

III. SNOWY EGRET

Band No.	Date Banded	Date and Location of Recovery
37-630871	June 6, 1937	Aug. 5, 1937 Deering, Mo.
36-656068	May 24, 1936	Aug. 15, 1936 Sims, Ark.
37-630875	June 6, 1937	Aug. 20, 1937 Pt. Pleasant, Mo.

IV. YELLOW-CROWNED NIGHT HERON

Band No.	Date Banded	Date and Location of Recovery
37-711463	June 6, 1937	Sept. 10, 1937 near Shreveport, La.

V. WATER TURKEY OR ANHINGA

Band No.	Date Banded	Date and Location of Recovery
36-719391	May 24, 1936	July 10, 1936 New Boston, Texas
36-719445	June 7, 1936	July 20, 1936 St. Francisville, La. (6 mi. E.)
34-661803	June 15, 1935	July 28, 1935 Sharkey County, Miss.
36-719194	May 24, 1936	Aug. 7, 1936 Tillar, Ark.
37-719720	June 6, 1937	Sept. 1, 1937 Chatham, Miss.
37-719151	June 6, 1937	Sept. 20, 1937 Jackson, Miss. (East of)
36-719585	June 7, 1936	Dec. 4, 1936 Tallula, Miss.
34-661814	June 15, 1935	Dec. 8, 1935 Paizacas, Campeche
37-711582	June 6, 1937	Dec. 22, 1937 Villa Azueta, Vera Cruz

672 N. Belvedere, Memphis, Tenn.

THE NESTING OF BLUEBIRDS BANDED
AS NESTLINGS

By AMELIA R. LASKEY

NEST boxes for Eastern Bluebirds (*Sialia sialis sialis*) have been placed in Percy Warner Park and the adjoining Edwin Warner Park to increase the numbers of this species around Nashville, Tennessee. Starting in 1936 with 26 boxes, others have been gradually added so that 63 have been available for the past three years. A careful analysis of the nesting data, accumulated through regular visits to the boxes, indicates that only 1,569 eggs of the 3,512 laid have been successful to the point of survival of the young to the age of 16-17 days when they normally fly from the nest. This is 44.67 per cent of the total number laid and corresponds to percentages for birds building open nests. It is markedly lower than for hole nesting species. Mrs. Nice (1937 p. 143-144) gives 40-46 per cent success for open nests and 59 per cent for hole nesting species in the north temperate zone. In Warner Parks predators are chiefly responsible for the loss of eggs, young, and brooding females. Cats and snakes regularly climb to the boxes; there has been some depredation by boys.

All nestlings are banded on the left tarsus and adults on the right. During the nesting seasons of 1937-1942, I have trapped on the nest 42 females that had been banded as nestlings in the parks in the years 1936-1941. Many mated males have been identified by

sight as park nestlings by bands on the left tarsus. But they could not be caught to read band numbers because during the six years under consideration, no male was ever found on the nest. My first record occurred in 1942 when, on July 23, I found one—without a band—brooding 3 nestlings about three days old. If as many males as females returned for nesting, a total of 84 banded as nestlings could have bred in the park, 6.5 per cent of the 1,308 fledged in 1936-1941.

Three others, one known to have been a male, were recovered within three miles of their birthplace. None have been reported as migrants.

TABLE 1. DATES OF FIRST EGGS IN FIVE SEASONS
Earliest Egg Each Year and Average Dates of First Eggs of Known Adults
and First Year Birds, Banded as Nestlings.

Year	Earliest Egg of Season	Adults		First Year	
		Average Date of First Eggs	Number of Birds	Average Date of First Eggs	Number of Birds
1938	March 2 ¹	March 15	2	March 26	2
1942	March 8	March 20	5	March 27	6
1941	March 14	March 26	11	April 2	4
1939	March 18	March 25	8	April 3	1
1940	April 2	April 5	3	April 11	9
Average for 5 years	March 15	March 18	29	March 27	22

There is considerable variation from year to year in start of egg laying. In 1938, a set of four was being incubated March 5; in 1939, first eggs were laid March 18 in two nests; in 1940, the first egg April 2; in 1941, March 14; and in 1942, subsequent observations indicated the first egg had been laid March 8 (a set of five was being incubated March 14). There is a relationship between temperature and start of egg laying but further study is necessary to clarify this point.

