

BIRD-BANDING

A JOURNAL OF ORNITHOLOGICAL INVESTIGATION

VOL. XXI

OCTOBER, 1950

No. 4

WEIGHT VARIATION OF THE EVENING GROSBEEK AT NORTHAMPTON, MASSACHUSETTS FROM JANUARY TO MAY 1949

BY B. M. SHAUB AND MARY S. SHAUB

The Evening Grosbeak, *Hesperiphona vespertina vespertina*, Cooper, has been, until the last decade, considered to be a casual winter visitor, although on a few occasions in the past the species invaded the north-eastern part of the United States in considerable numbers. Recently it has increased during the winter until it is no longer looked upon as a rare visitor; instead the appearance of this grosbeak is becoming an annual winter event in most of the New England States, New York, New Jersey and parts of Pennsylvania.

A search of the literature revealed a single mention of weights of the species. This record is given by Roberts (1932, Vol. II, p. 708) who states that the weight ranges from "2.25 to 2.50 oz." or 63 to 70 grams. These weights were obtained from labels on the grosbeaks in the Lano collection (personal communication of W. J. Breckenridge, Director of the Museum) now in the Minnesota Museum of Natural History, University of Minnesota.

Individual weights shown in Fig. 1 appear to be the first to be given for live birds of this species. The range of weights from the Lano collection covers only a relatively narrow band across this diagram. The fact that the Evening Grosbeak has remained a resident of the densely wooded northern areas until recently may account in large measure for the lack of such data, although continuous weight studies of passerine birds have not been actively pursued in the past.

The data from which figures 1 and 2 were constructed were collected over a period of about 13 weeks in the early part of 1949. Each bird trapped was banded and weighed. If a bird was already banded its number was recorded and then weighed. The weighing was done on a laboratory type Toledo springless scale which gives repeat weights to a half of one-tenth of a gram variation. All weights were recorded to tenths. No attempt was made to increase this refinement in weighing since other uncontrollable factors introduce variations much greater than a tenth of a gram.

The weighing was accomplished by placing the bird in a conical cellophane tube which had the small end open but too small for the bird to pass through. The tube was adjusted to weigh ten grams by clipping away cellophane or by adding transparent cellulose tape.

The springless scale is an ideal one for weighing small birds in the home, banding office or laboratory for the scale graduations and adjustments are in increments of 50 grams by tenths over a range from zero

