

A STUDY OF TUFTED TITMOUSE WEIGHTS

By Robert C. Leberman

At Powdermill Nature Reserve (Carnegie Museum's field station located three miles south of Rector, Westmoreland County, Pennsylvania) the Tufted Titmouse (*Parus bicolor*) is a common year-around resident, and a regular visitor at Reserve feeding stations during the colder months. Between 1961 and 1969, 465 titmice were banded; of these 335 were weighed on a triple beam balance at least once, with a total of 668 weights recorded. The number of weights taken for individual birds (Table 1) ranges from 1 to 12.

As a matter of general interest to EBBA members, and to make our data available to other banders for comparative purposes, two brief analyses are presented here: titmouse weight changes by month, and a comparison of their wing lengths and weights.

The average Tufted Titmouse in the Powdermill sample weighs 21.6 grams. This agrees well with the average of 21.7 grams for five birds of mixed age and sex from Kentucky (Mengel, 1965). Nine March birds from State College in central Pennsylvania (Condee, 1970) averaged 22.6 grams; our March average (83 birds) is 21.9. Condee also summarized data from a study in Tennessee where 14 birds averaged 20.5 grams. I found no published record of a sample as large as that from Powdermill.

Weights taken of individual titmice over a prolonged period show surprisingly little fluctuation. The single bird for which there is a sample of 12 weights, averaging 22.4 grams, show a variation of only 1.7 grams between a high of 23.2 and a low of 21.5. Wing lengths of this bird (#33-191781), which was banded as an immature, vary greatly, ranging from 78 to 83.5 mm. However a correlation with plumage stage is suggested: wing measurements of unworn plumage from this individual show an average of 79.3 mm. (three measurements ranging from 78 to 80) after the prebasic I molt, 82.0 after the prebasic II molt (ten measurements from 81 to 83.5), and 82.4 after the prebasic III molt (five measurements from 81 to 83). A second bird (band #104-192736) averaged 81.2 (three measurements from 80.5 to 82) when banded as a juvenile. After the prebasic I molt this bird averaged 80.2 (nine measurements, 79.5 to 81), 81.8 after the prebasic II molt (two measurements, 81.5 and 82), and 82.3 after the prebasic III (four measurements from 82 to 83). Although the samples are smaller, similar correlations between wing length and plumage stage are also suggested for other individuals in this study. It might be interesting for other banders to examine their data for a plumage stage effect in titmice as well as other species.

In Table 2 and Figure 1, the titmouse weights are plotted by monthly intervals. Although monthly variations are not large, peak weight is reached during the winter in December and January when the birds are feeding eagerly and they are wearing a full (unworn) plumage. July weights are the lowest. During this month immature birds predominate, and seventeen young birds average 20.0 grams. The single bird known to be an adult weighs a very low 19.6 grams. Unfortunately the age of an individual banded in July 1961 and weighing 23.3 grams, was not recorded. In July adults the energy requirements for the care of the young, and a decrease through wear of the feather covering should influence weight. The molt in late July and August undoubtedly also influences weight for both age groups.

A slight increase in average weight in September over the next two months may indicate the presence of a small migratory population in the area. Although the Tufted Titmouse is generally considered a non-migratory species, Hall (1970:49) has called attention to a movement of this species in the mountains of West Virginia in the fall of 1969, where "At 3800 feet elevation the Allegheny Front Operation Recovery station is above the normal breeding range of the Tufted Titmouse ... the total of 32 banded at that station during late September suggests a hitherto unrecorded southward movement of the species." A possible migration through Powdermill and other areas is presently under study (Clench and Leberman, MS).

Wing length is often used as an index of comparative size among individuals of a species. In Table 3 and Figure 2, I have summarized the weights for each wing length for 247 titmice from Powdermill. To avoid problems of feather wear and molt, only the average wing length of individuals measured between September and January are included in the sample. Where more than one weight is available for an individual the average is used. Even without consideration of lipid levels it is obvious that weight can be correlated with wing length in this species.

It is hoped that this brief study of titmouse weights will prompt other banders to examine and publish their data on average and monthly weight of this and other species. Such results from other areas of the Tufted Titmouse's range, whether similar or markedly different from those of this station, would be of interest.

I should like to extend thanks to Mr. A.C. Lloyd for his assistance in gathering the data for this study. He and Dr. Kenneth C. Parkes are responsible for all the weights and measurements taken between December and February. I am especially indebted to Dr. Mary H. Clench, who has been generous with both her time and advice through the several drafts of this paper. Dr. Parkes also has offered several helpful suggestions on the manuscript.

