

THE SWAMP ANTECHINUS - A STRESSFUL LIFE ... Associate Professor Barbara Wilson, Deakin University

The Swamp Antechinus, *Antechinus minimus*, is a native marsupial. Antechinus is a genus of small marsupial endemic to Australia. They have short, dense, soft fur and thin tapering tails that range from slightly shorter to slightly longer than body length. Their heads are pointed in shape with jaws supporting small carnivorous teeth. Antechinus species vary from 12–31cm in length and weigh 16–170 g when fully grown. Breeding females have a pouch, of a simple open design compared to the enclosed pouches of macropods, bandicoots and others.

The scientific name *minimus* implies a very small antechinus. However, this appellation from 1803, was when this species was minute compared to other known carnivorous species such as quolls. The Swamp Antechinus is actually a medium-sized antechinus (40–129 g) and is distinguished by the rich golden-brown colour of its rump and flanks. The species shelters at ground level at the base of tussocks or thick shrubs and uses its long foreclaws to forage for invertebrates in litter and soil.

On the mainland the species has a very patchy, predominantly coastal distribution extending from South Gippsland (Victoria) to Robe (South Australia). It occurs in small, localised populations and prefers damp habitats with a high percentage cover of understorey vegetation and has been recorded in forest, woodland, heathland, tussock grassland and sedgeland.

The ecology and reproduction of the species has been investigated by researchers at Deakin University since 1975. Breeding occurs annually between May and August and is synchronised within populations. All males die following breeding, resulting from the 'stress syndrome' associated with mating, when they stop feeding, exhibit weight loss and increased testosterone and stress hormones, resulting in damage to the immune system.

Following gestation (around 30 days) and birth, the young are attached to the teats of the female for about two months and become independent at three months. In evolutionary terms 'male die off' is considered an extreme life-history pattern that enables females and young to develop the next generation, unfettered by competition from adult males.

The status and distribution of the Swamp Antechinus in the eastern Otways was evaluated between 1975 and 2007. Assessment of long-term changes found that high-density populations occurred after above-average rainfall, and both low- and high-density populations collapsed after wildfire, after low rainfall, and in fragmented habitat. The current status of the species in 2013 was, however, unclear. We investigated the abundance of the species at 19 sites where it was trapped previously.

Between 2013 and 2015 the species was recorded at only six sites (n = 8), but at none in 2016–17. Remnants of the species are now restricted to exceedingly small populations in refuges such as the coastal dunes and inland gullies. In very productive collaborations with Parks Victoria and DELWP, we have recently identified and characterised these refuges.

This 40-year research program has resulted in a listing under the EPBC Act (1999) as Vulnerable. Predicted low rainfall and increased burning frequency pose major threats to the species. The refuges are very significant for the species' survival and recovery which is unlikely without targeted management, including predator control and protection from inappropriate fire regimes and habitat fragmentation. There may be a role for re-establishment of other populations. Fortunately, we have successfully bred the species in captivity and trialled reintroductions, thus there is a solid foundation upon which to base such a program. Restoring the Swamp Antechinus in the eastern Otways of a newly expanded Great Otway National Park would be a great achievement.



Swamp Antechinus



Swamp Antechinus coastal dune habitat

Reference Wilson, B. A., Zhuang-Griffin, L. and Garkaklis, M.J (2017) Decline of the dasyurid marsupial *Antechinus minimus maritimus* in south-east Australia: implications for recovery and management under a drying climate. *Australian Journal of Zoology* 65, 203–216 <https://doi.org/10.1071/ZO17041>