TAKING BODY WEIGHTS OF BIRDS[1]

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OUR feathered folk have stayed the attention of observers in practically every part of the world. Indeed, they have inspired and called forth a ponderous literature, some of which dates back to very early times. Yet, it seems extremely surprising to find, when one examines any considerable portion of the more accessible publications, that there is very little available data concerning the body weights of even our commonest birds.

Such matters as classification, anatomy, economic importance, life history and many others may be readily found, often discussed at great length, but if a search is directed toward a discovery of the average weight of a Bluebird or of a Robin, it is likely to prove both discouraging and practically fruitless. Why is this?

Perhaps the popular interest in birds may not be particularly attracted to the fact that a House Wren weighs not more than four- to five-tenths of an ounce or that the robust English Sparrow weighs on the average only a trifle over one ounce. Be that as it may, ornithologists are embarrassingly confronted with the pertinent fact that there exists a big gap in our sum total of information about birds which needs filling in with exact knowledge. In fact, a large amount of detailed data bearing upon this subject must come forth before many of our more obscure ornithological problems can be solved.

Andrews[2] says, ". . . the weight of the song bird is not a feature recorded by the ornithologist to any extent. To find the weight of a Cardinal Bird we must either shoot one or look for information in unusual publications. . . ."

To date, with the exception of a few scattered references of minor importance, only four publications[2], [3], [4], [5] dealing with wild

[1] Portions read before the Indiana Academy of Science December 3, 1926, under title "Weights of Banded Birds."

[2] Andrews, E. A.—Usefulness of Our Song Birds Through Soil and Vegetation. Auk, Vol. XLIII, No. 4, Oct. 1926.

[3] Heinroth, O.—Die Beziehungen zwischen Vogelgewicht, Eigewicht, Gelegengewicht und Brutdauer. Ornithologische Monatsberichte, Bd. 32, 1915.

[4] Krohn, H.—Vogelgewichte. Ornithologische Monatsberichte, Bd. 32, 1915.

[5] Whittle, C. L. & H. G —Some Bird Weights. Bull. Northeastern Bird-Banding Assoc. Vol. II, No. 2, April, 1926.

bird weights have come to my attention. It is not intended to imply by this, however, that I have an exhaustive acquaintance with bird literature. Two of the articles referred to are published by German authors and are quite inaccessible to the average American bird student.

There is no doubt in the author's mind that there is a genuine need for accurate, systematic measurements of the body weights of all our wild birds. An example will perhaps be sufficient to illustrate the point in question.

Whittle[1] says, "About April 7, several Song Sparrows appeared, four of which were large rangy birds averaging 2.90 grams heavier than the average weight of the first group.—Apart from the interest these birds have as constituting a possible migratory unit, there remains the interest due to their apparent greater weight than the average of the eastern Song Sparrows. . . At Mrs. Whittle's banding station in Peterboro, N. H., for two successive years in October a few of this type of Song Sparrow have appeared in her traps and have been banded, and her notes describe them as 'large rangy birds.' We have even come to think of them as constituting a possible example of a northern race of the Eastern Song Sparrow, which has never been obtained on its breeding grounds and which at present is represented by the abnormally large birds in our museums, birds collected perhaps only as migrants."

An incident from the author's bird banding experiences has a direct bearing upon the above citation and is given here to illustrate further the need for data concerning bird weights.

At 8:45 a.m. on February 18, 1926, two exceptionally heavy Song Sparrows were taken from the same trap and carried into the laboratory to be banded and weighed. During a bit of excitement the door of the gathering cage was accidently pulled open. Before it could be closed both birds escaped and were instantly killed by flying forcibly against the window.

In my four years previous banding experience, Song Sparrows had been caught and banded during the winter months which were notably larger and heavier than those caught at other times,

[1] Whittle, C. L.—On the Nature of the Relationship Existing Among Land Birds During Sustained Aerial Migration. Auk, Vol. XLIII, No. 4, Oct. 1926.

though up to this time no attempt had been made to weigh or measure the larger birds.

