

# Burying beetle larvae know the best time to beg for food

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A female beetle feeding her larvae via regurgitation. Credit: Yuki Mitaka/iScience

It's easy to imagine an adult bird standing over youngsters whose mouths

are open wide for a pre-mashed meal. It's more difficult to picture a beetle doing the same thing, but the burying beetle *Nicrophorus quadripunctatus* feeds its young by the same mouth-to-mouth regurgitation technique. In a study published in *iScience* on September 11, researchers found that burying beetle larvae can sense when the mother beetles emit a pheromone, 2-phenoxyethanol, when they are ready to feed their young. The aromatic compound not only incites the larvae to beg, but also is antimicrobial.

"The study of parental care is mainly conducted on birds and mammals, but the complexity of their parent-offspring communication sometimes becomes an obstacle for understanding the evolutionary process of the system," says Mamoru Takata, postdoctoral research fellow at Kyoto University's Laboratory for Insect Ecology and first author of the paper. "The study of a species with a simpler communication system is needed, and burying beetles are an ideal group."

The beetles breed inside of dead animals and then scavenge food from the [carcass](#), feeding their larvae as often as three times per hour during the first two days after they hatch. Takata's research focused on how the larvae know when to beg.

Past research has theorized that feeding was a simple response to a begging signal, when a larva lifts the front half of its body and moves its head up and down, but that could be dangerous for the larvae: begging too often without a food reward would be a deadly waste of energy. By emitting a pheromone that effectively says that dinner is ready, the beetles and their larvae can make efficient decisions about feeding times. Additionally, the antimicrobial characteristics of the pheromone imply that the compound evolved primarily as a form of shared immunity but now fills a secondary role in parent-offspring communication.

But a carcass is a limited resource, and the beetles can tell if there are too many mouths to feed. "They can estimate the amount of carcass, and if the number of larvae [is] too much for it, they eat or just kill some of the larvae by biting," says Takata. There are also times when male beetles will invade a carcass and kill [larvae](#) that are not their own. "But please note that the cannibalism is limited to the situation, and after regulation, it seems the beetle family is almost peaceful."

**More information:** *iScience*, Takata et al.: "A parental volatile pheromone triggers offspring begging in a burying beetle"  
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