467.3

ONTOGENY OF SONG LATERALIZATION IN JUVENILE NORTHERN CARDINALS. R. A. Suthers* and F. Goller, Medical Sciences, Indiana Univ. Sch. of Med., Bloomington, IN 47405

In adult northern cardinals (*Cardinalis cardinalis*), the left and right sides of the syrinx cover different vocal registers such that fundamental frequencies below about 3.5 or 4 kHz are produced only by the left syrinx and higher frequencies are produced primarily by the right syrinx. Many frequency modulated (FM) notes sweep through both vocal registers and require the bird to switch sound production from one side to the other in the middle of the frequency sweep. We have studied the development of song lateralization during song learning by juvenile northern cardinals. We recorded the rate of airflow through each side of the syrinx and the subsyringeal pressure in young male cardinals between 40 and 319 days of age. Laterally independent motor control of the aperture on each side of the syrinx is already present in early subsong but left-right switching occurs between notes or syllables rather than within a single note. Most notes are produced on the left side alone but some are produced only on the right and others with airflow through both sides. Successive syllables within the same extended expiration may be produced on opposite sides of the syrinx. Occasionally both sides generate different, non-harmonically related frequencies giving rise to "two-voice" syllables. Even though the right syrinx is closed during phonation on the left, it typically opens during each inspiration. The separate vocal registers of the adult are not evident in most subsong. Most sound is below 4 kHz, the left vocal register of adult birds, regardless of the side in which it is generated. The ability to change sides during a continuous FM sweep does not become prominent until early plastic song when syllable morphology and phrasing also become more adult-like. Although laterally independent motor control of sound production is present in subsong, the bilateral coordination and motor precision necessary for switching from one side of the vocal organ to the other within a single note require longer to develop. (Supported by NIH and NSF)