

GEOGRAPHIC VARIATION IN THE YELLOW-BILLED CUCKOO:
CORRECTIONS AND COMMENTS¹

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My paper (*Condor* 90:473–477, 1988) on geographic variation in the Yellow-billed Cuckoo, *Coccyzus americanus*, contains an error in Table 1. The mean value (\bar{x}) for wing length of western males should read 145.01 rather than 135.01.

Another error was incorporated into the formula used to calculate *t*-test values indicating the probability of statistically significant differences between population samples. Because of this, I reported no statistically significant differences between means of bill length, depth of the upper mandible, and wing length of grouped eastern and western populations. Recalculation with a corrected formula reveals that the differences in means of wing length of both sexes are in fact statistically significant ($P < 0.05$).

The disparity between the new *t*-test results and the earlier erroneous results, which agreed with my visual examination of the graphed data, led me to investigate what minimum amount of numerical difference might be statistically significant. For wing length, given the sample sizes and character variances, the difference would be statistically significant ($P < 0.05$) if it were as small as 1.5 mm.

I also recalculated *t*-test values and probabilities of statistical difference in wing length between many of the individual samples that comprised the grouped eastern and western populations (see fig. 1 and table 2 in Banks 1988). There are no differences between samples in the eastern part of the range. Some, but not all, of the eastern samples are different from samples in

California or the Pacific Northwest. Statistically speaking, females from California differ in wing length from those of the Pacific Northwest, but males do not. California birds of both sexes differ from those of southern Baja California, but Baja California birds do not differ from those of the Pacific Northwest. These latter variations were addressed in nonstatistical terms in the earlier paper (p. 475) with the conclusion that "overall differences are minor and no clines are evident in any character."

The actual difference between mean wing lengths of eastern and western birds is 4.20 mm for males and 5.82 mm for females; western males average 3% and western females 4% larger than their eastern counterparts. Similar comparisons for bill length and culmen depth give values of 5–7% larger in the west. As reported earlier, wing lengths of nearly half the adult birds measured fall between the means of eastern and western populations, a fact that precludes the distinction of eastern and western birds on the basis of that measurement. There is, further, virtual overlap between east and west in the ranges of measurements of wing length, bill length, and culmen depth. This is an instance where a statistical difference cannot be equated to a biological or practical difference. Despite the statistical differences in mean values between grouped eastern and western populations of Yellow-billed Cuckoos, or between some of those within the western group, my interpretation of the body of data on the more than 700 specimens examined—that the species should be considered monotypic—remains unchanged.

M. L. Isler drew my attention to the error in Table 1. K. E. Franzreb and S. A. Laymon reviewed the original data and detected the error in my *t*-test values. I thank Christine E. Skelly for isolating the error in my formula and for recalculating the values. M. R. Browning, T. H. Fritts, G. D. Schnell, and C. E. Skelly read and commented on drafts of this note.

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