From 27 to 56 per cent of the breeding females were captured on the nest each year, a total of 42 per cent for the five year period. Records of 23 of the young females found nesting in the park showed egg laying began at ages varying from 243 to 370 days, the average being 312 days of age. Dates for their earliest egg of each season during 1938-1942 extended from March 17 (in 1938) to April 16 (in 1940) with March 27 as the average early date for the five year period.

¹Latest possible date. A set was being incubated March 5, 1938.

The records of 27 females known to be at least two years old show the average date of first eggs during the same five year period to be March 18. This is nine days earlier than the young group. First clutches for both groups averaged five per set.

Mrs. Nice found her Song Sparrows (*Melospiza melodia beata*) in Ohio, laying at 316-372 days of age with a slight tendency to lay a little later than old birds. Eight young females averaged 4 eggs per set while 16 females two or more years of age averaged 4.5 eggs in first sets (1937 p. 106).

Kuerzi, in Connecticut, reports 6 female and 5 male Tree Swallow (*Iridoprocne bicolor*) nestlings of 1938 returning to breed in 1939—10.4 per cent of the 106 banded in the nest that year (1941 p. 41). He found that Tree Swallows laid at 344-354 days of age, averaging, like my Bluebirds, nine days later than older birds with size of sets apparently the same. He states that mature females were more efficient in nest building than one year old birds (1941 p. 25-26). His Tree Swallows were single-brooded so that range in ages is not nearly so great as in species like Bluebirds and Song Sparrows that may raise three successful broods in a season. The young Tree Swallows showed only ten days variation in ages, the Song Sparrows 57 days, and the Bluebirds 127 days. Among Bluebirds in the northern states, this wide range in ages probably would not occur because in his studies in Illinois, Musselman finds only two nesting periods. Bluebirds are summer residents there and permanent residents in Tennessee.

Kluijver, in Holland, found young Starlings (*Sturnus vulgaris L.*) laying later than the older birds and with smaller sets; their first eggs averaged $4.9 \pm .3$ while the older birds averaged 5.9 ± 0.09 per set.

Among my Bluebirds, those hatched late in a season, during the third nesting period, began to lay at approximately the same time as those hatched in the first period. Two females, N 11, hatched August 1, and N 12, hatched August 12, 1939, laid their first eggs April 10 and April 11, 1940, respectively, while N 4 hatched April 9, 1939, laid April 13, 1940 and N 5, hatched April 16, 1939, laid April 8, 1940. Among the eight individuals of the 1939 hatch whose ages are known, there was a difference of 125 days between the oldest and the youngest, yet the youngest laid two days ahead of the oldest. Likewise this occurred in 1942 when an April bird, 86 days older than a July bird of 1941, laid her white eggs eleven days later than the younger.

Sister birds, N 15 and N 16, hatched July 20, 1940, laid their first eggs one week apart, March 30 and April 6, 1941.

In 1942 a mother bird and her 254 day old daughter each had four eggs in neighboring boxes on March 30. The older bird laid

an additional egg the following day.

Three individuals had their first nests in the same boxes in which they had been hatched. Two of them, N 11 and N 13, laid white eggs. Four others used boxes in meadows adjoining their birthplaces. Boxes are 500 or more feet apart, separated by narrow thickets.

One female hatched in 1938 from a 7 egg set (100 per cent successful) was found incubating the following year in a box not far from her birthplace. Her sets consisted of 5 eggs.

A number of individuals have laid white eggs but there has been no evidence as yet to show this to be an inherited trait in this group. No. 36-146599 hatched April 1937 from an albino egg was found in 1939 laying blue eggs. No. 38-121000 banded as an adult on April 6, 1939 was then incubating 6 white eggs. In 1940 one of those hatched from this set, N 6, laid five blue eggs in the adjoining meadow. The following year N 6 had moved on to the next meadow, laying 6 blue eggs in the second nesting period. From this hatch, N 22 was found in 1942 as she incubated 6 blue eggs. Thus daughter and granddaughter of the white-egg-laying female were laying normally colored eggs.

