

**Advice to the Minister for Environment Protection, Heritage and the Arts  
from the Threatened Species Scientific Committee (the Committee)  
on Amendment to the list of Threatened Species  
under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)**

**1. Reason for Conservation Assessment by the Committee**

This advice follows assessment of new information provided through the Species Information Partnership with the Northern Territory Government on:

***Phascogale pirata* (Northern Brush-tailed Phascogale)**

**2. Summary of Species Details**

<b>Taxonomy</b>	Conventionally accepted as <i>Phascogale pirata</i> (Thomas, 1904; Van Dyck and Strahan, 2008). Until recently, this taxon was generally considered as a subspecies of the more widely distributed <i>Phascogale tapoatafa</i> .
<b>State Listing Status</b>	Listed as vulnerable under the Northern Territory's <i>Territory Parks and Wildlife Conservation Act 2000</i> .
<b>Description</b>	The Northern Brush-tailed Phascogale is a carnivorous marsupial. The body is 150–210 mm long, with silvery-grey fur. Eyes and ears are large, and the snout is sharply pointed. Body weight is about 150–230 g. Its most notable feature is a long (180–210 mm) tail distinguished by long black hairs. The hairs can be erected when alarmed to form a bottlebrush shape.
<b>Distribution</b>	<p>The Northern Brush-tailed Phascogale is restricted to eucalypt forests in the top end of the Northern Territory. It has been recorded from Melville Island (Tiwi group) and West Island (Sir Edward Pellew group), Gove Peninsula and Cobourg Peninsula. Almost all other records are concentrated in an area bounded by Kakadu, Katherine and Litchfield National Park (Woinarski et al., 2007).</p> <p>The species was recorded from the Gove Peninsula in the 1940s but has not been recorded in subsequent fauna surveys in the region (NRETAS, 2009). Similarly, phascogales were recorded on West Island in 1988 but have not been detected since in targeted surveys for the species (Ward et al., 2006). Recent (2009) targeted surveys for the species at two sites considered of high habitat value for phascogales in Kakadu National Park failed to detect the species, but there is a road kill specimen from early 2009 in Kakadu National Park (NRETAS, 2009).</p>
<b>Relevant Biology/Ecology</b>	There have been no detailed studies of the Northern Brush-tailed Phascogale, but its ecology is probably similar to that reported for its temperate region relatives (Rhind, 1998). The species' diet is predominantly invertebrates with some small vertebrates. It is a nocturnal mammal, feeding both in trees and on the ground. It shelters in tree hollows during the day. Most records are from tall open forests dominated by <i>Eucalyptus miniata</i> (Darwin Woollybutt) and <i>E. tetradonta</i> (Darwin Stringybark).

	The species gives birth mid year with litter sizes of up to eight young (Rhind et al., 2008). Generation length is one year (Rhind et al., 2008).
<b>Threats</b>	
<i>Past</i>	N/A
<i>Present</i>	<p>The general decline in native mammals in the Northern Territory suggest the Northern Brush-tailed Phascogale is affected by similar threats including habitat clearing, invasive species and changed fire regimes.</p> <p>Habitat clearing for horticulture and development purposes has variably affected populations on Melville Island and on private lands in the Batchelor–Litchfield area. Impacts of disease and predation and poisoning by exotic pest species are uncertain, although likely threats include Feral Cat (<i>Felis catus</i>) predation and poisoning by Cane Toads (<i>Bufo marinus</i>). The probable local extinction of the Northern Brush-tailed Phascogale from West Island corresponds to the introduction to the island of the Domestic Cat (Taylor et al., 2004) and colonisation by the Cane Toad, suggesting past threats may include impacts of predation and poisoning by these exotic pest species (Woinarski et al., 2007). The recent increase in the extent and dominance of invasive pasture grasses (particularly Mission Grasses and Gamba Grass) may also threaten the species. These grasses have an adverse impact on habitat, hunting efficiency and on-ground movement (NRETAS, 2009), and increase the threat of hot fires.</p>
<i>Future</i>	<p>Changed fire regimes, including more intense fires, are likely to lead to reduction in forest structure (Liedloff and Cook, 2007) and availability of suitable tree hollows (Williams et al., 1999). There is a high incidence of cyclones in some of the main (coastal) populations (Cobourg Peninsula, Melville Island), which could be detrimental to this species through reduction in abundance of tree hollows and change in forest structure (NRETAS, 2009). The incidence of severe cyclones is expected to increase in this region as a consequence of global climate change (NRETAS, 2009).</p>

### 3. Public Consultation

The information used in this assessment was made available for public exhibition and comment for 30 business days. No comments were received.

