ScienceWatch-Helping the Wimpy Neighbor

"This behavior, the formation of territorial defense coalitions, has been rarely documented in birds." – S.E. Goodwin

The breeding territories of male songbirds are bounded by invisible lines which they vigorously defend to block any encroachment by neighboring males. Once the lines are established peace generally ensues, and each male can get down to the business of raising his family. He need only be concerned with an occasional outside male trying to take over his territory. But what if it's his neighbor's territory that's being usurped? Now research published in the February 26, 2014 issue of *Biology Letters* answers this question.

The study by evolutionary biologists Sarah Goodwin and Jeffrey Podos, University of Massachusetts, Amherst, MA, shows that the male will intervene if the intruder is more robust than his neighbor, forming a coalition to drive the intruder out.

The song of male chipping sparrows (*Spizella passerina*) is fairly easy to indentify although the trilling rate may vary. Trilled songs are not easy to produce and males that can trill faster are perceived by females as being superior.

Goodwin and Podos began their study in the spring of 2012 with the aim of measuring responses of males to the playback of songs at slower and faster rates within their territories. They set up speakers and played a slow song one day and a fast song the next for each of 24 males. They also recorded the responses of the resident males to the stimulus song and to a stuffed male placed near the speaker during the playback.

As expected, the resident attacked the model more vigorously when the stimulus song was faster. Unexpectedly, in nine of the 48 trials, the neighboring male (ally) entered his neighbor's territory to help repel the simulated intruder. Also unexpected was the resident male's acceptance of his neighbor's intrusion, resulting in a coalition.

When the researchers examined relative trill rates in each case where a coalition formed, they found a consistent pattern. The ally initiated a coalition only when his trill rate exceeded that of the resident he was helping. Additionally, in all but one instance the trill rate of the intruder exceeded that of the resident, and often it was even faster than the ally.

These findings show that male sparrows eavesdrop on males in surrounding territories and become allies when they perceive a threat to themselves in the form of a more aggressive intruder on a territory containing a weak male. To a male sparrow a stronger neighbor means one that might oust him from his own territory. "We interpret this to mean that the ally not only prefers a lousy neighbor, but also specifically does not want that lousy neighbor replaced by a more serious contender," said Podos.

The results also suggest that male chipping sparrows can assess the relative strengths of neighbors and intruders by their trill rates, compare them with their own and decide whether or not to join forces with the neighbor.

Biologists have long believed that the selective advantage inherent in males forming coalitions to gain sexual partners helped spur the increase in intelligence and brain size in dolphins. Now we see the same phenomenon in a tiny bird with a tiny brain.

Clearly there is a lot going on in bird's brains that we have yet to discover.

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