

MENSURAL SEPARATION OF BLACK-CAPPED AND CAROLINA CHICKADEES
By John P. Hubbard

The problem of distinguishing Black-capped Chickadees (Parus atricapillus) and Carolina Chickadees (P. carolinensis) is one that confronts banders in the area of overlap from New Jersey and Maryland to Illinois and Missouri. As plumage differences are often relative and because birds held for banding often do not vocalize, banders must frequently rely on measurements to separate them. Wood (1969) proposed separating them on the basis of absolute measurements of wing (chord) and tail lengths. More recently (1970) he has suggested that the tail/wing ratio be employed instead and proposed using the ratio diagram of Simon (1960). Inasmuch as banders over a wide area will be using this as a basis for separation of chickadees I have briefly assessed the mensural characters of the two species, both from Simon's study and from specimen data in publications and in the Bailey-Law collection.

An examination of mensural characters reveal that in the Northeast and to a lesser degree in the Midwest and Appalachians, the simplest way of separating these two species is on the basis of absolute tail length. As there is some overlap in this character, the tail/wing ratio is helpful in identifying intermediate birds and in checking others. Even so, the tail/wing ratio also shows some overlap and some birds cannot be identified on the basis of measurements, at least with a high degree of confidence. Wing lengths overlap to a great degree and do not seem to be useful in separating the two species in the Northeast and Midwest. Nevertheless, banders should record wing as well as tail measurements for all birds banded.

In the Northeast-Midwest areas we are dealing with one subspecies of the Carolina Chickadee (P. c. extimus) and two of the Blackcap (P. a. atricapillus and P. a. praticus). Praticus is primarily an inhabitant of the Appalachians (northward into Ohio and Pennsylvania), whereas the slightly larger atricapillus occurs widely in the rest of the region.

Northern samples of Carolina chickadee measured by Lunk (1952) had tails that averaged 4.7 to 6.9 mm shorter than those of Blackcaps measured by Duvall (1945). These differences may seem trivial, but examination reveals that very little overlap in tail length occurs between most samples of the two species. In Blackcaps the minimum tail length measured by Duvall (1945) was 57mm, whereas in all but one sample of northern Carolina chickadees the maximum was 58mm (Lunk, 1952). The exception was in the Midwest, where male carolinas ranged up to 62mm. The mean of that sample is similar to those farther east, and it appears that measurements in the Midwest may only exceptionally approach 62mm. In Maryland, Simon (1960) found all but 2 of 71 Carolina Chickadees to have tails of 57mm or less (the exceptions were 58 or 59mm), whereas all but 3 of 129 Blackcaps from there had tails of 59mm or more (the exceptions were 57-58mm). Specimens examined by me are similar in that all 11 Carolinas have tails

of 56mm or less and all but 1 of 17 Blackcaps measure 59mm or more (the exception is 57mm). From these data it appears that northeastern Carolina and Blackcapped chickadees overlap in tail length only in the range of 57 to 59mm. In Simon's sample of 104 birds (1960, table 2) and my sample of 28 specimens the two species show only 4% overlap in tail length.

In birds with tail length in the range of overlap, the ratio of tail to wing chord may aid in identification. In 17 Northeast-Midwest Blackcaps I found that this ratio ranged from 88.6 to 97.6%, compared to 80.0 to 88.2% in 11 Carolinas from the same general region. In Maryland, Simon (1960, table 3) found the range in 38 Blackcaps to be 93.3 to 100% (mean 96.1%) while 66 Carolinas were 82.7 to 92.2% (mean 87.0%). (Simon's table 2, ostensibly based on the same data as table 3, appears to have the line separating the two species incorrectly drawn, with consequent disagreements in sample size and ratio range). Tanner (1952) found the ratio to range between 89 and 100% in 54 Blackcaps from West Virginia and adjacent areas, whereas Lunk's (1952) data on northern Carolina Chickadees yields mean values of 86.2 to 89.4% (these are based on mean tail/mean wing, and the range of individual measurements is not known). This body of information reveals that the tail/wing ratios overlap in the range of 88.6 to 92.2%, but the actual number of overlapping birds is small.

Using the above data, the following key has been constructed. With it, identification is first attempted on the basis of tail length, and if a measurement falls in the zone of overlap, identification is then attempted on the basis of tail/wing ratio. I have expanded the zone of tail measurements requiring tail/wing ratio confirmation because variation from person to person in measuring makes closer adherence to the actual observed range undesirable. It seems better to leave a bird unidentified rather than to be lulled into misidentifying one on the basis of too fine a line of distinction. The tail/wing ratios used here are those representing closest approach of the two chickadees without actual overlap. The value used for the Blackcap is 92.5%, at the lowest end of the species' range of tail/wing ratios, and for the Carolina chickadee the value is 88.5%, at the highest end of the range. Some chickadees will remain unidentified because both their tail length and tail/wing ratio fall in the zone of overlap. Plumage characters might be of use in identifying such birds.

KEY TO CAROLINA AND BLACK-CAPPED CHICKADEES

- 1. Tail length 55mm or less.....Carolina
- 1. Tail length 60mm or more.....Blackcap
- 1. Tail length more than 55 and less than 60mm.....See 2.

2. Tail length:	55.5	56.0	56.5	57.0	57.5	58.0	58.5	59.0	59.5	
Wing at most:	60.0	60.5	61.0	61.6	62.1	62.7	63.2	63.7	64.2	-Blackcap
Wing at least:	62.8	63.3	63.8	64.4	64.9	65.5	66.1	66.6	67.1	-Carolina
Wing intermediate.....	Unknown									

Banders should be alert for cases in which this key breaks down as these may indicate birds or areas in which hybridization has occurred. Such hybridization occurs locally in the Midwest (Brewer, 1963) and may be expected elsewhere. At the same time, the bander should realize that this key is tentative and based on small samples or incomplete analysis. As a result it will bear improvement and revision in the future.

References

- Brewer, R. 1963. Ecological and reproductive relationships of Black-capped Chickadees. Auk 80: 9-47.
- Duvall, A. J. 1945. Distribution and taxonomy of the Black-capped Chickadee of North America. Auk 62: 49-69
- Lunk, W.A. 1952. Notes on the variation in the Carolina Chickadee. Wilson Bull. 64: 7-21.
- Simon, S.W. 1960. Occurrence and measurements of Black-capped Chickadees at Monkton, Md. EBBA News 23: 11-12.
- Tanner, J. T. 1952. Black-capped and Carolina Chickadees in the Southern Appalachian Mountains. Auk 69: 407-424.
- Wood, M. 1969. A bird bander's guide to determination of age and sex of selected species. Pennsylvania State University, College of Agriculture, University Park, Pa., 181 pp.
- 1970. Corrections by the author for "A bird bander's guide to determination of age and sex of selected species." (1969). EBBA News 33: 107-108. Penn State Univ., College Agric., University Park, Pa.
- Rockbridge Alum Springs Biological Laboratory, Rte 2, Goshen, Va. 24439

* * *

SOMETHING ABOUT DEADLINES: We regret to have to remind authors and columnists that deadlines are set for a good reason. We still receive papers and columns as late as 15 days after the deadlines. Please submit your contribution on time so that your editor can get some banding in, at least once in a while. Aside from this, we try to get the issues in the hands of the readers as early as possible! Thank You. (Editor)

