

## EGGS.

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**Deposition.** Almost invariably an egg is laid daily until the clutch is complete. Indeed, such is the great fecundity of the species that it will often continue under exceptional circumstances to deposit an egg daily, with or without an occasional day of recouplement, until it multiplies the number in a typical set several times over, and that without a radical diminution of the properties of the egg. Records of even the most prolific of our wild birds laying more than a single egg daily are so few that an instance given by Mr. C. H. Morrell, Pittsfield, Maine, is of more than usual interest: On May 21st, '97, at about sunset a cavity in an ash slab was sawed into and the three eggs taken out, examined and returned; on the 26th it contained nine eggs, which were collected. It looks very much as if two eggs had been deposited in one day and from appearances all must have belonged to the same bird. Certainly no egg was overlooked upon the first visit.

**Arrangement.** The eggs usually remain in the position of deposition, becoming adjusted to the body during the frequent turning to which they are involuntarily subjected. When the cavity is small and the clutch large they are sometimes placed in two layers, the fine chips protecting them from injury. The arrangement of a heavily incubated set containing the unusual number of thirteen eggs taken by Mr. H. J. Flanagan in Providence Co., R. I., on May 30th, '98, was peculiar, if not unique. The entrance, eighteen inches above the nest, was about three and one-half feet above the ground, in an apple tree, and had been previously broken into so that the eggs were in plain sight. The trunk had been hollowed out to a diameter of ten inches or so, and the eggs laid in one row of five and two rows of four each. Two eggs which contained dead embryos appeared of a dark brown color. One was situated almost in the middle of the central row, and the other in the center of one of the outer rows, about one egg separating them.

**Clutch.** As a rule the minimum number of eggs in a set is found in the south, where the usual clutch appears to consist of but 5 or 6 eggs, a larger number being rather unusual. The whole north appears to be more favorable for the maintenance and development of much larger broods; most commonly 6 to 9 eggs are laid; sets of 10 not uncommonly, while 12, 13, and even 14 eggs are not wanting; larger sets are unknown, with one possible exception, published in the *Forest and Stream*, Vol. XXV., p. 427—a brood of 19 young, all alive and in good condition.

LOCALITIES.	NO. OF EGGS IN SET.											Total
	4	5	6	7	8	9	10	12	13	14		
N. C., S. C., Ga., Fla., Ala., La.	3	11	6	.....	2	.....	.....	.....	.....	.....	.....	22
Del., Pa., N.J., N.Y., Ont. (Toronto)	3	9	21	17	10	11	1	3	.....	1	.....	76
New England.....	2	4	5	2	20	3	6	.....	1	.....	.....	43
O., Ind., Ill., So. Mich., Ky.....	2	1	3	4	1	2	1	.....	.....	.....	.....	14
Wis., Minn., Ia., Neb., Kas.....	4	2	6	11	7	1	5	.....	.....	.....	.....	36
Total.....	14	27	41	34	40	17	13	3	1	1	.....	191

The southern bird makes up for the smallness of her set by producing a second brood in many instances. Mr. Arthur T. Wayne, Mt. Pleasant, S. C., says that two, and sometimes three broods, are reared in a season, a fact which has been noted by Bendire also.

**Season's Aggregate.** The Flicker has the reputation of laying more eggs under exceptional circumstances than any other species. Nearly every observer has something to say regarding this peculiarity and the persistence with which it is carried out. Mr. J. Warren Jacobs has found that on several occasions, when the eggs were taken before the set was completed, he has been rewarded with another egg on his return the next morning; and after laying 6 or 8 eggs, the bird rested a few days before beginning a new set. Mr. Paul Bartsch finds it to be a very patient and persistent layer; if one removes all the eggs except one from an incomplete set, and keeps this up day after day, the Flicker will try to complete the set, depositing egg after egg until her supply or patience is exhausted. He has in this way taken 17 eggs from one nest. Mr. J. H. Bowles stated that a friend once collected 25 eggs from one nest before the poor bird finally gave it up. Mr. J. B. Purdy