Five birds known to have been hatched from blue eggs laid white eggs: N 1, N 11, N 13, N 18, N 21. Only N 11 was found in two seasons. In April 1940 at 253 days of age she began her first set of 5 in the box where she had been hatched from a set of 4 blue eggs. For the season she laid 5-5-5-4 white eggs with only the third successful. She deserted the first two sets soon after completion and the young of the fourth set when they were five days old. She reappeared in the box in March 1941, laying 5 albino eggs, one blue-tinged. Four young were raised; one egg was sterile. May 6 she began her second set of 5 white eggs but disappeared at the time this set was hatching.

In 1942 there were more white eggs laid than in any previous season. They consisted of 3 sets of 4, 8 sets of 5, 2 sets of 6, and 1 set of 7. This total of 71 white eggs was 9.1 per cent of the 774 laid this season. There seemed to be 6 or 7 females laying them. Two, N 18 and N 21, were nestlings of 1941; three were found unbanded, including the one with the 7 egg set, indicating they were not raised in the Warner Parks boxes. Incidentally it might be mentioned that sets of 7 Bluebird eggs are rare; the 1938 and the 1942 sets are the only records in the Nashville area.

In addition to the nestlings in the park boxes, a considerable number are banded as I find them elsewhere, many from tin cylinders on posts on roadsides placed there by suburban and country residents for their newspapers. A female, hatched in one of these tin receptacles in early June 1941, was found April 16,

1942 incubating 4 eggs in a Warner Parks' box about five miles from her birthplace. At the home of one of my neighbors, a female hatched in April 1937 was nesting in the same garden two years later in a box 125 feet from the one in which she had been hatched.

So far, none of my banded nestlings have been found after three years. The high rate of mortality through predation is doubtless the main factor in this prevailing short life span. The oldest Bluebird of record in the Parks' group is an adult female banded May 1939 and nesting there each year. Her latest recapture was in April 1942, when she was at least 4 years old. Another female banded at my home as an adult April 1936 was retrapped each year until Nov. 4, 1939 when she was at least in her 5th year of age.

Grateful acknowledgment is made to Mrs. Nice for suggestions and for references she kindly furnished from her files.

SUMMARY

From 3,512 Bluebird eggs laid during seven years in two adjoining parks, 1,569 young were fledged—44.67 per cent. Forty-two females banded as nestlings have returned to nest in the parks; also one banded elsewhere nested in the park, five miles from her birthplace. Numerous mated males banded as nestlings are seen at the nests.

The first eggs of 23 birds were laid at ages of 243–370 days, average, 312. Egg laying started on the average date of March 27 (1938–1942), nine days later than a group of 27 birds two or more years old. Size of sets did not differ with age, five being the average.

Late and early hatched birds laid at approximately the same time the following spring.

Laying of white eggs is apparently not an inherited trait; a daughter and a granddaughter of a white-egg-laying female laid blue eggs. Five females hatched from blue eggs laid white eggs.

LITERATURE CITED

- KLUIJVER, H. N. 1933. Bijdrage tot de Biologie en de Ecologie van den Spreeuw (*Sturnis vulgaris L.*) gedurende zijn Voortplantingstijd. Wageningen Veeman and Zonen, 145 p.
- KUERZI, RICHARD GOTTRON. 1941. Life Histories of the Tree Swallow. *Proceedings of the Linnean Society*, 52–53: 1–52.
- LASKEY, AMELIA R. 1939. A Study of Nesting Eastern Bluebirds. *Bird-Banding*, 10: 23–32.
1940. The 1939 Season of Nesting Bluebirds at Nashville, Tennessee. *Wilson Bull.*, 52: 183–190.
- MUSSELMAN, T. E. 1935. Three Years of Eastern Bluebird Banding and Study. *Bird-Banding*, 6: 117–135.
- NICE, MARGARET M. 1937. Studies in the Life History of the Song Sparrow I. *Transactions of the Linnean Society*, 4: 1–247.

Graybar Lane, Nashville, Tenn.