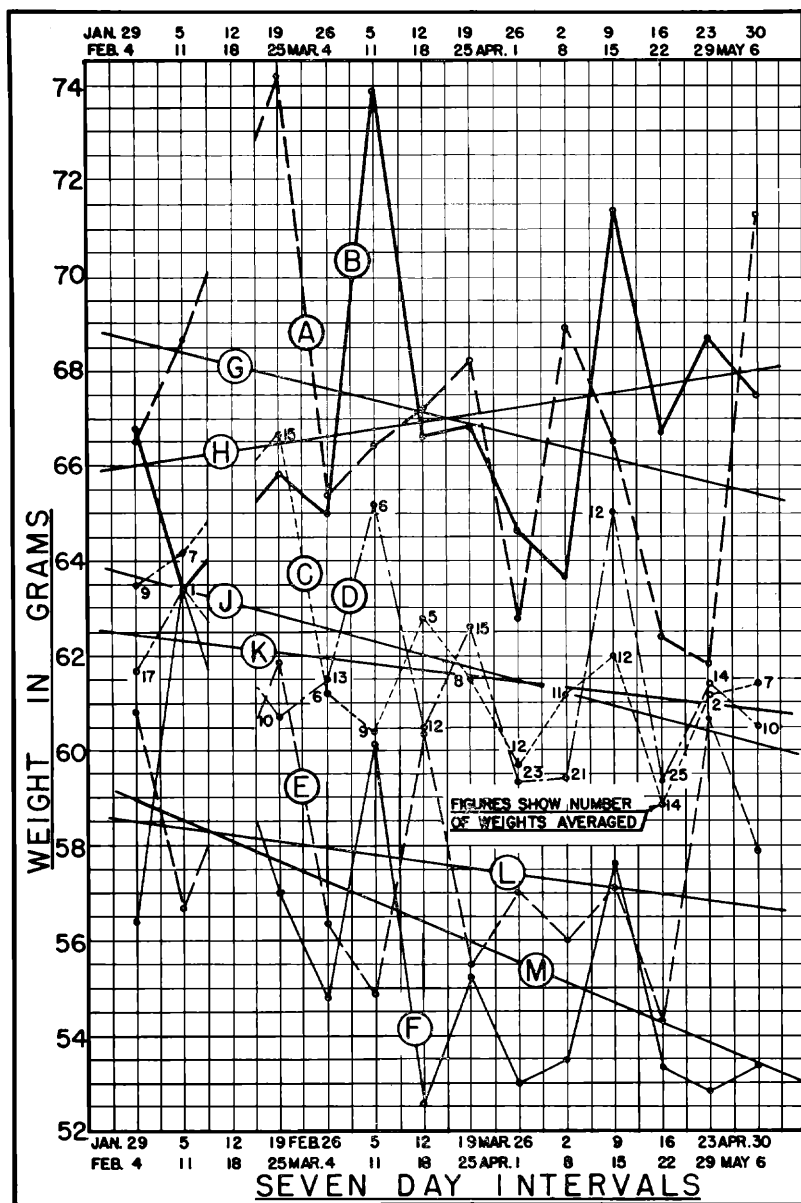


Fig. 1. All weights used in making the six graphs were the first weights of 117 males and 179 females. Repeat weights were not used. Curve (A) shows the weight of the heaviest male caught during each seven-day interval while (B) gives the corresponding weight for the heaviest female. (C) and (D) give the average weights of all males and females respectively during each seven-day period. (E) and (F) represent the weights of the lightest male and female respectively for the same periods.

Lines (G), (J) and (L) show the trends of the weights of the heaviest, average and lightest males while lines (H), (K) and (M) show the trends of the weights of the females in the same categories.

to 300 grams. The adjustment consists of simply shifting a sliding weight from notch to notch to bring the pointer within the desired 50 gram range. Within the 50 gram increment the pointer automatically and quickly indicates the weight. The scale is not portable. For field work and also for office weighing any small scale having an accuracy of at least a tenth of a gram may be used. When weighing birds in the field we have found that it is very satisfactory to wrap a bird in a small piece of cheese cloth to prevent the bird from struggling while lying on the pan. The weight of the cheese cloth can be adjusted to some even gram value; three or four grams of the material is usually sufficient.

When working with the Evening Grosbeak one soon learns that the individuals have distinct characteristics. When one approaches the trap some individuals scream loudly and are pugnacious. The screams are often answered by the birds in the trees. When removed from the traps to the gathering cages the screaming may continue until the bird is banded, unless the banding is somewhat delayed. After the bird is placed in the weighing tube it becomes unusually quiet in comparison to its behavior in the trap and gathering cage.

Some individuals bite viciously often raising their crests while biting to show that they are really in a ferocious mood. Their bite is painful and is just short of the point where a blood blister results. An occasional biter breaks the skin especially if the pinched skin is pulled out of the bird's mouth. Some individuals refrain from biting and do not appear to be frightened in the least; a few will even eat sunflower seeds when they are offered. Most Evening Grosbeaks appear to be extremely bewildered when released after being banded. They will often fly up into the trees and chirp loudly for an hour or more when the rest of the flock has left. When released some are very reluctant to fly away unless in company of others. The larger flocks that gather at the feeding stations appear to be built up by smaller groups often arriving from different directions and the larger flocks, unless frightened severely, usually break up into smaller flights upon leaving.

The weight data obtained for each consecutive seven day period fell into three natural categories for each sex. These showed the weights of the heaviest and lightest individuals and the average of all birds of each sex. The data arranged in the above manner were used for the graphs and from each set of data the trend lines were derived by computation. The data included only the first weights of 117 males and 179 females. All repeat weights were rejected because the weights of extremely light or heavy birds if frequent enough could affect the results appreciably.

The consecutive values for each of the six categories were plotted in Fig. 1. Graphs (A), (C) and (E) of this figure give the weights for the heaviest, averages and lightest males while (B), (D) and (F) give the corresponding weights for the females. With the exception of the graph for the heaviest females the others appear to indicate a gradual decrease in weight during the winter. The trend in weight variation of each category shows that the amount for the various graphs over the 13 weeks is as follows: heaviest males (G) show a loss of 3.2 grams; the heaviest females (H) a gain of 2.0 grams; the average weight of all males (J) shows a loss of 3.3 grams; average weight of all females (K) gives a