once found a nest in a cavity of an apple tree, and as soon as the first egg was deposited it was removed, and as fast as all subsequent eggs were laid they were removed; the bird continued to lay day after day until she had deposited 27 eggs. Mr. F. A. Colby has known it to lay as many as 28 eggs in a continuous stretch; a day perhaps was skipped after the boys robbed her, but she did not stop laying more than two days at a time when relieved of four to six eggs in a bunch. Rev. P. B. Peabody discovered a nest among a dense growth of black oaks, averaging about six inches in diameter. It was placed eighteen inches from the ground in a cavity, which, according to his remembrance, was partly natural and partly excavated by the birds, the depth being very slight. One or two eggs only were taken at the time at first, whereupon the mother Flicker, like so many others on record, began to spin out her "set" to the number of 30 or over before giving up in despair. Mr. J. H. Armfield reports the taking of a large number of eggs from a cavity in a maple tree near a spring, seven miles S. W. of Greensboro, N. C., in '98. Five eggs were collected on May 6th, and every two or three days thereafter all eggs found were gathered; the female continuing to lay, not every day, however, until July 5th, when she had deposited 48 eggs. This is the next to the largest on record. In relation to that historic and extraordinarily prolific bird of Taunton, Mass., little can be added to the meagre notes recorded by the collector at the time. The eggs were taken one at a time from a cavity in a willow, beginning May 6th, '86, leaving a nest egg, until 71 had been deposited. Mr. Chas. L. Phillips informs me that some of the eggs were accidentally broken and the remainder disposed of to Mr. F. B. Webster, the well known dealer, who in turn writes me that he has entirely lost sight of the Phillips collection, and has no means of tracing it, as it may have been broken up for decorative purposes. No measurements were taken, and while the collector is inclined to think they were all the product of one female, it is not impossible that a second bird whose own nest had been demolished, may have "jumped the claim" in preference to chiseling out a fresh nest so late in the season, and after one day's interval contributed her share to the grand total. Still, as Mr. Phillips argues, it is unlikely. It is unfortunate that this series of eggs was not better appre-

ciated for its scientific value. While this method of collecting eggs is hardly scientific and only justifiable in rare cases, permit me to advise the collector occasionally practicing it, to fix the identity of the female by means of some peculiarity of voice, habit, or plumage, if possible; and to carefully number and measure the eggs in the order of deposition, time on nest, etc. Collected from all sources we have the following:

Massachusetts.....	15 eggs, taken in sets, no nest egg
Connecticut.....	17 eggs, taken in sets, no nest egg
Pennsylvania.....	17 eggs, taken in sets, no nest egg
Iowa.....	17 eggs, taken singly, nest egg
New York.....	20 eggs in 27 days, in sets, pigeon's nest egg
Connecticut.....	21 eggs daily, nest egg
Massachusetts.....	25 eggs daily
Michigan.....	27 eggs daily, no nest egg
Massachusetts.....	27 eggs, in sets
Vermont.....	27 eggs, in sets
Nebraska.....	28 eggs, in sets, no nest egg
Illinois.....	28 eggs, singles and sets, nest egg
Pennsylvania.....	30 eggs in 40 days, in sets, no nest egg
Minnesota.....	30 eggs daily
Indiana.....	37 eggs in 49 days, in sets, no nest egg
Texas.....	40 eggs in 40 days, no nest egg
North Carolina.....	48 eggs in 65 days, no nest egg
Massachusetts.....	71 eggs in 73 days, nest egg

Mr. C. L. Rawson, the veteran oologist, who is perhaps better known as "J. M. W.", of Norwich, Conn., has looked over some oological data, taken from field experiments made by himself and his climber since '76, and has come to the conclusion that the Flicker lays no more eggs in proportion to the usual number in a set when stimulated in some way, than many other species of various genera. Twice by the nest egg and at times by the substitution process he could take but 21 eggs from the Wacup, but in the same manner his notes say he has taken

11 eggs from the Common Term (only one pair nesting on islet).....	Equal to 3 sets.
20 eggs from the Sora Rail (only one pair in bog).....	Equal to 2 sets

32 eggs from the Bob-white (identification of same bird sure).....	Equal to 3 sets
16 eggs from the Marsh Hawk.....	Equal to 4 sets
17 eggs from the Sharp-shinned Hawk.....	Equal to 5 sets
13 eggs from the Cooper's Hawk.....	Equal to 3 sets
9 eggs from the Red-shouldered Hawk.....	Equal to 3 sets
9 eggs from the Barred Owl.....	Equal to 3 sets
21 eggs from the Flicker.....	Equal to 3 sets
13 eggs from the Meadowlark.....	Equal to 3 sets
11 eggs from the Purple Finch (besides 4 eggs of Cowbird).....	Equal to 2 sets
12 eggs from the Vesper Sparrow.....	Equal to 3 sets
16 eggs from the Parula Warbler.....	Equal to 4 sets
20 eggs from the Long-billed Marsh Wren.....	Equal to 3 sets

Numerous instances in which that pest, the European House Sparrow, has equaled or even exceeded the best ratio given by Mr. Rawson in the above interesting list, might be given.

**Dates.** The nesting period averages much later than is generally thought by writers. The time for fresh and complete sets varies of course, according to the season, but the following averages compiled from a large amount of data will be found in most instances to be approximately correct in average seasons :

LOCALITIES.	AVERAGE.	VARIATIONS.
N. C., S. C., Ga., Fla.....	May 4...	April 10 to June 7
Penna., N. J.....	" 15...	" 28 " 26
N. Y., New Eng. (except Maine)...	" 22...	" 14 " 6
Maine, Ont., N. S.....	" 30...	May 14 " 18
Louisiana.....	" 7...	" 5 to May 10
Ohio, Ind., Ill., So. Mich.....	" 22?..	" 2 to June 30
Iowa, Neb., Kans.....	" 10...	April 24 to May 28
Minn., Wis.....	" 18...	May 10 to June 1
Alaska and N. W. Ter.....	June 10.....	

