

Naked mole rats migrate above ground with no help from the moon

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Stan Braude, professor of the practice of biology in Arts & Sciences, has been studying naked mole rats in the wild in eastern Africa for more than 30 years. Credit: Stan Braude

A full moon conjures an image of a person transforming into a

werewolf—a mythical story of moonlight explaining the unexplainable. While werewolves may only exist in the movies, unusual animal and human behaviors noticed under a full moon are real. Could moonlight be responsible?

A new study published in the *African Journal of Ecology* considers the role of the moon in driving a particularly rare occurrence: the solo journey of a naked mole rat from one underground colony to start a new one.

Stan Braude, professor of the practice of biology at Washington University in St. Louis, has been studying [naked mole rats](#) in the wild in eastern Africa for more than 30 years. Braude previously discovered how naked mole rats disperse—or leave their underground colony to mate with an outsider and form a new colony—by migrating above ground.

The factors driving this rare behavior are not well understood. In the new study, Braude and his collaborators asked for the first time whether naked mole rats are using moon phases to time their dispersal.

A number of publications on other [rodent species](#) suggested that if the animals depend on vision to avoid predators, they might not be active at new moons when the sky is the darkest. But if animals, such as the naked mole rats, instead depend on hearing and smell, they would be more likely to be active at new moons, when they can avoid detection.

"We were so sure that naked mole rats would only be above ground on nights without moonlight, but the data proved us wrong. They don't appear to entrain to moonlight at all. Our next hypothesis to test is that cues from the [social environment](#) are triggering this behavior."

Capturing naked mole rats

Naked mole rats are almost blind. They spend the majority of their lives underground in tunnels that they dig with their teeth. Naked mole rats live most of their lives in their natal colony as workers, helping out their mothers.

And when their time comes to leave the colony to breed, they switch from being active any time during a 24-hour cycle to being nocturnal. They put on fat and become less active in preparation for the journey they will undergo to start a new [colony](#). A journey that requires going above ground.

The safest time for them to go above ground would be during a new moon when the night is darkest—or, at least, that was the expectation.

To find out, Braude and his team captured dispersing naked mole rats in Meru National Park, Kenya.

They used a collection approach called a drift fence to help guide the movement of animals walking in the open field into a specific location. In this case, the drift fences led to pitfall traps containing buckets.

The idea came to Braude from work that Owen Sexton did 30 years ago to study the migration of salamanders at Tyson Research Center, the environmental field station for Washington University in St. Louis. Sexton's group put the drift fences in the woods to study when the salamanders were migrating to the pond.



A drift fence gently guides a naked mole rat to a collection bucket. Credit: Stan Braude

"Salamanders cannot jump. Neither can naked mole rats. If you put a small barrier in their way they have to go around it," Braude said.

And they did. Braude and his team successfully collected nine dispersing naked mole rats using this method—an astonishing accomplishment, given the rarity of these walkabouts.

Migrating with or without the moon

Capturing naked mole rats in the wild allowed Braude and his team to

definitively conclude that naked mole rats do in fact migrate away from their natal colonies by walking above ground.

They also knew the exact dates when the nine naked mole rats were above ground. Now they could ask whether there is a correlation between moon phase and their presence above the ground.

The short answer was no.

"There truly is no association in either direction with the amount of light or lack of light," Braude said.

Dispersing naked mole rats did not avoid a [full moon](#) and did not prefer a new moon. They do not disperse according to the phases of the moon, the co-authors wrote.

Births also not tied to moon phase

Braude and his collaborators also used data from captive naked [mole rats](#) at the Leibniz Institute for Zoo and Wildlife Research in Berlin to consider the association between [moon](#) phase and litters born. In this facility, the animals live in a room with windows that allow in sun and moonlight.

"They had dozens of successful births and had a wealth of birthdays," Braude continued.

Some 173 litters in 23 colonies were born across every day of the lunar cycle during an 11-year period. They found no association.

"These results, although negative, gives us better insight into the dispersal. And they suggest perhaps the dispersal has more to do with the social environment that they are leaving than the physical environment

that they are entering," Braude said.

More information: Stan Braude et al, Naked mole-rats do not disperse or deliver pups in correlation with moon phase, *African Journal of Ecology* (2020). [DOI: 10.1111/aje.12721](https://doi.org/10.1111/aje.12721)

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