Global Bird Traits Database
Biometric Measurements Protocol

Bill length: measured in two ways using callipers (see Fig 1).

1) Total Culmen. This is taken from the tip of the bill to the base of the skull.

2) Length of bill from nostril. From the anterior edge of the nostrils to the tip of the bill (hook the callipers into the anterior edge of the nostril when taking this measure). The anterior edge is the edge of the nostrils closest to the tip of the bill.

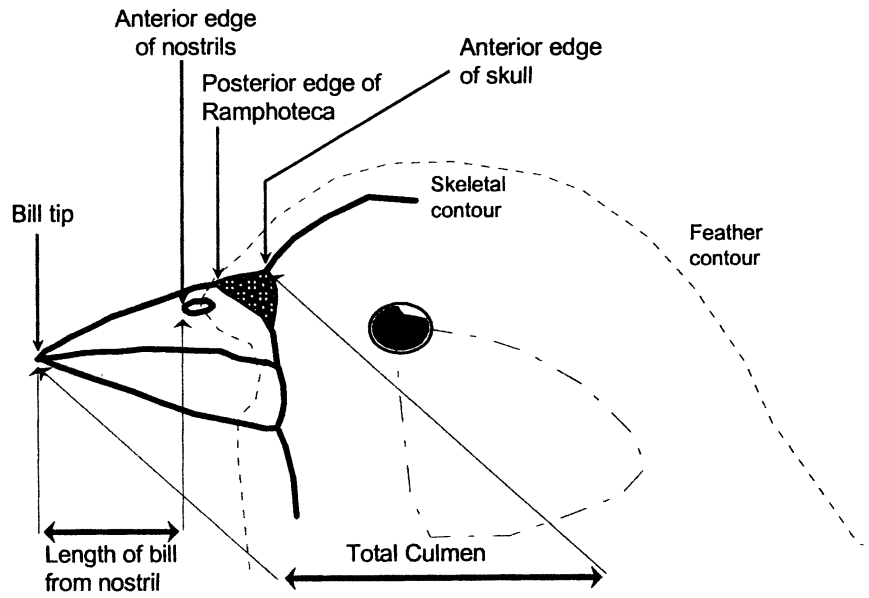
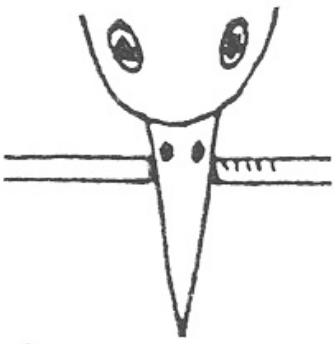


FIGURE 1. Lateral view of the head of the Citril Finch illustrating the field bill measurement landmarks. Both the feather and the skeletal contours are shown.

Bill length measures (from Borras et al. 2000).

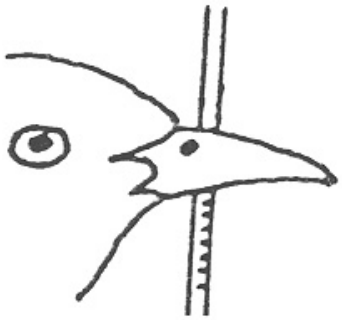
3) Bill width: measured in 1 way using callipers.

Bill width is measured at the anterior edge of the nostrils, looking at the bird's head from the top.



4) Bill depth: measured in 1 way using callipers.

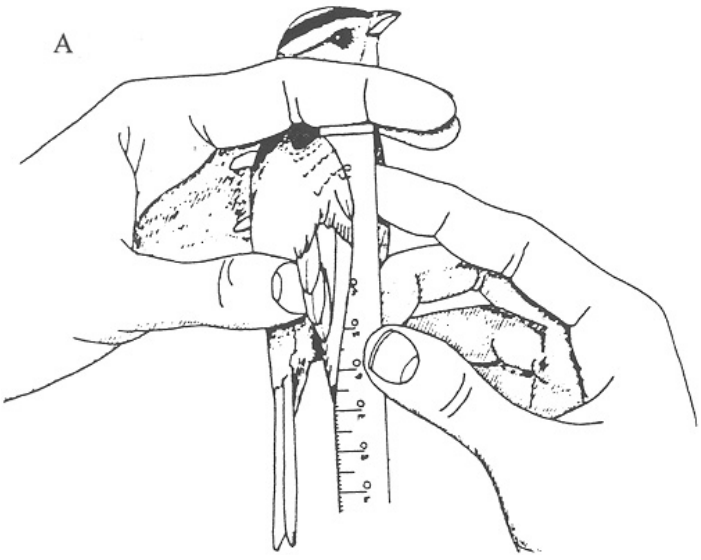
Bill depth is measured at the anterior edge of the nostrils, looking at the bird's head from the side.

