In cricket sex songs, males feel the caloric burn, study finds

June 16 2015

Laurel Symes, a postdoctoral researcher in Dartmouth College's Departments of Psychological and Brain Sciences and Biological Sciences, led a study into cricket mating calls that sheds new light on the concept of biological trade-offs. Credit: Laurel Symes

Male tree crickets may be a hunk of burning love when they're belting out their different mating songs, but they're all burning the same amount of calories no matter how they do it, a Dartmouth College study finds.

The findings shed new light on the concept of biological trade-offs—or the increase in one trait and the decrease of another trait—that allow species to evolve differently in a changing environment. For example, a male insect that produces a louder call may attract more females but also more predators.

The study appears in the journal *Evolution*.

The researchers tested for the presence of trade-offs among tree cricket species by measuring the males' acoustic characteristics, calories burned, volume and signaling time. They found that species with faster pulse rates, produced by opening and closing their wings up to twice as many times per second, did not expend greater energy per unit mass. In other words, the calories burned stayed constant regardless of the crickets' body weight because of differences in the duration and repetition of their song characteristics—short syllables repeated often or long syllables repeated less frequently.

Further trade-offs were seen in relationships between signals and body size. Small males burned few calories singing, permitting them to call for up to 80 percent of the night but at low volume. Large males produced much louder calls, but they burned far more calories and sang for as little as 20 percent of the night, likely because their wings are so long and heavy.

'Physiology, physics and ecological interactions can generate trade-offs within species, but may also shape divergence among species,' says lead author Laurel Symes, a postdoctoral researcher in Dartmouth's Departments of Psychological and Brain Sciences and Biological

Sciences who specializes in evolutionary biology and sensory ecology. 'Our findings are interesting because they are some of the clearest examples of biological trade-offs and suggest that evolutionary pathways may be tightly constrained.'

Provided by Dartmouth College

Citation: In cricket sex songs, males feel the caloric burn, study finds (2015, June 16) retrieved 24 April 2024 from https://phys.org/news/2015-06-cricket-sex-songs-males-caloric.html