LITERATURE CITED

- Condee, Ralph W. 1970. The winter territories of Tufted Titmice. *Wilson Bull.*, 82: 177-183.
- Hall, George A. 1970. The fall migration, Appalachian region. *Audubon Field Notes*, 24: 47-51.
- Mengel, Robert M. 1965. The birds of Kentucky. *Orn. Monogr.* #3: xiv and 581 pp.

TABLE 1. Number of Weights Taken for Individual Tufted Titmice.

Number of weights	Number of birds
1	205
2	58
3	25
4	12
5	11
6	11
7	6
8	5
9	1
10	-
11	-
12	1

TABLE 2. Average Weight of Tufted Titmice by Monthly Intervals.

Month	Sample Size	Weight Range	Mean Weight	Fat Estimates*			
				0	1	2	3
January	35	19.9-25.0 g	22.2 g	20	8	1	2
February	33	19.3-24.1	21.6	25	4	0	1
March	83	18.8-25.2	21.9	50	23	6	0
April	82	17.7-24.6	21.6	44	29	6	2
May	31	19.2-24.6	21.8	24	4	2	0
June	7	19.2-23.5	21.4	4	3	0	0
July	19	17.6-23.3	20.2	9	5	3	0
August	26	19.0-25.0	21.2	20	4	2	0
September	97	18.7-24.9	21.7	91	2	0	0
October	129	17.5-26.1	21.4	111	13	2	0
November	106	18.5-24.6	21.3	84	10	1	1
December	20	20.6-24.8	22.5	9	4	5	1
Totals	668	17.5-26.1	21.6	491	109	28	7

* Number of records for each class on a scale of 0-3.

TABLE 3. Wing Length and Weight of 247 Tufted Titmice.

Wing length	Weight range	Sample size	Mean
72 mm	19.1 g	(1)	19.1 g
73	--	(0)	--
74	18.2-20.3	(3)	19.5
75	18.5-21.4	(16)	20.3
76	18.7-25.0	(28)	20.7
77	19.2-22.2	(25)	20.7
78	17.5-23.7	(46)	21.0
79	20.1-23.4	(27)	21.6
80	20.1-24.4	(27)	22.0
81	20.1-24.2	(27)	22.4
82	19.9-24.9	(27)	22.6
83	21.6-24.2	(8)	22.6
84	22.2-26.1	(6)	23.8
85	22.2-23.8	(2)	23.0
86	22.6-24.5	(3)	23.4
87	24.6	(1)	24.6

FIGURE 1. Average weight of Tufted Titmice by monthly intervals.