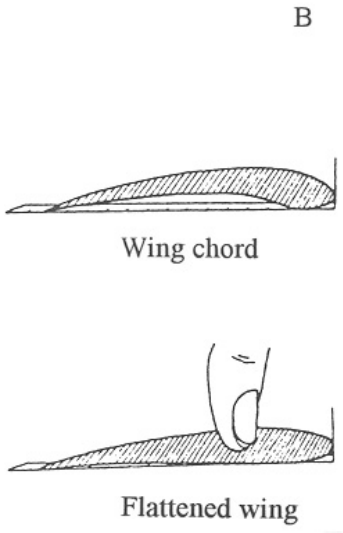


5) Wing length: measured in 1 way using an end-rule.

This is the distance from the bend of the wing to the longest primary/wing tip of the unflattened wing.

To measure the wing chord, ie the **unflattened** wing length, hold the bird so the wing is accessible for measuring (see below). Slip a ruler with a perpendicular metal stop fixed at zero under the wing. Slide the stop of the ruler until it fits snugly against the carpal joint, with the primaries parallel to and extending down the ruler. The wing chord is usually read to the nearest millimeter. Tilting the ruler to a 45 degree angle to the plane of the wing keeps the feathers off the ruler, reduces friction, and increases accuracy. The wing should be as close to a natural resting position as possible, ensuring that all primaries lie in their natural alignments. Do not record wing length if you know or suspect that the longest primary is missing, broken, or in molt and less than fully grown.



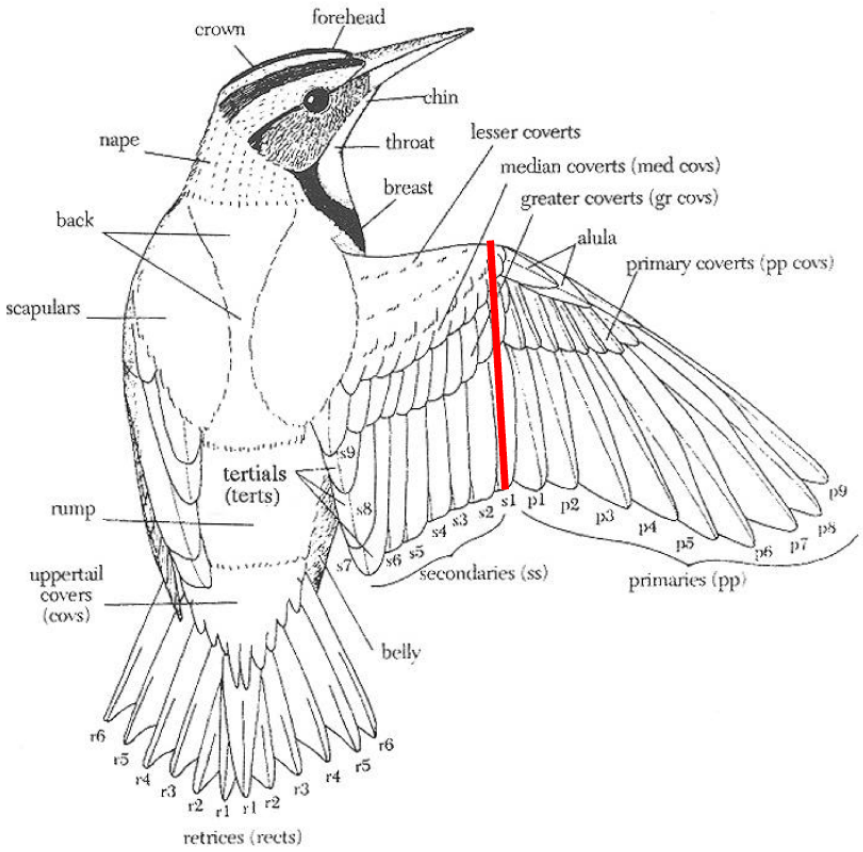


6) First secondary length (Sec1): measured using callipers.

This is measured as the distance between carpal joint to tip of the first secondary (S1) with the wing folded. It is important to search for S1 on the closed wing of specimens, which can be tricky. S1 is right next door to the innermost primary and is always shorter than the wingtip, even if only fractionally. S1 is usually the shortest feather in the closed wing (i.e. shortest distance between carpal joint to tip). Note that wing length minus sec1 = Kipp's distance.

