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INSPIRATORY MUSCLE ACTIVITY DURING SINGING IN ZEBRA FINCHES AND COWBIRDS. J.M. Wild*, F. Goller, and R.A. Suthers. Dept. of Anatomy, Univ. of Auckland, N.Z., and Medical Sciences Program, Indiana Univ., Bloomington, IN 47405.

Singing is produced by an intricate coordination of vocal (syringeal) and respiratory muscles. Expiratory muscle activity is associated with the production of notes and syllables, which are separated by silent intervals, negative air sac pressure, and inspiratory air flow. In order to study the muscular basis of these minibreaths, and the pattern of activity in inspiratory muscles during song, we recorded combinations of EMGs from M. scalenus, M. levatores costarum, and abdominal expiratory muscles, together with air sac pressure and tracheal air flow during singing. During quiet respiration small amplitude EMGs in M. scalenus and the levator are correlated with inspirations and alternate with EMGs in expiratory muscles. During song in both species there is a discrete, high amplitude pulse in M. scalenus associated with each minibreath, and likewise from the levator in cowbird, but neither muscle is active during phonation. This suggests that these inspiratory muscles in birds do not brake expiration during song. In the cowbird there was also a ~1.4 msec period of slowly augmenting activity in M. scalenus and the levator prior to song, which was correlated with the initial part of the visual display during which the head and neck feathers are raised, but not with more vigorous parts of the display. Supported by NIH NS 29467 and NSF IBN 9411191 (RAS) and APART (FG).