Mr. Arthur T. Wayne finds the average date in South Carolina to be April 21st, except in '95 (a late season) when it was May 9th.

**Shape.** The contour is subject to little variation, the typical egg being ovate ; now and then an oval specimen is found,

and more often sets in which the eggs are irregularly elliptical ovate, sometimes sharply pointed.

**Color.** Fresh eggs are a beautiful translucent white, the yolk showing through and suffusing the whole shell with a mellow delicate pink. When blown this pale wild rose bloom disappears, the shell retains the translucency in decreasing amount until it is dry when it is simply a pearly glittering white.—Lynds Jones. All colorless fine textured eggs, especially when fresh, seem to emit a faint glow and in this state are admired by field oologists more than the clear porcelain white specimens in the cabinet. Not rarely a set of prepared eggs show a creamy suffusion, which, if the cause was unknown, would deceive one into believing it to be naturally produced. If the eggs are left standing unblown for a number of days, the yolks will settle and the lining absorb enough coloring matter to stain it a uniform creamy-buff, which, showing through the semi-transparent shells, gives them the same appearance. With every reason for the belief that the prehistoric bird had a reptilian ancestry and that plain white eggs would most naturally be produced by the descendants of such progenitors for a time at least, uncolored eggs must be regarded as the least modified as far as external appearance goes. Some species advanced along the line of involuntary protective coloration of their eggs, while others habitually nesting in dark cavities, in large colonies or practically safe places, as the Petrels, Pelicans, Pigeons, Owls, Kingfishers, Woodpeckers, Swifts, Hummingbirds, etc., have undergone slight changes apparently. According to Dr. Brewer, "Any egg, always excepting a Woodpecker's, is liable to be marked (stained) by minute infusions of colored lymph of the parent in exclusion." On what grounds he excludes the Woodpeckers is purely conjectural, but if it is on account of the fine texture and polish, the Kingfishers should also have been made an exception. It would appear, moreover, that Woodpeckers' eggs are occasionally spotted. It is reported that Audubon once found a set of spotted eggs of the Three-toed Woodpecker. Angus Gaines, Viscennes, Ind., noted a set of eggs of the Red-headed Woodpecker with reddish spots at the larger ends (see *Oologist*, Vol. XII, p. 118) and in Vol. VIII, p. 96 of the same paper a set of four eggs of the Flicker, spotted with dull red, is recorded

from Fairbank, Minn.; and J. H. Bowles, Ponkapog, Mass., describes the latter species as sometimes laying eggs minutely spotted with dots of red or black, for the most part easily washed off.

**Texture.** The shell has a fine smooth surface with a porcelain-like gloss normally. A set of five in my cabinet collected at Avery's Island, La., is quite unusual in having no gloss whatever. Granulations appear upon the larger ends not infrequently, being much more noticeable on a white and polished surface than upon a colored or lusterless specimen. Mr. Jacobs, in describing the abnormally large egg in the Ottawa, Kansas, set, notes a number of dead white granulations scattered over the shell at random, and at one side a decided hump; a large circular patch on the larger end is also dead white, indicating a thin spot in the shell.

**Measurements.** The average of over 500 eggs, nearly all of which were taken in the United States, is  $1.09 \times .85$ . 173 eggs taken in New York and Pennsylvania are but a very small fraction above the general average. When amassing data, the extraordinary amount of variation to which it proves subject was not taken into account and what was at first considered a fair number of measurements proves insufficient material for a series of locality averages. The South, Northeast, and Northwest show surprisingly little difference in general averages. Leaving out the series of 48 eggs taken from a single bird inhabiting the mountains of Western North Carolina, reduces the Southern average to  $1.06 \times .84$ , and a further reduction to  $1.02 \times .83$  is made by not including the Louisiana (Avery's Island) series which are large eggs also. On the other hand many eggs from Maine, Iowa, Minnesota and Nebraska are unusually small, thus lowering the averages of their respective localities.

LOCALITY.	NO. EGGS.	AVER.	MAX.	MIN.
South (N. C., S. C., Ga., Fla., La.).....	133	$1.098 \times .849$	$1.24 \times .92$	$.90 \times .75$
Northeast (New England, New York, Ontario—To- ronto—, Pennsylvania). . .	233	$1.090 \times .855$	$\left\{ \begin{array}{l} 1.15 \times .91 \\ 1.22 \times .86 \\ 1.21 \times .88 \end{array} \right.$	$\left\{ \begin{array}{l} 1.00 \times .75 \\ .96 \times .80 \\ .97 \times .73 \end{array} \right.$
Northwest (O., Ky., Wis., Kas., Neb., Iowa., Minn.)	126	$1.088 \times .855$	$1.41 \times .93$	$.93 \times .65$

The major axis is subject to much greater variation than

the minor axis, which is I believe, the case with all kinds of eggs.

