USP ESALQ – ASSESSORIA DE COMUNICAÇÃO
Veículo: Science Mobile
Data: 02/10/2013
Link: http://news.sciencemag.org/plants-animals/2013/10/sex-storm
Assunto: Sex Before the Storm

Sex Before the Storm

A person might be caught off-guard without an umbrella in a sudden downpour, but rain doesn't catch insects by surprise. Moths, beetles, and aphids predict storms by sensing changes in air pressure and then alter their behavior, researchers have discovered. In particular, the new study finds that insects change their mating behaviors when the air pressure drops, which often precedes rain, or when the air pressure rises, which can signal strong winds.

"People have observed before that birds, bats, and even fish respond to changes in [air] pressure," says entomologist Maria Fernanda Peñaflor of the University of São Paulo in Brazil, a co-author of the new study. "This is the first time such behavior has been studied in insects."

Peñaflor and her colleagues knew that insect behavior was mediated by temperature, wind, and rainfall and wondered whether air pressure played a role as well. They first correlated air pressure data from a local meteorology station with the behavior of male cucurbit beetles (*Diabrotica speciosa*), green and yellow beetles about 6 millimeters long that feed on cucurbit vegetables, such as cucumbers, pumpkins, and squashes, in South America. They discovered that on days when the pressure was falling—indicating impending rain—the male beetles were less likely to walk in the direction of female pheromones, which they normally follow to pursue mates. To find out more, Peñaflor's group collaborated with researchers at the University of Western Ontario in Canada who had a controlled pressure chamber in which they could perform experiments.

With the new setup, the team studied the effects of various pressure scenarios on armyworm moths (*Pseudaletia unipuncta*), small brown moths whose larvae feed on many food crops, and potato aphids (*Macrosiphum euphorbiae*), insects that are a few millimeters long and suck sap from plants including potatoes. The scientists found that the females produced fewer pheromones, and fewer male-female pairs mated, when the pressure was either dropping or rising over a 6-hour period at a rate that mimicked what is often seen in nature before storms. But they got a surprise when they tested pairs of cucurbit beetles. Although a male won't follow pheromones to find a distant female when the air pressure is decreasing, if a

pair of beetles is already in close proximity, the male will mate with the female very quickly, forgoing normal courtship rituals, a phenomenon never seen under stable air pressure.

“It was as if they were trying to quickly reproduce before the rain came,” Peñaflor says. In the case of aphids and moths, which are more fragile than the beetles, she says, the risk of mating when a storm is on its way might be too high, even if the insects are already close to each other.

The results, which appear online today in the journal *PLOS ONE*, pave the way for studies of how other types of animals alter their behaviors in response to weather, Peñaflor says, and they could even lead to pest management techniques useful for agriculture. Her team would like to further study exactly how insects sense the pressure changes; she and her colleagues think that the outer cuticle of insects’ bodies likely contains sensors that function like barometers.

The new findings aren’t surprising to people who have been studying insects for years. Joop van Lenteren, an entomologist at Wageningen University and Research Centre in the Netherlands, says he began noticing decades ago that his insects didn’t behave the same on stormy days. “For my lab, it’s almost become standard that when the weather is poor, we skip experiments for a few days.”

But not all insect researchers have this habit, so he hopes the new findings encourage others in the field to take air pressure into account in their studies. Past experiments on insects, he says, could have been flawed if they didn’t control for this variable. “I’m doubting some older papers now, where researchers quantified insect behavior and got unexpected results.”

Fonte: Sarah C. P. Williams