It was decided to take advantage of the above situation in order to determine whether the excessive weight might not be due to fat or perhaps to a very early development of the sex organs. Both birds were accordingly dissected only to find that the sex organs were exceedingly small—so small, in fact, that the bird of lighter weight was not determined to be a female until after microscopical examination of frozen sections revealed the presence of very small oöcytes (eggs).

Removal of the contents of the crops showed that each bird contained less than one-fourth of a gram of food material although the average crop-capacity was subsequently estimated to be between three and four grams. There appeared to be no sign of fat in either bird.

The length of the male was 6.8 inches: that of the female 6.7 inches, about one half an inch longer than the average Eastern Song Sparrow. Both Song Sparrows were of course weighed immediately following the accident. It was found that the male weighed 26.5 grams: the female 26.0 grams. Subsequent weights of 39 other Song Sparrows yielded an average of 22.5 grams per bird. As for plumage, I was unable to detect any difference from that found in the average Eastern Song Sparrow.

While the above data are by no means conclusive, it is certainly suggested that there is perhaps a larger, more robust race of Eastern Song Sparrow, found during the breeding season only at the northern limit of the Song Sparrow range.

Whittle was the first to call attention to these larger, heavier Song Sparrows as determined by taking their weights. He was also first to suggest the possibility of a northern race of the Eastern Song Sparrow. It is interesting that both Whittle and I have arrived at this hypothesis by the weighing method. The above dissections lend additional weight to the hypothesis.

The point is clear, I take it, that there is an actual need for accurate information concerning the weights of wild birds, and, the primary purpose of this paper is to demonstrate to bird banders that it is quite practical for them to contribute valuable data on bird weights, at very small cost for new equipment, or additional expenditure of time.

The first difficulty encountered by the author in weighing birds was the securing of a suitable, accurate scale at small cost. After consideration of many scales a Dietetic Spring Balance[1] was decided upon, first, because no time-consuming manipulation of weights is required, and second, because the cost is not great. The scale used had a capacity of 250.0 grams and was determined to be accurate to about 0.5 of a gram. Since a fat Bob-White weighs only about 190 grams, it is apparent that the capacity is ample for the needs of the average bird bander.[2] Scales of the same kind, but of greater capacity may be secured from the same maker.

The Dietetic Spring Balance has the advantage of a movable dial, by means of which the tare-weight of the bird container may be neutralized, and the weight of the bird read off directly without subtraction.

A number of box-like containers to hold the bird while being weighed were experimented with, but after a number of trials and estimates of the time required, a simple cloth sack was finally used exclusively. This sack had a length of about twelve inches, and an opening with diameter of about six inches. The material of the sack was of soft Canton flannel, of moderately heavy weight, though a great variety of materials might serve equally well.

To weigh a bird, the cloth sack was placed on the scale and the movable dial turned clockwise until it registered zero with the pointer. After banding, the bird was quickly inserted into the sack and held in the closed end while the opposite hand grasped it from the outside. The free end of the sack was then wrapped snugly about the bird so that the wings were securely pinned against its sides in a natural position. Thus folded within the bag, the bird was simply laid upon the pan of the scale and the weight read off directly. The sack requires no drawstring because experience shows that even the most nervous birds remain perfectly motionless while being weighed if they are properly wrapped within the cloth bag.

Injury by this procedure is unlikely in the hands of one at all experienced in handling live birds. That birds are unduly fright-

[1] This scale may be secured by parcel post from John Chatillon & Sons, New York City, at an approximate cost of $10.00.

[2] One ounce = 28.3495 grams.

ened is improbable because my repeat records show that numbers of individuals have submitted to being weighed by this method three or more times a day for a number of days in succession. Lastly it should be added—there is no danger of smothering because the entire procedure requires not more than twenty seconds.

In a subsequent paper the author expects to publish the weights of 252 birds, comprising 25 species, banded at Johns Hopkins University, Baltimore, Maryland, and to outline some of the problems that these data suggest.

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