

Dung beetles use stars for orientation

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You might expect dung beetles to keep their "noses to the ground," but they are actually incredibly attuned to the sky. A report published online on January 24 in *Current Biology* shows that even on the darkest of nights, African ball-rolling insects are guided by the soft glow of the Milky Way.

While birds and humans are known to navigate by the stars, the discovery is the first convincing evidence for such abilities in insects, the researchers say. It is also the first known example of any animal getting around by the Milky Way as opposed to the stars.

"Even on clear, moonless nights, many dung beetles still manage to orientate along straight paths," said Marie Dacke of Lund University in Sweden. "This led us to suspect that the beetles exploit the starry [sky](#) for orientation—a feat that had, to our knowledge, never before been demonstrated in an insect."

Dacke and her colleagues found that dung beetles do transport their dung balls along straight paths under a starlit sky but lose the ability under overcast conditions. In a planetarium, the beetles stayed on track equally well under a full starlit sky and one showing only the diffuse streak of the [Milky Way](#).



Researchers gave dung beetles caps to block out light. Credit: Marcus Byrne

That makes sense, the researchers explain, because the [night sky](#) is sprinkled with stars, but the vast majority of those stars should be too dim for the beetles' tiny [compound eyes](#) to see.

The findings raise the possibility that other nocturnal insects might also use [stars](#) to guide them at night. On the other hand, dung beetles are pretty special. Upon locating a suitable dung pile, the beetles shape a piece of dung into a ball and roll it away in a straight line. That behavior guarantees them that they will not return to the dung pile, where they risk having their ball stolen by other beetles.

"Dung beetles are known to use celestial compass cues such as the sun, the moon, and the pattern of polarized light formed around these light sources to roll their balls of dung along straight paths," Dacke said.

"Celestial compass cues dominate straight-line orientation in [dung beetles](#) so strongly that, to our knowledge, this is the only animal with a visual compass system that ignores the extra orientation precision that landmarks can offer."

More information: *Current Biology*, Dacke et al.: "Dung beetles use the Milky Way for orientation." [dx.doi.org/10.1016/j.cub.2012.12.034](https://doi.org/10.1016/j.cub.2012.12.034)

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