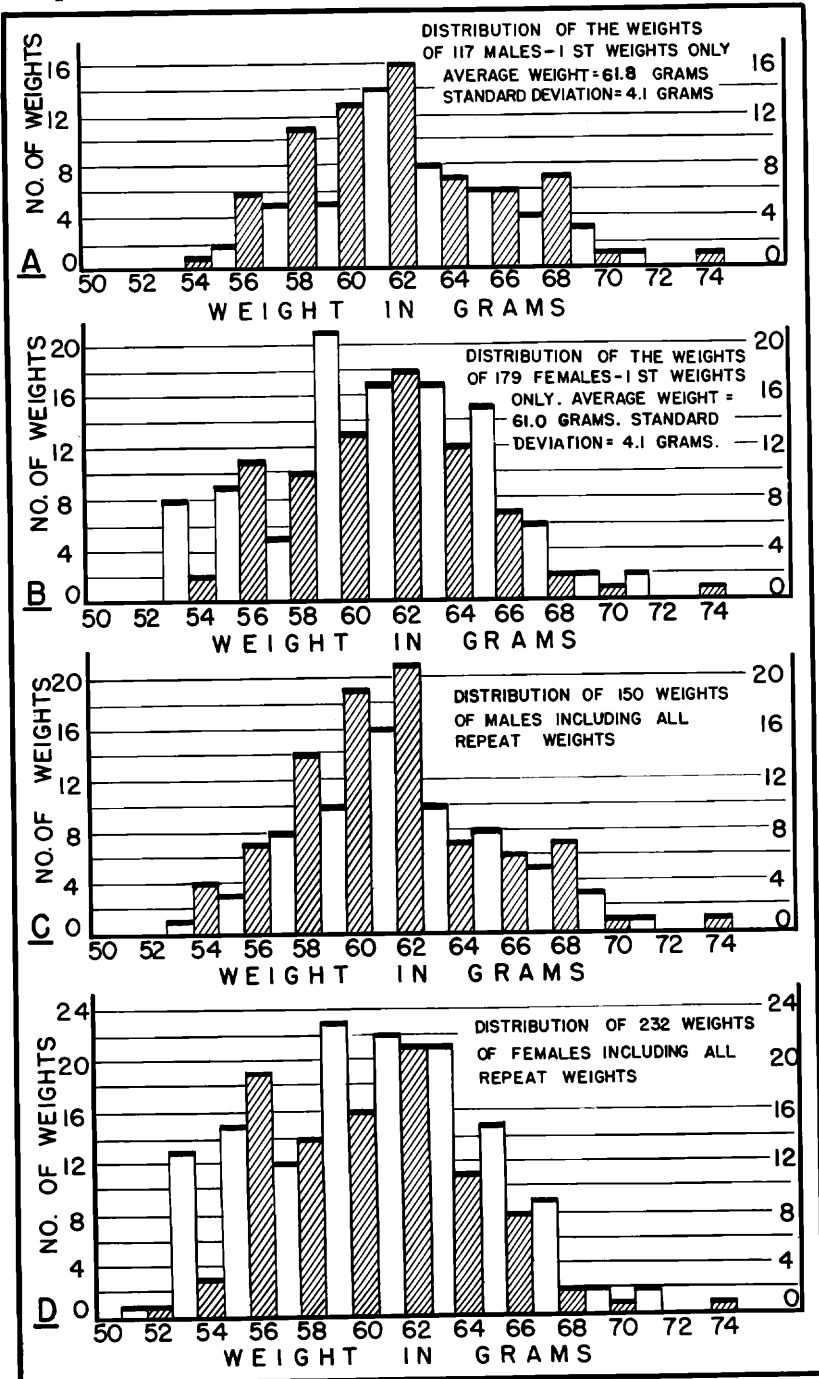


Fig. 2. The weights included in each column of the distribution graphs consist of the weights shown minus 0.4 grams and plus 0.5 grams inclusive.

loss of 1.5 grams; lightest males (L) a loss of 1.8 grams and the lightest females (M) show the greatest change, a loss of 5.8 grams.

One could readily expect the trend for all weights to show an increase during the period the birds were being weighed instead of a decrease; for they were fed daily at many feeding stations in the city and vicinity where sunflower seeds were made available. However, the quantity of seeds provided daily together with the numerous disturbing elements, near the feeding stations, that frightened the birds may have resulted in a food intake inadequate for their needs. Possibly, a diet which consisted so largely of a single item did not provide the necessary nutritive ingredients to maintain their early winter weight. The birds normally left the feeding stations for their roosting sites around 1 to 3 o'clock. Perhaps, between their departure and darkness they acquired additional natural woodland food to more or less balance their diet. When additional series of weights are obtained in the future in other localities they will probably amplify the work already begun.

An interesting anomaly is the fact that the trend of the weights of the heaviest females showed an increase instead of a decrease. This trend, of course, may have been accidental due to the small number of individuals involved directly although 179 birds were involved indirectly.

