Sparrow hawk	3	April, October
66.	White-breasted nuthatch	3	January, November, December
67.	Rose-breasted grosbeak	3	May to July
68.	White-throated sparrow	2	April, May
69.	Nashville warbler	2	May
70.	Barn owl	2	April, September
71.	Herring gull	2	April, October
72.	Marsh hawk	2	April
73.	Black-and-white warbler	2	May
74.	Green heron	1	Fall 1952
75.	Wood pewee	1	May 1953
76.	Great blue heron	1	April 1954
77.	Blue-gray gnatcatcher	1	April 1954
78.	Philadelphia vireo	1	September 1954
79.	Blackpoll warbler	1	May 1956
80.	Shrike	1	July 1956
81.	Turkey vulture	1	March 1957
82.	Broad-winged hawk	1	April 1957
83.	Louisiana waterthrush	1	April 1957
84.	Townsend solitaire	1	March 1959
85.	Redstart	1	May 1959
86.	Red-tailed hawk	1	February 1960
87.	Fox sparrow	1	March 1960
88.	Baird sparrow	1	March 1960
89.	Pine siskin	1	April 1960
90.	Field sparrow	1	April 1960
91.	Henslow sparrow	1	April 1960
92.	Indigo bunting	1	April 1961
93.	Crested flycatcher	1	May 1961

seen 93 species of birds, in the trees and shrubs, in the grass, in the bird bath, about the feeders, and just flying around. A mere patch of sky is visible between the tree tops and the awning over the window; outlined against this patch I have seen in silhouette such birds as the Great Blue Heron, Herring Gull, and Broad-winged Hawk.

The living room "blind" is as handy for bird photography as for bird watching. A camera can be left set up, trained on the bird bath or feeder, in focus and ready to shoot when a desirable subject assumes a desirable pose, or in the case of movies, goes into an interesting action pattern.

At the time of writing (April, 1962), the back yard checklist totalled 93 species. The record had been kept for 2,394 days, in 104 of the 115 months which elapsed during the 9½ years from September 1, 1952, to March 31, 1962. Table 1 shows the species, listed in order of frequency of observation, and the months during which each has been seen. House Sparrows were seen every day except one, a dark stormy day when not even one bird was seen.

Table 2 shows the number of species seen during each of the 104 months. Eleven months of the 9½-year period are missing because of summer vacation trips and a sabbatical leave-of-absence. The monthly figures are not entirely comparable be-

TABLE 2.

NUMBER OF SPECIES OF BIRDS SEEN IN EACH OF THE 104 MONTHS IN WHICH OBSERVATIONS WERE MADE.

	'52	'53	'54	'55	'56	'57	'58	'59	'60	'61	'62
Jan.		8	10	10	14	12	—	10	14	12	12
Feb.		4*	8	14	12	11	—	11	17	12	10
Mar.		15	12	13	13	17	—	15	27	18	11
April		19	21	23	29	25	—	27	27	23	
May		24	25	25	38	30	14*	30	32	29	
June		18	20	22	21	22	19	17	17	18	
July		17	20	16	20	14	19	15	10*	13	
Aug.		—	7*	14	—	10	15	—	12	—	
Sept.	19	23	15	15	15	9*	14	14	16	15	
Oct.	16	20	11	11	10	—	14	17	13	12	
Nov.	13	16	11	12	12	—	11	13	9	9	
Dec.	11	13	8	14	12	—	8	9	10	11	

* Months in which observations were made on fewer than 10 days are indicated by asterisks.

cause the number of days during which observations were made in any one month varied from 4 to 31. Even so, there was considerable consistency from any month to the corresponding month of other years, as well as a fairly uniform annual pattern. Those months in which observations were recorded for fewer than 10 days are indicated in Table 2 by asterisks.

Figure 1 shows a "composite" yearly cycle. The points on this graph represent the average number of species seen per day in each "composite" month. For example, the 9½-year period of observation included 244 January days; the average number of species seen per day during these 244 days was 4.44. Figure 2 shows the average number of species seen per day during each month on record from January, 1953 to September, 1961.

The largest number of different species seen in any one day was 20, on May 4, 1956. The largest average per day for a month, 13.4, and the largest number seen in a month, 38, both occurred in May, 1956. The largest number of different species seen in one year was 60, in 1960. The average number per day for the 2,394 days was 6.96.

I am indebted to my student assistant, Miss Janet Simek, sophomore at the Kansas State Teachers College, for compiling the data for Tables 1 and 2, and for drawing the graphs.

Kansas State Teachers College, Emporia, May 15, 1962.

Published September 4, 1962.

BIRDS THAT CAME TO SEE ME

By John Breukelman

In the fall of 1952, after we had moved into a new home and started the landscaping of the yard, I suddenly realized that we had a favorable bird-watching site in our living room. In the back yard, visible through the picture window, was a variety of wild and cultivated plants—weeds, trees, and shrubbery. The area was surrounded by houses, yards with playing children, cats and dogs, power mowers, and other bird-disturbing influences, but these did not prevent many birds from coming into close viewing range. I started a daily checklist of backyard birds seen through our living room window. Then in early February, 1953, came a serious attack of flu and a full set of complications, with the result that a four-month period of convalescence made me, for the first time in my life, a shut-in.

