

**ACOUSTICS2008/2868**  
**The relationship between complex vocal signaling and immunocompetence in the brown-headed cowbird (*Molothrus ater*)**

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Male brown-headed cowbirds (*Molothrus ater*) use song in mate attraction and in male-male competition to signal their quality to potential mates and competitors. Singing is an energetically expensive activity for birds, so repertoire size, singing rate, and complexity of songs should be honest indicators of a male's overall quality. Resistance to parasites is a major component of male quality, and some aspects of immunity are inherited by his offspring. Females obtain indirect benefits from mating with healthy males by having healthy offspring, so song may signal immune condition to females. Male cowbirds usually sing between four and six different song types when displaying to females. These songs differ in the amount of frequency modulation required during singing, which indicates that the difficulty of production of these songs by the syrinx also varies. In this study, we investigate the correlation between immune function and singing behavior, specifically the size of a bird's repertoire and the complexity of his songs. Understanding the relationship between repertoire size, song complexity, and immune function is important to understanding the role of vocal signaling in mate attraction in songbirds.