

**Criteria for Aging and Sexing Bay-breasted Warblers in the Fall.**—

Although the ages of warblers can be determined in the fall by skulling, criteria for separating the sexes are lacking for many species. In an effort to establish a method for distinguishing age and sex classes by a combination of plumage, wing length, and skull characteristics, I analyzed information from 268 Bay-breasted Warblers (*Dendroica castanea*) killed at TV towers during the fall. I wish to thank Dr. Charles Kemper and Mr. Donald H. Baldwin and The Royal Ontario Museum for birds from Eau Claire, Wisconsin and Agincourt, Ontario, respectively. Mr. James Baird allowed me to use his data on 11 birds killed in Needham, Massachusetts.

In the fall or first basic plumage, the Bay-breast is a medium-sized warbler, yellow-green dorsally with or without streaking on the crown, back, and upper tail coverts; the underparts are unstreaked. Chestnut may be present on the crown, throat, and flanks. The under tail coverts are buffy and the soles of the feet are grayish or flesh-colored. Separation of this species from the Blackpoll Warbler (*Dendroica striata*) is sometimes difficult, but can be accomplished by using the following criteria (characteristic of the Bay-breast given first in each case): chestnut feathers present vs. chestnut feathers absent; yellowish-green dorsally vs. gray-green dorsally; buffy under tail coverts vs. white under tail coverts (often tinged with clear yellow); gray or flesh-colored soles of feet vs. yellowish soles of feet. Distinction of age and sex: (all birds should be aged by skull ossification; see below for wing lengths.)

**Adult male:** Crown, back, rump, and upper tail coverts: yellow-green, heavily streaked with black.

Crown and throat: some chestnut feathers present.

Flanks: dark chestnut patches of varying extent.

**Adult female:** Crown, back, rump, and upper tail coverts: yellow-green with moderate to light streaking.

Crown and throat: no chestnut feathers.

Flanks: chestnut patch pale or lacking.

**Immature male:** Resembles adult female in dorsal coloration.

Crown and throat: often a few chestnut feathers present.

Flanks: chestnut patch pale but usually present.

**Immature female:** Crown, back, rump, and upper tail coverts: yellow-green. Streaking, if present, very light.

Crown, throat, and flanks: no chestnut.

It is important to remember that no unequivocal determination of sex can be made by plumage characteristics alone, and that the above can only be considered the "average" plumage for each age and sex. However, if combined with wing length, it is possible to sex 95 per cent of the birds correctly. For instance, a bird with extensive dark chestnut flanks is undoubtedly an adult male, but a moderately streaked bird with faint chestnut patches on the flanks, no chestnut on the throat or head, and a wing length of 71.5 mm. (chord) would be classed as an adult female if the skull were ossified and an immature male if unossified.

Wing lengths (chord) in mm.: (Based on 268 aged and sexed birds from TV tower kills: 11 from Needham, Massachusetts in 1958, 22 from Agincourt, Ontario in 1962, and 235 from Eau Claire, Wisconsin in 1963, 1964, and 1966.)

	Mean ( $\pm$ s.e.)	Standard deviation	No.	95% of pop.
Adult male:	74.78 $\pm$ .20	1.62	55	71.54-78.02
Adult female:	71.37 $\pm$ .19	1.45	60	68.47-74.27
Immature male:	72.97 $\pm$ .21	1.65	62	69.67-76.27
Immature female:	69.95 $\pm$ .16	1.55	91	66.85-73.05

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