A set collected at Mt. Pleasant, S. C., April 21st, and now in the collection of Mr. R. P. Sharples, measure  $1.17 \times .89$ ,  $1.24 \times .92$ ,  $1.19 \times .90$ ,  $1.10 \times .84$ , and the collector—Mr. Arthur T. Wayne—says they might easily be mistaken for the eggs of the Pileated Woodpecker. It remains for the Ottawa, Kansas, bird, already referred to as building in a school house loft, to break the record in the dimensions of one egg. The set is now in the collection of Mr. J. Warren Jacobs and measures  $1.16 \times .94$ ,  $1.15 \times .91$ ,  $1.15 \times .88$ ,  $1.17 \times .94$ ,  $1.21 \times .92$ ,  $1.19 \times .91$ ,  $1.41 \times .93$ . Equally remarkable is a set of small eggs collected by Prof. Ora W. Knight, Bangor, Maine, June 14, '93— $.85 \times .75$ ,  $.99 \times .79$ ,  $.98 \times .77$ ,  $.87 \times .79$ ,  $.77 \times .72$ —and is probably a second or third set. The average of 16 eggs known to be of the second laying is slightly less than the general average— $1.07 \times .84$ . Mr. Chas. L. Phillips, who took 71 eggs from one hole in 73 days, states that they appeared of the usual dimensions with very little variation; a fact also noted by J. Parker Norris in the *Ornithologist and Oologist* after he had collected 30 eggs from one pair and found the last egg as large as the first. The measurements of the 48 eggs taken from one bird near Greensboro, N. C., as already briefly mentioned under the head of *Season's Aggregate*, are before me, although unfortunately not in exact order of deposition, and exhibit a great difference in size—from  $1.08 \times .80$  to  $1.17 \times .87$ —much larger than the general average. Runt eggs are by no means scarce, in fact I consider them more often occurring in this species than in any other of the family. Mr. Otto Grady, Ludlow, Ky., found a nest June 24, '95, containing six young ready to leave, piled pellmell on top of one another, and three runt eggs; one being as thick as an ordinary Robin's egg and much longer than the average Flicker's egg, the second the size of a Red-headed Woodpecker's egg, and the third almost globular. An Orleans County (N. Y.) collector took 20 eggs from a pair in 27 days, the 8th and 9th being runts. Another is incidentally mentioned by another New York oologist, but no particulars given. There is a distinction between the small fertile eggs such as are given in the locality table, and the



runts which are excluded from all averages ; such as I have measurements of appear below :

Toronto, Canada.....	June 7, '95, in set of 8 eggs,	.70 x .56
Grinnell, Iowa.....		.67 x .58
Avery's Island, La.....	May 14, '95, in set of 6 eggs,	.79 x .62
Port Hope, Ontario, Canada.....	June 10, '98, in set of 4 eggs,	.79 x .65
Philo, Illinois.....	May 11, '98, in set of 9 eggs,	.83 x .67

**In Other Birds' Nests.** When the exact circumstance of deposition is unknown, the owner of a nest in an old Woodpecker cavity is the bird placing the lining therein, the chamber being vacant. It is hardly probable that the Flicker would intrude unless its own nest had been destroyed before the completion of its quota. On June 6th, '89, while collecting near Lake Assawamsett in Plymouth County, Mass., Mr. A. C. Bent explored an old orchard. One tree contained a Bluebird's nest with five eggs of the owner and one of the Flicker's, and in a neighboring cavity a deserted nest of a Tree Swallow with the same number of eggs. A not much frequented place and while possibly the work of some boys, it is hardly probable. A similar instance is recorded by E. G. Elliot, Bradford, Mass., May 16th, '84, of a set of five eggs of Bluebird and one of Flicker, nest of grass and feathers. Records of European House Sparrow and Red-headed Woodpecker eggs in freshly excavated quarters with one or more eggs of the Flicker are not uncommon, and upon investigation the latter proved to be the aggrieved party in every instance. In the *Oologist*, Vol. XII, p. 76, Walter Draper, Barahoo, Wis., gives an interesting account of an "Eccentric Flicker." He observed a Mourning Dove's nest in process of construction on a limb of an oak tree near a path, and a few mornings later was surprised to see a female Flicker on the nest. She was not disturbed at that time, but returning at noon to investigate, the Dove was flushed from her own two eggs and a cracked egg of the intruder found near the edge where it had probably been shoved by the proprietor.