

# Vision assists ants to stabilise their head – until darkness falls

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The nocturnal bull ant *Myrmecia pyriformis*. Credit: Ajay Narendra

A study of Australian endemic nocturnal bull ants has found that they rely upon visual cues to stabilise their heads when navigating uneven ground.

The Macquarie University study, in collaboration with researchers from Australian National University, found that nocturnal bull ants stabilise their head using visual information. The ability to stabilise their head deteriorates as it gets dark. The study has taken the first steps towards identifying how insects acquire visual information in low light.

"We know that ants memorise visual scenes to navigate to specific places, such as their nest or a food source," said researcher Ajay Narendra.

"To compare a previously memorised view to the current one, they need to have a stable visual system. Imagine how distorted the view would appear when the head is rolled as they walk over a round twig or leaf!

"We wanted to see whether nocturnal ants employ compensatory head movements when their body rolls, and to what extent this ability is affected as light levels fall."

The study found that [ants](#) use [visual information](#) to keep their [head](#) stable (and in turn their visual system) when the body rolls. But in complete darkness they used non-[visual cues](#), most likely mechanosensory information, to navigate.

The researchers hope their learnings can be applied to new technologies, for example in navigation on uneven ground or for night-vision surveillance.

"Ants with miniature brains are extremely competent visual navigators even in dimly lit environments. If we can pinpoint how often they capture visual scenes and how many scenes they store, these can be incorporated in autonomous agents," said Ajay Narendra.

**More information:** Chloé A. Raderschall et al. Head roll stabilisation

in the nocturnal bull ant: implications for visual navigation, *The Journal of Experimental Biology* (2016). [DOI: 10.1242/jeb.134049](https://doi.org/10.1242/jeb.134049)

Provided by Macquarie University

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