Exchange of information between female and male wrens in duet performances

Coleman, M. & Fortune, E. S., Claremont McKenna College/New Jersey Institute of Technology, USA.

Acoustic communication is a common mechanism for the exchange of information between organisms. Although acoustic information can theoretically be passed simultaneously between individuals, animals commonly regulate the flow of information by taking turns. We are studying the neurophysiological mechanisms for precise temporal regulation of the production of acoustic signals in a species of duetting wren, *Pheugopedius euophrys*.

These wrens are specialists in taking turns, producing a duet in which females and males rapidly alternate syllable production, resulting in a song that sounds as if a single bird is singing. Behavioral interventions in which the auditory delays between birds are experimentally altered demonstrate the each bird relies on acoustic cues from its partner (or partners) to influence the timing and spectral features of its own vocal performance. Neurophysiological studies reveal sex difference in how these acoustic cues are used by the nervous system. Neural activity in females but not males changes depending on context - whether the bird is singing alone versus in a duet. This result is surprising because levels of premotor activity in other songbirds are generally correlated with song production. The changes in female brain activity in relation to whether or not the male is participating may be an adaptation for taking turns within duet performances. These sorts of sex differences in the regulation of information exchange are likely to be found across taxa.