

Snakes can hear more than you think

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Woma python. Credit: Dr Christina Zdenek

A University of Queensland-led study has found that as well as ground vibrations, snakes can hear and react to airborne sound.

Dr. Christina Zdenek from UQ's School of Biological Sciences, in

collaboration with QUT's Professor Damian Candusso, played three different [sound](#) frequencies to captive-bred snakes one at a time in a soundproof room and observed their reactions.

"Because snakes don't have external ears, people typically think they're deaf and can only feel vibrations through the ground and into their bodies," Dr. Zdenek said.

"But our research—the first of its kind using non-anesthetized, freely moving snakes—found they do react to soundwaves traveling through the air, and possibly human voices."

The study involved 19 snakes, representing five genetic families of reptile.

"We played one sound which produced ground vibrations, while the other two were airborne only," Dr. Zdenek said.

"It meant we were able to test both types of 'hearing'—tactile hearing through the snakes' belly scales and airborne through their internal ear."

The reactions strongly depended on the genus of the snakes.

"Only the woma python tended to move toward sound, while taipans, brown snakes and especially death adders were all more likely to move away from it," Dr. Zdenek said.

"The types of behavioral reactions also differed, with taipans in particular more likely to exhibit defensive and cautious responses to sound."

Dr. Zdenek said the different reactions are likely because of evolutionary pressures over millions of years, designed to aid survival

and reproduction.

"For example, woma pythons are large nocturnal snakes with fewer predators than smaller species and probably don't need to be as cautious, so they tended to approach sound," Dr. Zdenek said.

"But taipans may have to worry about [raptor](#) predators and they also actively pursue their prey, so their senses seem to be much more sensitive."

Dr. Zdenek said the findings challenge the assumption that [snakes](#) can't hear sound, such as humans talking or yelling, and could reshape the view on how they react to sound.

"We know very little about how most snake species navigate situations and landscapes around the world," Dr. Zdenek said.

"But our study shows that sound may be an important part of their sensory repertoire."

"Snakes are very vulnerable, timid creatures that hide most of the time, and we still have so much to learn about them."

The research has been published in *PLOS ONE*.

More information: Christina N. Zdenek et al, Sound garden: How snakes respond to airborne and groundborne sounds, *PLOS ONE* (2023). DOI: 10.1371/journal.pone.0281285 , journals.plos.org/plosone/article?id=10.1371/journal.pone.0281285

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