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News

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Termites tune in to food frequencies

[Roxanne Khamsi](#)

Insects choose their meal using vibration signals.

Forget the taste of your meal, how does it sound? That's the question that termites ask themselves when chomping into wood, an Australian study suggests.

It seems that these insects choose what to eat according to the way each piece of wood vibrates in response to their gnashing jaws. The finding could lead to new approaches to controlling termite damage, say researchers.

The scientists examined the feeding behaviour of the drywood termite species *Cryptotermes domesticus*, which thrives in several continents. Close relatives in the Kaloterme termite genus wreak havoc on homes in Europe. Scientists know that *C. domesticus* prefers eating small rather than large pieces of wood in the wild, but they were mystified about exactly how the termites made this choice.


So the Australian group recorded the sound generated as termites tunneled into pinewood, a common building material. "Almost all wood-eating pest termites find it very palatable... unfortunately," says Theodore Evans of the Commonwealth Scientific and Industrial Research Organisation in Canberra, Australia.

Along with engineer Joseph Lai of the Australian Defence Force Academy in Canberra and his colleagues, Evans found that when termites chewed their way through a 20-millimetre-long wood block, the sound of their bites created a vibration of 7.2 kilohertz. Termites in a similar block that was 160 millimetres long generated a slower vibration at 2.8 kilohertz, which would match a high F note from a xylophone.

Size matters

Given the choice, the termites showed a clear preference for the smaller block. They were even more attracted than normal to the 20-millimetre block when its usual 7.2-kilohertz sound was boosted in volume. In this case, the insects burrowed four times more into the shorter block than the longer, clearly preferring the sounds of a small block of wood.

The discovery about termites' use of sound has excited the scientific

 Noisy eating helps termites choose their meal.

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community. "This is a landmark paper that will stimulate completely new directions of research," says termite expert Barbara Thorne of the University of Maryland in College Park. The findings appear this week in the *Proceedings of the National Academy of Sciences*¹.

As surprising as the termite insight may seem, even people use sound to select food. "Humans can appraise the quality or condition of food using vibratory cues: tapping a melon gives is a good indication of ripeness," Evans points out.

Sound diet

So why do these termites prefer smaller blocks of wood? "I think that drywood termites have evolved a preference for smaller pieces of wood because their greatest competitors are not interested in small pickings," Evans explains.

Evans says that a penchant for smaller wood, which is more easily transported from place to place, has also allowed these termites to spread easily. He adds that a better understanding of how termites select food could help people to stop the termites' damaging rampage through their best furniture.

The study only looked at one type of termite, explains Thorne. "Other species and types of termites may well prefer larger pieces of wood," she says. After all, "humans tend to think that bigger is better, particularly when selecting among pieces of cake or chocolate."

"This was the first study of its kind and we are expanding our work to other termite species, including subterranean termites," says Evans.

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References

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