The measurement is usually taken on the closed wing with callipers, similar to the wing length method, but instead of going to the wing tip, one side of the callipers hooks around the carpal joint and the other side touches the tip of the first secondary.

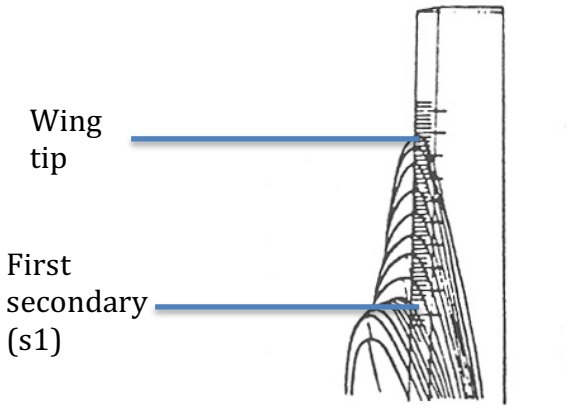
In many passerines (Figure 2), there are nine primaries (p1-p9). The first secondary is s1. If you count from 9 to 0 from p9, you will then be holding the first secondary. You can hold the bird's wing as in Figure 3 to count the primary feathers and find the innermost secondary feather. Remember the number of primary and secondary feathers can vary depending on the passerine species, and there are different numbers of primary feathers for non-passerines.



Bird feather names and the location of the S1 measurement (first secondary).

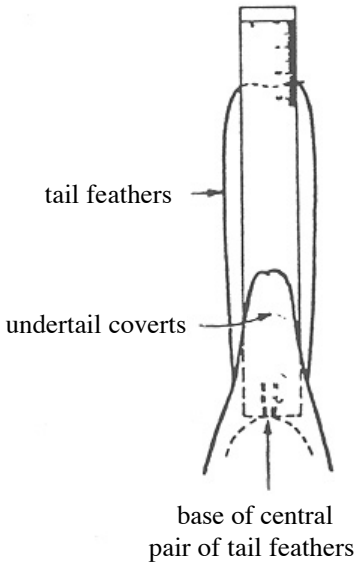
birdlifebergriver.blogspot.com

One way to hold a bird's wing to count the number of primary and secondary feathers. On a museum specimen the task is a little tougher, but can be done quickly with practice.



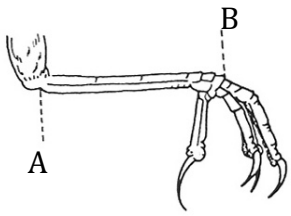
7) Tail length: usually measured using a thin ruler with zero mark flush at one end. Some museums prefer pointed tip callipers to be used, in which case the tip of the callipers needs to point to the entry point where the tail feathers enter the skin, and measure the distance from there to the wing tip.

Measure the distance between the tip of the longest rectrix and the point at which the two central rectrices protrude from the skin. Use a ruler that has the zero mark set flush at one end. A thin ruler works best. Insert the ruler between the two central rectrices, holding the ruler in line with the tail and pushing the end of the ruler firmly against the feather roots (i.e., the point of insertion of the feathers), or lay the ruler flat along the underside of the tail and push it gently against the base of the central tail feathers.



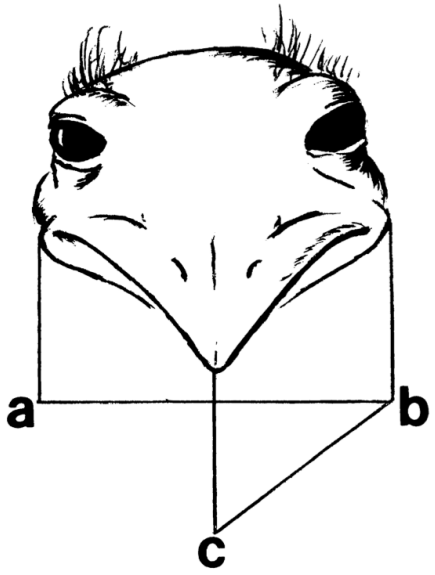
8) Tarsus length: measured in 1 way with callipers.

Measured, using callipers, as the distance from the notch at the knee (A) to the third crease at the ankle (B), with the foot folded over, using callipers.



9) Gape width

Gape width is measured using callipers as per Clark (1995). The width (Fig.1. a to b) of the bill is measured at the point where the upper and lower mandibles meet. Note that unlike the figure below (of a nestling bird), most museum specimens will not have protruding gapes.



Measuring gape width from **a** to **b**.

Clark, A.B. (1995) Gapes of sexually dimorphic blackbird nestlings do not show sexually dimorphic growth, *The Auk*, **112**, 364-374.