



Phascogale tapoatafa Brush-tailed Phascogale

Taxonomy

Phascogale tapoatafa (Meyer, 1793)

Three geographically disjunct populations of *Phascogale tapoatafa* are distinguished at the subspecies level on a suite of external and cranio-dental features. These are found in southeast Australia from South Australia to mid-coastal Queensland, southwest Western Australia and the Kimberley region of Western Australia. A potential fourth subspecies occurs on Cape York but remains too poorly represented in collections. (Aplin et al. 2015).

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 1991).

Categorised as Vulnerable in the 2013 Advisory list of threatened vertebrate fauna in Victoria (DSE 2013).

Proposed conservation status

Vulnerable in Victoria

Criterion A2bce

Species Information

Description and Life History

The Brush-tailed Phascogale is a small carnivorous, strongly arboreal dasyurid marsupial, grizzled grey above and cream to white below with large naked ears and a conspicuous black 'bottlebrush' tail. The claws are long and sharp, and the hind feet have striated foot pads.

Phascogales are foraging generalists, and their diet predominantly consists of invertebrates. Some invertebrate taxa are preferred prey, but few taxa are avoided. Active pursuit of vertebrates is negligible; however the taxon appears to be opportunistic, and scavenging of vertebrates may contribute to the diet. Nectar is also taken, appearing to be a particularly prized but rare and patchy food source. It is suggested that the current and former distributions of this taxon have been constrained by both the seasonal reliability of rainfall and the diversity of food resources.

Female Brush-tailed Phascogales forage over home ranges of 30-60 ha that do not overlap, while males forage over areas greater than 100 ha. Male home ranges overlap extensively with both females and other males (Traill and Coates 1993; Soderquist 1995).

Generation Length

The generation length of the Brush-tailed Phascogale is estimated to be 9 to 24 months. The breeding cycle varies greatly between males and females. Males start breeding as soon as 9 months old and they die as soon as they finish breeding (before 12 months old), females breed in the first year and may go into breeding into their second year.

Distribution

In Victoria the Brush-tailed Phascogale's distribution is fragmented. The taxon occurs in the foothills to the east and north-east of Melbourne; central Victoria around Ballarat, Heathcote and Bendigo; north-eastern Victoria from

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Broadford to Wodonga; the Brisbane Ranges north-east of Geelong; and far western Victoria from Mt Eccles to Apsley.

Habitat

The Brush-tailed Phascogale prefers dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter. It also inhabits heath, swamps, rainforest and wet sclerophyll forest.

Threats

Subpopulations and habitat are considered at risk from loss and fragmentation of habitat, loss of hollow-bearing trees and competition for nesting hollows with introduced species, predation by foxes and cats, inappropriate fire regimes, drought and climate change.

IUCN Criteria

Criterion A. Population size reduction. Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4			
	Critically Endangered	Endangered	Vulnerable
A1	≥ 90%	≥ 70%	≥ 50%
A2, A3, A4	≥ 80%	≥ 50%	≥ 30%

<p>A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.</p> <p>A2 Population reduction observed, estimated, inferred or suspected in the past where the causes of the reduction may not have ceased OR may not be understood OR may not be reversible.</p> <p>A3 Population reduction, projected or suspected to be met in the future (up to a maximum of 100 years) [(a) cannot be used for A3]</p> <p>A4 An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.</p>	<p>based on any of the following:</p>	<p>(a) direct observation [except A3]</p> <p>(b) an index of abundance appropriate to the taxon</p> <p>(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat</p> <p>(d) actual or potential levels of exploitation</p> <p>(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites</p>
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Evidence:

Eligible under Criterion A2 as Vulnerable

The population reduction over the past 10 years is inferred to be 15 to 30 %, based on (b), (c) and (e) above.

Past reduction of the taxon's population is based on the effect of the prolonged drought on the population and habitat.

The causes of the reduction may not have ceased, be understood or be reversible.

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Criterion B. Geographic range in the form of either B1 (extent of occurrence) and/or B2 (area of occupancy)			
	Critically Endangered Very restricted	Endangered Restricted	Vulnerable Limited
B1. Extent of occurrence (EOO)	< 100 km ²	< 5,000 km ²	< 20,000 km ²
B2. Area of occupancy (AOO)	< 10 km ²	< 500 km ²	< 2,000 km ²
AND at least 2 of the following 3 conditions:			
(a) Severely fragmented OR Number of locations	= 1	≤ 5	≤ 10
(b) Continuing decline observed, estimated, inferred or projected in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals			
(c) Extreme fluctuations in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals			

Evidence:

Ineligible under Criterion B

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 78,440 km² and the Area of Occupancy (AoO) is estimated to be 2,940 km², both of which exceed the thresholds for criterion B.

Criterion C. Small Population size and decline				
	Critically Endangered	Endangered	Vulnerable	
Number of mature individuals	< 250	< 2,500	< 10,000	
AND at least one of C1 or C2				
C1	An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future):	25% in 3 years or 1 generation (whichever is longer)	20% in 5 years or 2 generations (whichever is longer)	10% in 10 years or 3 generations (whichever is longer)
C2	An observed, estimated, projected or inferred continuing decline AND least 1 of the following 3 conditions:			
(a)	(i) Number of mature individuals in each subpopulation	≤ 50	≤ 250	≤ 1,000
	(ii) % of mature individuals in one subpopulation =	90 – 100%	95 – 100%	100%
(b) Extreme fluctuations in the number of mature individuals				

Evidence:

Ineligible under Criterion C

It is suspected that there are 20,000 to 40,000 mature individuals, but this qualifier is too weak and numbers exceed the thresholds for criterion C.

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Criterion D - Very small or restricted population			
	Critically Endangered	Endangered	Vulnerable
Number of mature individuals (observed or estimated)	<50	<250	<1,000
D2 - Only applies to the VU category Restricted area of occupancy or number of locations with a plausible future threat that could drive the species to critically endangered or Extinct in a very short time.	-	-	D2 - Typically: AoO < 20 km ² or number of locations < 5

Evidence:

Ineligible under Criterion D

It is suspected that there are 20,000 to 40,000 mature individuals.

Criterion E (Quantitative Analysis) was not addressed as the taxon does not have a detailed Population Viability Analysis.

References

Aplin, K. P., Rhind, S. G., Ten Have, J. and Chesser, R. T. (2015). Taxonomic revision of *Phascogale tapoatafa* (Meyer, 1793) (Dasyuridae, Marsupialia), including description of two new subspecies and confirmation of *P. pirata* Thomas, 1904 as a "Top end" endemic *Zootaxa* 4055 (1): 1-73.

DSE (2013) *Advisory List of Threatened Vertebrate Fauna in Victoria 2013*. Department of Sustainability and Environment, Melbourne

SAC (1991). Flora and Fauna Guarantee Scientific Advisory Committee: Final Recommendation on a Nomination for Listing. Nomination No. 123 *Phascogale tapoatafa*.

Soderquist, T.R. (1995). Spatial organisation of the arboreal carnivorous marsupial *Phascogale tapoatafa*. *Journal of Zoology* (London). 237: 385-98.

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