

These male marsupials forgo sleep for sex during the breeding season

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This photograph shows a male dusky antechinus in a naturalistic enclosure located in Cape Otway, Australia. Credit: Erika Zaid

All animals need sleep. When humans or animals don't get enough, it can lead to trouble paying attention, irritability, and other ill effects. And yet, researchers [reporting](#) in the journal *Current Biology* have made the surprising discovery that a small Australian marsupial called an antechinus will sacrifice hours of sleep per night to make more time for sex during the mating season.

The researchers say the multi-year study is the first to show direct evidence for this type of sleep restriction in any land-dwelling mammal. It's a trade-off between sleep and reproduction that they say is likely driven by strong sexual selection.

"Using a combination of techniques, we showed that males lose sleep during the [breeding season](#), with one male halving his sleep during this mating period," says Erika Zaid of La Trobe University in Melbourne, Australia.

"In humans and other [animals](#), restricting the normal amount of sleep leads to worse performance while awake, an effect that compounds night after night. And yet, the antechinus did just that: they slept three hours less per night, every night, for three weeks."

Antechinus are bizarre in other ways, too. Males only reproduce once in their lifetime and live for only one year. Females can live for two years. Male antechinus typically die at the same time right after their sole short and intense [mating season](#).

During the breeding season, males compete physically and through [sperm competition](#) for access to as many females as possible to maximize their [reproductive success](#). Their unusual life history is what drew the researchers led by John Lesku, also of La Trobe University, to

study them.



This photograph shows researcher E.Zaid holding a dusky antechinus before releasing it at the trapping site at the end of the breeding season. Credit: Francesca Leonard

"The males have one shot at fathering offspring during a single three-week mating period," Lesku says. "We found that male, but not female, dusky antechinuses, become restless during their only breeding season."

The researchers used accelerometry to track the marsupials' movements. They also used electrophysiology and metabolic measures to quantify how much the animals were sleeping. Those data showed that the males

were sleeping three hours less every night for weeks.

The findings suggest that antechinus may have some way to thrive on less sleep during this time. The other possibility is that they accept the downsides of staying awake to improve their chances at paternity.

"It is actually a little surprising that these animals do not sacrifice even more sleep during the breeding season, since they will soon die anyways," Zaid says. "In this way, keeping much of their sleep intact reveals the essential functions that sleep serves."



This photograph shows a cool temperate rainforest in southern Australia where dusky and agile antechinus lose sleep for sex during the breeding season. Credit: Erika Zaid

It's not clear what causes males to die after the breeding season. The researchers don't suspect that sleep loss alone is the reason. In part that's because the males they saw sleeping the least were not the ones in the worst condition.

The researchers want to learn more about how antechinus manage the sleep loss, which is at a level that would make people act as though they were legally intoxicated. "Are antechinus equally compromised, but just get on with it?" they ask. "Or are they resilient to the negative effects of [sleep](#) restriction?" These are exciting questions for future study.

More information: Semelparous marsupials reduce sleep for sex, *Current Biology* (2024). DOI: [10.1016/j.cub.2023.12.064](https://doi.org/10.1016/j.cub.2023.12.064).
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