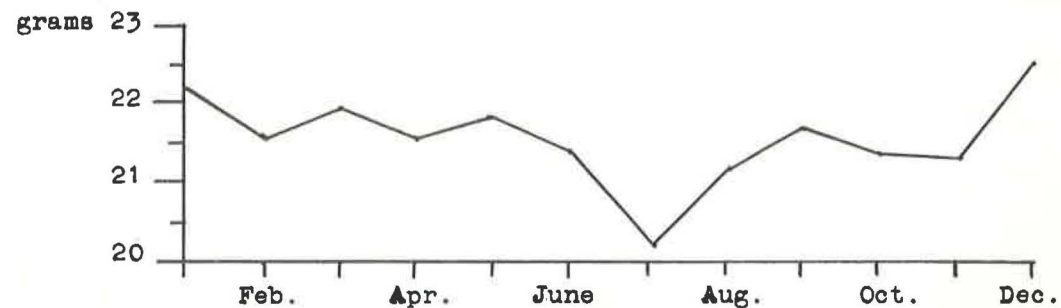
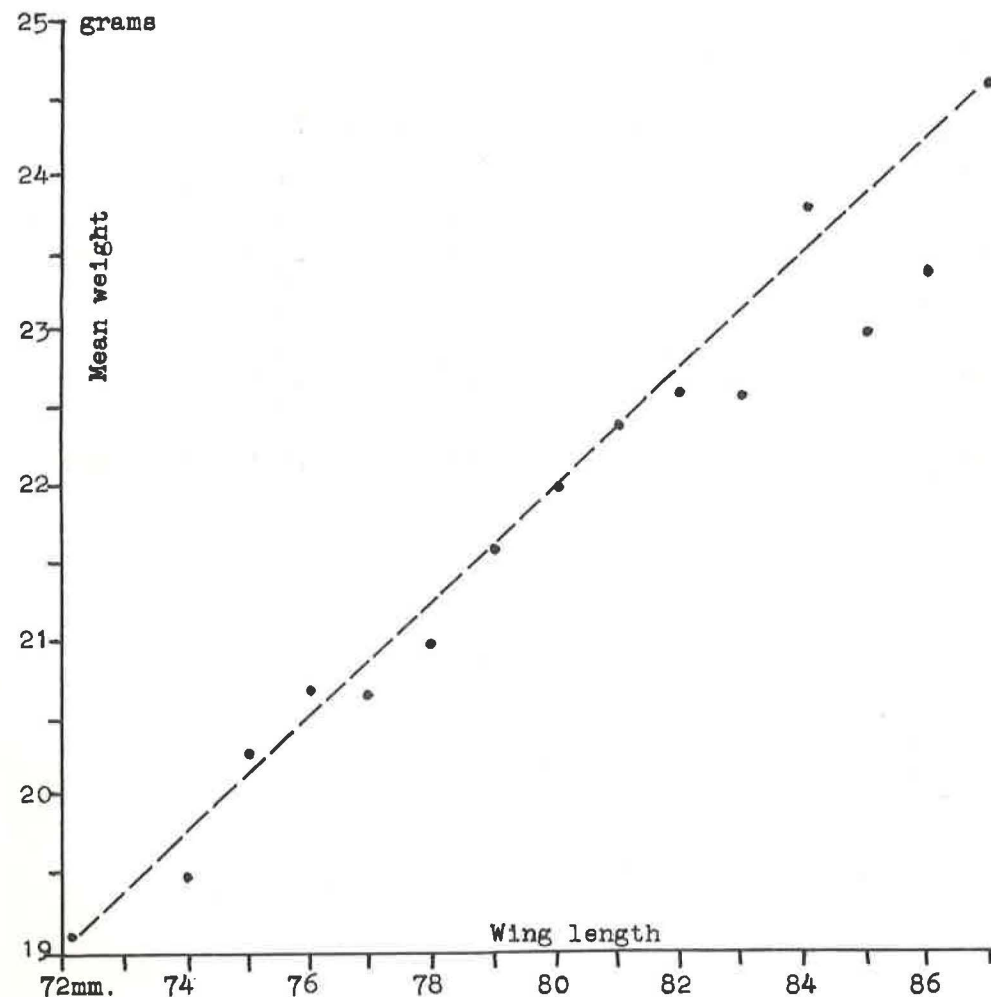


FIGURE 2. Mean weight and wing length of Tufted Titmice.



--Powdermill Nature Reserve, Star Route South, Rector, Pa. 15677

A GUIDE FOR FIELD IDENTIFICATION OF IMMATURE HERONS, EGRETS AND IBIS FOR BANDERS

By John C. Miller

Here is some information that might be of help to new and old banders who handle young Herons and Egrets. Little Blue Heron (*Florida caerulea caerulea*): The young of this species can be told from the Snowy Egret (*Leucophoyx thula thula*) by the dark blue outer primaries in the wings. These dark marks can be seen in the young bird's quills if the feathers are not yet out on the wings. You can tell by bill and leg color but only in the much older birds. The legs are greenish and the feet the same color.

Cattle Egret (*Bubulcus ibis*): The young of this species can be told from the rest of the egrets and herons by the black colored bill with a gold tip on the upper mandible, dark skin color and black legs. The eye color is hazle. They also have shorter legs than the rest of the herons and egrets.

Snowy Egret: The young of the Snowy can be told from the Little Blue Heron by the all-white primaries in the wings, also, the very young birds will not have a dark area in the quills of the wings. This is the easiest way to tell them apart. The legs and feet are good marks to use also. The feet are yellow or gold and the legs are black.

Louisiana Heron (*Hydranassa tricolor ruficollis*): The young of this bird are easy to tell apart at any banding age because they look like the adult bird-white on the belly and white going up the breast and neck and reddish around the head, neck and back. They also have dark-blue feathers in the wings with white wing coverts.

Black-crowned Night Heron (*Nycticorax nycticorax*): The young Black-crowned can be told from the young Yellow-crowned (*Nyctanassa violacea*) by the eye color, wings, back and head color. The eye color is yellow and the wings are brown. The back is brown and the head color is brown.

Yellow-crowned Night Heron: The young Yellow-crowned can be told from the young Black-crowned by the eye color, wing color, the head and back color. The eye of this bird is orange or reddish all the time. The wings, head and back color are dark greyish purple.

Glossy Ibis (*Plegadis falcinellus*): The young Glossy Ibis is an all dark bird with black feet. It also had a small curved bill which has a black ring around it, much like a Pied-billed Grebe. This ring will leave the young bird within a few weeks after hatching. The wings of the young bird are greenish black.
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