

SCIENTIFIC NOTE

MATING BEHAVIOR OF *LYTTA NUTTALLI* SAY (COLEOPTERA: MELOIDAE)

On June 20, 1994, I observed aggregations of *Lytta nuttalli* Say (Coleoptera: Meloidae) on vegetation at B1 weather station on Sugarloaf Mountain, Boulder County, Colorado (el. 8,560). On other visits I did not encounter significant numbers of beetles at this site, and the aggregations appeared to have no function other than mating. The following account of their behavior is typical: At any given moment, individuals of both sexes were flying between patches of vegetation. Flight distances were as great as 10 meters, but were usually shorter. Upon landing, males clambered around until encountering another beetle. When a male encountered another male, there was a brief struggle before the interaction was terminated. If a male encountered a female, he attempted to climb onto her back. The female struggled; often, the pair fell off the vegetation and continued struggling on the ground. If a male successfully climbed onto a female, securely clamped to her back, he could prevent flight, though the females often succeeded in dislodging their suitors. The male frantically moved his abdomen, attempting to bring it into contact with the female's genitalia, while the female moved her abdomen vigorously, giving the appearance of resistance. I observed no females accepting mates without first seeming to resist.

If the male made genital contact, the female appeared unable to separate from him. Even if she could throw him off her back, the female appeared incapable of freeing her genitalia. Other studies of *Lytta* reveal that the male's aedeagus has two sharp spines which evidently engage the female's vaginal wall and allow the male control over termination of copulation (Gerber *et al.* 1971a, b. *Can. J. Zool.* 49:523-533, 1595-1610; Gerber *et al.* 1972. *Can. J. Zool.* 50:649-660). Usually, copulating pairs assumed an end-to-end position, and the larger female frequently dragged the male around behind her. Mating females often climbed vegetation and attempted to fly, but with their genitalia securely engaged, males were able to prevent female flight. Sometimes, copulating females hovered in stationary position, anchored by their mates.

If mating behavior is shaped by sexual selection mediated by male-female conflicts of interest, then one conflict facing potential mates is as follows: Although males would perhaps best be served by mating immediately, perhaps by resisting male advances for as long as possible, females gather information to assess male quality (see Thornhill and Alcock, 1983. *The evolution of insect mating systems*, Ch. 13., Harvard University Press, Cambridge). The size differences among males suggest that there is variation in male phenotypic quality, and if these differences sometimes have genetic bases as well as fitness consequences for offspring, it would benefit females to discriminate among males.

Duration of copulation may also be influenced by intersexual conflicts of interest. Though female *Lytta* can be induced to mate more than once under laboratory conditions (Gerber *et al.* 1971. *Can. J. Zool.* 49:1595-1610), their opportunities to do so under natural circumstances may be diminished by males' ability to monopolize them. The male's locking aedeagus gives substantial control over the duration of copulation (Gerber *et al.* 1971. *Can. J. Zool.* 49:1595-1610). Extended copulation is one form of mate-guarding (see Alcock 1994. *Ann. Rev. Ent.* 39:1-21); male *Lytta nuttalli* may ensure exclusive paternity at the expense of both their mate's and any other males' reproductive interests.

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