So I became a bird-watching specialist. As others specialized in birds of prey, waterfowl, shorebirds, upland game, or colony-nesting birds, I also selected a specialty. But for me no 4:30 a.m. trips, no tramping in rain or snow, and no straining of eyes in twilight semidarkness. I specialized in birds that (1) came to see me, and (2) kept reasonable hours. Having started this specialty, I continued it, checking on a calendar the species seen each day and jotting down occasional notes of interest. Bird-watching opportunities from the living room are frequent and varied. I have spent many pleasant hours (in total time; sometimes not more than a minute or two in any one day) in this deluxe bird-watching—sitting in a comfortable chair with binoculars, bird books, notebook, and a cup of coffee (or a tall iced tea, according to season) at hand. Some kind of show is nearly always in progress—courtship antics, nestbuilding, fighting, aerial acrobatics, baby feeding, determination of peck order, or getting a brood of young out of the nest.

A bird bath supplied with fresh water is important as an attraction for many kinds of birds, but the feeders supplied with mixed grains, bread crumbs, suet, kitchen scraps, and other eatables are of most importance in bringing a variety of species to close range, convenient to watch with or without binoculars.

The backyard area that can be seen from our living room is about 35 × 125 feet. In this space, surrounded by all of the above mentioned human influences, I have

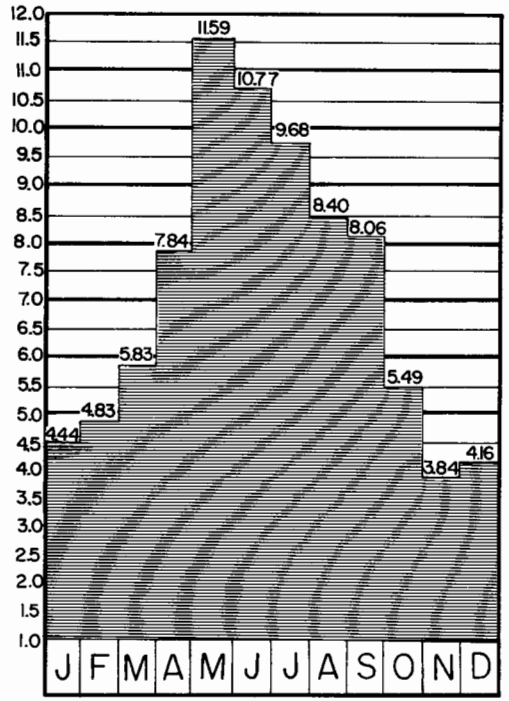


Figure 1. The average number of different species of birds seen per day in each "composite" month, from September 1952, to March 1962, inclusive.

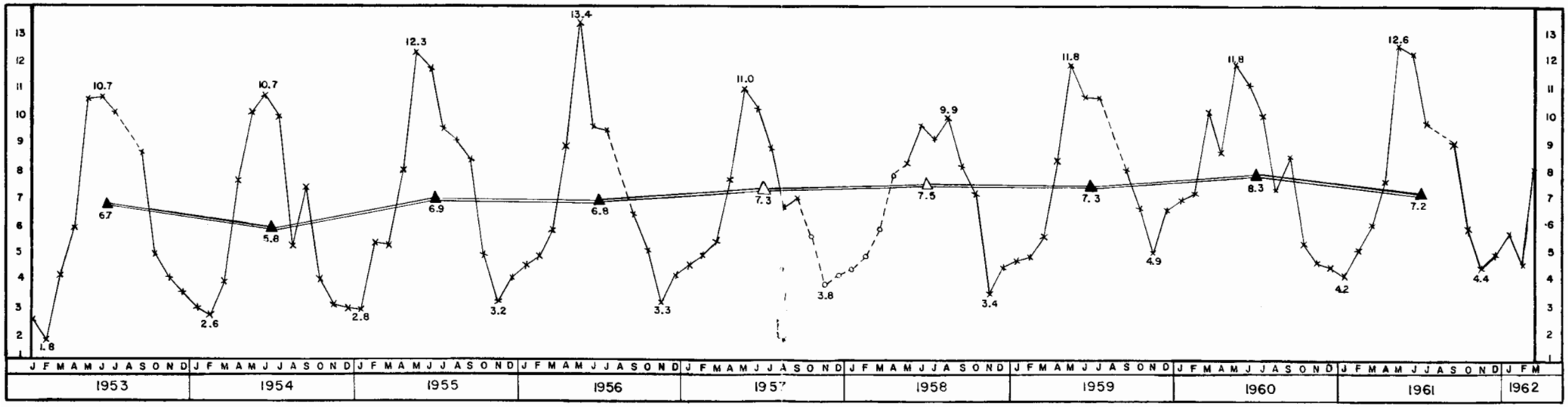


Figure 2. The average number of species of birds seen per day in each month from January 1953, to March 1962. Dotted lines span the missing Augusts of 1953, 1956, 1959, and 1961. The open circles for the period from October 1957, to April 1958, were taken from the composite values calculated for Figure 1. The triangles show the annual averages. The smallest average for a month was 1.8 species per day in February 1953; the largest was 13.4, in May 1956.