A female is usually the first to come from the trees to the feeding trays. These bolder birds may fare better and maintain or even increase their weights during the winter while the more timid ones obtain much less food in proportion. This observation, while a casual one among observers, may be due only to the preponderance of females in the flocks. In this instance the sex ratio is 39.5% males. In 1947 two Northampton stations reported 45.2% and in the same year Parks at Hartford reported a percentage of 25.8 (Mason and Shaub, 1949, p. 17). In 1946 (Parks, 1947, p. 60) Parks' banding ratio was 44.8% males. On the average, therefore, other things being equal, a female should be the first to reach the feeding trays. Some observers, looking for an opportunity to contribute some precise data could observe and record the number of times females reach the feeding trays first and how many seconds elapse before a male arrives and starts eating.

The weight of individuals varies considerably from time to time depending chiefly upon the available supply of food and if the bird is bold enough to obtain it from precariously located feeding stations. When unmolested a grosbeak may eat several grams or more of food in a comparatively short time. We observed a female sitting alone on a small feeding tray from which she ate 43 sunflower seeds in a few minutes. The same number of seeds selected without visual aid at random from the same tray a few minutes later contained 2.95 grams of kernels after being shelled.

The compilation of the computed values for the averages, standard deviations, trends of weekly weights and the weight ranges of the several categories is given in table I.

The distribution of the weights of the males and females is shown in Fig. 2 by charts A and B respectively. These charts show a nearly normal distribution with a skewness on the side of the birds having the lighter weights. As seen from the data given in graphs (C) and (D)

TABLE I

Sex and Category	Number of weights or averages	Average weight in grams	Standard deviation (grams)	Trend of weekly weights and average weights in grams	Range of individual and average weights in grams
Heaviest males, graph (A) Fig. 1.	13	66.9	3.4	-3.2	61.8 - 74.1
Heaviest females; graph (B) Fig. 1.	13	66.9	2.8	+2.0	63.4 - 73.9
Weekly average weights of males; graph (C) Fig. 1.	13 averages	average of 13 averages 62.4	4.1 Graph (A) Fig. 2	-3.3	58.8 - 66.7
All males	117	61.8	—	—	54.3 - 74.1
Weekly average weights of females; graph (D) Fig. 1.	13 averages	average of 13 averages 60.7	4.1 Graph (B) Fig. 2	-1.5	59.3 - 65.1
All females	179	61.0	—	—	52.6 - 73.9
Lightest males; graph (E) Fig. 1.	13	57.6	2.4	-1.8	54.3 - 61.9
Lightest females; graph (F) Fig. 1.	13	55.6	3.1	-5.8	52.6 - 63.4

Fig. 1, the majority of each sex was weighed during the last half of the period when the birds were, on the average, lighter in weight. This factor together with the general decline in the weight would account for much or all of the skewness from a normal distribution. The distribution of all weights including repeats is given for the males and females in charts C and D, Fig. 2 respectively.

Another probable reason for a gradual decrease in weight is that the late arrivals from the woodlands probably come in flocks late in the winter and early spring and being hungry and less timid they may be more easily trapped and hence their lower weights would further depress the trend lines.

It is probable that the distribution of 500 weights of each sex in December or January would give a good normal curve having slightly higher average weights than those obtained.

SUMMARY

The weights of 296 Evening Grosbeaks consisting of 117 males and 179 females give an average of 61.8 grams for the males and 61.0 grams for the females. The range for the males was 54.3 to 74.1 grams and from 52.6 to 73.9 grams for the females. The standard deviation of the weights for both sexes was 4.1 grams. The trend of the weekly weight averages for both males and females showed a decrease of 1.5 grams and 3.3 grams respectively over the 13 week period. The trends of the weekly weights of the heaviest males was minus 3.2 grams, the lightest males minus 1.8 grams, the heaviest females plus 2.0 grams and the lightest females minus 5.8 grams.

REFERENCES

- MASON, EDWIN A. AND SHAUB, MARY S.
1949. Report on Connecticut River Valley Cooperative Evening Grosbeak Survey. *Bird-Banding*, 20(4): 169-179.
- PARKS, G. HAPGOOD
1947. The Evening Grosbeaks Return to Hartford. *Bird-Banding*, 18(2): 57-76.
- ROBERTS, THOMAS S.
1932. The Birds of Minnesota. 2 vols. *Univ. of Minn. Press*, Minneapolis.
159 Elm Street, Northampton, Massachusetts.

RETURNS FROM BANDED BIRDS

BY MAY THACHER COOKE

This is the final paper in this series and gives a number of interesting returns of passerine birds, the majority of which have been found in checking over the returns before filing. A few, however, are older records that have come to light in the course of other studies, and which even now seemed worthy of publication.

As in previous lists, an asterisk preceding the number indicates that the bird was known to be a bird of the year when banded.