SEXING BY WING LENGTH
By Charles H. Blake

This problem was raised at the Ocean City workshop. No satisfactory answer could be given offhand. Actually the answer depends in large part on a decision as to how often one can afford to be wrong. A span of 1.64 standard deviations includes (in theory) 90 percent of the measurements; 2.57s includes 99 percent and 3s includes 99.7 percent. The consequence of the way these figures progress is that the greater the fraction of the measurements we include, the greater the accuracy of our estimate of the sex of a given bird but the fewer the birds that may be sexed.

Let us look first at a case where sexing by measurement offers no problem: adult Ruby-throated Hummingbirds. For the male the observed extremes are 39 and 43 mm. and the mean is 39.9 ± 0.92. The mean plus and minus 3 standard deviations gives a range 37.1 - 42.7 mm. The corresponding figures for the female are: range 44 - 48; mean 45.7 ± 0.45; mean +3s, 44.4 - 47.0. Evidently, on the basis of the samples available, any adult can be sexed by wing length.

When we turn to juvenile Cardinals the picture is very different. For males, range 85 - 92; mean 87.1 ± 2.3; mean +1.64s, 83.3 - 90.9; mean ± 2.57s, 81.2 - 93.0. For females, range 81 - 88; mean 85.0 ± 1.7; mean +1.64s, 82.2 - 87.8; mean +2.57s, 80.5 - 89.5. Let us now be clear as to just what questions we are asking. If we consider the means +1.64s, then all birds with wings over 87.8 are taken to be male and our question is: what percent of males can be distinguished by wing length alone from 90 percent of females? Similarly, birds with wing under 83.3 are assumed females and what percent of this sex can be distinguised from 90 percent of males? In using this criterion we are also saying that about 5 percent of our allocations in either case will be wrong. Why 5 percent? Because we are actually dealing with only one tail of the distribution. The answers to our questions are: that we can sex 37.7 percent of the males and 25.3 percent of the females.

Now we ask the same sort of questions but use means +2.57s. We will be wrong only half a percent of the time, but we can sex fewer birds: 14.4 percent of males and a mere 0.8 percent of females.

All this depends on the assumption that the distribution of wing lengths is Gaussian (normal). There is no a priori reason why this assumption should be correct. Even a small departure from normality might considerably affect the proportion of a given sex which could be sexed by wing length alone. I have been able to satisfy myself by an artificial example that this is, in fact, true. To examine the distribution of wing length adequately in a given age and sex of a single species requires measurement of a minimum of 500 individuals. This large number is needed to yield the data for a smoothed curve, although the statistical parameters, such as mean and standard deviation, are sufficiently accurately derived

from 25 to 50 measurements. It might appear that we could use the observed range of lengths. The trouble is that the range increases with sample size up to a limit but in an unpredictable fashion.

We have considered here easy cases in which age and sex could be determined by plumage. If sex cannot be determined we may have the Purple Finch problem where brown males and all females have the same wing length characteristics. We as yet know the wing length changes related to age and sex for only a few species. The general conclusion is that sexing by wing length alone is usually quite liable to error. The further we go toward eliminating the errors the more likely we are to eliminate the answers as well.

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MISGUIDED AMERICAN REDSTART
By Frederick S. Schaeffer

I was pleasantly surprised to learn recently from the Banding Office that one of the American Redstarts I banded during Operation Recovery 1964 was recovered.

#109-00861, an immature female American Redstart which, when it was banded in the John F. Kennedy Memorial Wildlife Refuge (Tobay Banding Station) near Jones Beach, Long Island, N.Y. on September 26, 1964 decided that going south wasn't good enough! Instead, it was found dead in East Cleveland, Ohio sometime in October 1964. The exact date was not specified and the finder has not yet answered my request for it.

I find this recovery rather odd, particularly since it was so late in the Redstart migration, but perhaps far more birds than we suspect stray off their migration path.

If anyone has any information as to similar instances, I would be eager to get in touch with them.

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