

# Chainsaw-carved trees make perfect homes for marsupial phascogale

June 15 2021, by William Terry

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Credit: William Terry, Author provided

As a result of logging and severe bushfires, Australian wildlife is facing a severe shortage of tree hollows—holes in the trunks and branches of large old trees. More than [300 species](#) of birds and mammals, including possums, bats, cockatoos, owls and kookaburras, rely on tree hollows for shelter or breeding.

In Australia, hollows are usually formed through the decay of a tree scar,

and it can take hundreds of years for tree hollows big enough for medium-sized animals to form naturally.

This includes phascogales—the rat-sized, carnivorous marsupials that live in open woodlands across Australia and are the focus of my research [and photography](#). But like many of Australia's forest-dwelling mammals, phascogales are vulnerable to extinction.

So with hollows becoming harder to find, I venture into forests and study how well artificial hollows, made with chainsaws, can replace them. And, incredibly, it's working: [my research](#) shows phascogales and other native animals are enthusiastically moving into the new real estate.

## **Meet the mysterious brush-tailed phascogale**

Phascogales are an important species to Australia but, unfortunately, their cryptic behavior and nocturnal habits mean people rarely see them.

Phascogales feed on insects after stripping bark from eucalypts. But through my close interactions and radio tracking, I've documented phascogales eating other more unusual foods, including [bird eggs and sometimes even small birds](#), such as gray-shrike thrush.



A sacred kingfisher using a natural tree hollow for nesting. Credit: William Terry

I've also recorded them taking dead birds, such as the rosella pictured below. They even have a reputation among farmers as being a fierce chicken killer, but this may be exaggerated.

Phascogales have an unusual life. Shortly after mating between April and May, all males die at about 11 months of age from stomach ulcers. This frees up resources for the next generation of young joeys that will emerge from the nest in early summer.

**But will they survive in the future?**



Tragically, at least one species, the brush-tailed phascogale, is threatened with extinction, primarily due to [habitat loss](#), [climate change](#), and feral predators such as foxes and cats.

The brush-tailed phascogale (*Phascogale tapoatafa tapoatafa*) occurs across the eastern side of Australia, from southern Queensland to Victoria. It's now extinct in South Australia.



Brush-tailed phascogales live in trees, but will come to the ground to forage for food among leaf litter and fallen timber. Credit: William Terry

Likewise, the much smaller red-tailed phascogale (*Phascogale calura*) once survived across a vast swathe of land from Western Australia to

Victoria. Today, it survives only in small pockets in the Western Australia wheatbelt.

Household cats are a particularly major issue for phascogales, and many cat owners in central Victoria have a story about their cat bringing home a phascogale (so please keep your pet cat inside at all times).

Last year, [research confirmed](#) climate change would reduce the available areas phascogales could survive. This research found areas with a phascogale-friendly climate would decline by up to 79% in Queensland, 67% in Victoria and 17% in NSW, by 2070.

Climate change also threatens to bring longer, more frequent and severe heatwaves. For phascogales and many other mammals, this could be a death sentence.



Phascogales belong to the same family as the Tasmanian devil, quoll (pictured) and the tiny antechinus. Credit: William Terry, Author provided

Tree hollows with thick walls can protect the animals sheltering inside from the high temperatures outside.

But these are getting increasingly rarer, and this is where [my research on chainsaw hollows](#) comes in. Thick-walled hollows may be very important for the long-term survival of phascogales and other species in a warming climate.

## Carving them a home

A chainsaw hollow is a cavity constructed inside a tree. A faceplate is then attached over the top, with a hole drilled into it for the animal to enter. They offer refuge for Australia's endangered mammals and birds.

For our project, we carved 45 chainsaw hollows in dry forests and woodland where phascogales are known to occur. We also installed similar-sized [nest boxes](#)—which are more commonly used to offset the loss of hollows—on nearby trees. We monitored these for two and a half years.





A phascogale inspects a dead crimson rosella it found at the base of a tree. Moments later, this phascogale dragged the bird away. It was unclear what happened next. Credit: William Terry



The red-tailed phascogale has been lost from much of its former range and now only exists in the Western Australian wheatbelt. Credit: William Terry, Author provided





A relative to the phascogale, the tiny agile antechinus commonly uses tree hollows on the ground. Credit: William Terry, Author provided

[Research](#) from 2018 shows nest boxes offer little protection from outside temperatures. I've collected data, which is not yet published, that confirms this.

My research shows chainsaw hollows provide 27% more protection from extreme temperatures during heatwaves compared to nest boxes, which provided almost no protection.

So it's no wonder [we observed and recorded phascogales](#) and the more common sugar glider (*Petaurus notatus*) more frequently sheltering in chainsaw hollows than in nearby nest boxes.

Other animals used the chainsaw hollows, too. This includes the feather-tailed glider, yellow-footed antechinus, and the white-throated treecreeper.

But like [nest boxes](#), the chainsaw hollows showed signs they would be only an interim measure, requiring maintenance with bark growing over entrance holes and issues with a buildup of moisture.

In any case, further research into this species is needed, as it will aid land managers to conserve this enigmatic species as more challenges are thrown their way into the future.

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