

# To these flies, cicada sounds are like love songs

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Mating pair of *Emblemasoma erro*. Males and females are attracted to the sounds of a cicada known as *Neotibicen dorsatus*. Credit: Entomological Society of America

In the insect world, smells are important. Insects of course do not have noses, but they do have receptors on their antennae, feet, and other body parts that allow them to sense chemicals and odors.

Female parasitoid wasps and flies are known to hone in on their hosts (caterpillars, [cicadas](#), and other insects and arthropods) by "smelling" them—that is, they sense chemicals from other insects that attract them. Once they find the hosts, they lay eggs on or inside them, and the young that emerge from the eggs feed on them.

But according to new research published in the open-access *Journal of Insect Science*, a fly known as *Emblemasoma erro* uses sound, not smell, to locate its cicada hosts. And it's not just the females that are lured by the song of the cicadas. Males are also attracted to the sound, possibly because they know that the females will be there.

"Every summer, the grasslands of the central Great Plains ring with the mating calls of male cicadas that are trying to attract female cicadas," said Dr. Brian J. Stucky, author of the article.

Unfortunately for the cicadas, their song also attracts the unwelcome attention of gravid female *E. erro* flies that "eavesdrop" on the signals and follow them to their source, where they deposit first-instar larvae directly onto the cicadas.

In addition, the cicada songs attract male and female flies that are ready to mate. It's as if the cicada is a singles bar, and its music is a Barry White CD.

From 2011 to 2013, late July to early September, Stucky broadcasted cicada calls with a loudspeaker mounted on a wooden box and observed flies of both sexes arriving and hanging out. Some of the female arrivals were gravid, but many of them were not, so deposition of larvae was not

their goal. Indeed, males and females both demonstrated that they had procreation in mind. Males repeatedly attempted to mate with other arriving flies, including other males, and some managed to do so with females.

Stucky reaffirmed his observations by catching and counting flies that responded to the cicada calls in three different traps, with varying durations and volumes of the cicada signals. All told, he captured 110 flies, about 75 percent of which were females, including several that were not carrying larvae and thus not looking to infect the host. He reasoned that the flies had come to mate when they heard and flew to the cicada sound. Otherwise, the trip would have been an unproductive waste of time and energy.

"Hearing is a multi-functional sense in insects," Stucky said.

In the case of the [flies](#) he studied, he suggests that "hearing may have originated as a means of finding a host but has become useful in another way as well."

**More information:** "Eavesdropping to Find Mates: The Function of Male Hearing for a Cicada-Hunting Parasitoid Fly, *Emblemasoma erro* (Diptera: Sarcophagidae)," [jinctscience.oxfordjournals. ... 0.1093/jisesa/iew048](https://journals.oxford.com/journal/doi/10.1093/jisesa/iew048)

Provided by Entomological Society of America

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