#### 4. How judged by the Committee in relation to the EPBC Act criteria and Regulations

##### Criterion 1: Not eligible

It has undergone, is suspected to have undergone or is likely to undergo in the immediate future a very severe, severe or substantial reduction in numbers

Criterion element	Evidence
Reduction in numbers	Insufficient data – decline is evident from variation between historic statements about the abundance (Dahl, 1897) and recent assessments and anecdotal evidence (Rhind et al., 2008; NRETAS, 2009). Over the last 1-2 decades, the population on West Pellew Island appears to have become locally extinct, and about 10-15% of the optimal habitat of the Tiwi Island population has been cleared for forestry plantation. However, there are insufficient data on reduction in numbers across the remaining populations to accurately quantify decline.

##### Criterion 2: Not eligible

Its geographic distribution is precarious for the survival of the species **and** is very restricted, restricted or limited

Criterion element	Evidence
Geographic distribution AND	Not limited – extent of occurrence is 57 000 km <sup>2</sup> based on recent records excluding the presumed extinctions on West Island (Ward et al., 2006) and north-eastern Arnhem Land (NRETAS, 2009). The species' estimated area of occupancy is less than 9000 km <sup>2</sup> (NRETAS, 2009).
Geographic distribution precarious	Yes – this species has a severely fragmented distribution, occurring as a series of discontinuous populations and continued decline is inferred due to ongoing threats.

##### Criterion 3: Eligible for listing as vulnerable

The estimated total number of mature individuals is very low, low or limited; **and either**

(a) evidence suggests that the number will continue to decline at a very high, high or substantial rate; **or**

(b) the number is likely to continue to decline **and** its geographic distribution is precarious for its survival

Criterion element	Evidence
Total no. of mature individuals AND	Limited – the total population size is unknown but the species occurs at low population densities where present and the estimated area of occupancy is less than 9000 km <sup>2</sup> . With a low degree of confidence the number of mature individuals is likely to be substantially less than 10 000 (Woinarski et al., 2007; NRETAS, 2009).
Continued rate of decline	Insufficient data – see Criterion 1.
<b>OR</b>	

Total no. of mature individuals	Limited – see above.
AND	
Continued decline likely	Yes – see Criterion 2 in relation to decline in area, extent and quality of habitat, and populations being evident in only a few locations.
AND	
Geographic distribution precarious	Yes – see Criterion 2.

**Criterion 4: Not eligible**

The estimated total number of mature individuals is extremely low, very low or low

Criterion element	Evidence
Total no. of mature individuals	Not low – total population size is unknown. With a low degree of confidence the number of mature individuals is likely to be substantially less than 10 000 (NRETAS, 2009).

**Criterion 5: Not eligible**

Probability of extinction in the wild that is at least

- (a) 50% in the immediate future; or
- (b) 20% in the near future; or
- (c) 10% in the medium-term future

Criterion element	Evidence
Probability of extinction in the wild	No data.

**5. Recovery Plan**

The Committee considers that there should not be a recovery plan for the Northern Brush-tailed Phascogale as the approved conservation advice for the species now provides sufficient direction to implement priority actions and mitigate against key threats.

**6. Recommendations**

- (i) The Committee recommends that the list referred to in section 178 of the EPBC Act be amended by **including** in the list in the **vulnerable** category:

*Phascogale pirata*

- (ii) The Committee recommends that there should not be a recovery plan for this species.

Associate Professor Robert J.S. Beeton *AM FEIANZ*

Chair

Threatened Species Scientific Committee

### References cited in the advice

- Dahl K (1897). Biological notes on north-Australian mammalia. *Zoologist: Series 4*, 1, pp. 189–216.
- Liedloff AC and Cook GD (2007). Modelling the effects of rainfall variability and fire on tree populations in an Australian tropical savanna with the FLAMES simulation model. *Ecological Modelling*: 201, pp. 269–282.
- NRETAS (Natural Resources, Environment, The Arts and Sport) (2009). Unpublished information provided to the Department of the Environment, Water, Heritage and the Arts. Canberra.
- Rhind SG (1998). Ecology of the brush-tailed phascogale in jarrah forest of south-western Australia. PhD thesis. Murdoch University, Perth.
- Rhind SG, Woinarski JCZ, and Aplin K (2008). Northern Brush-tailed Phascogale. In 'The Mammals of Australia'. Third edition. (eds S Van Dyck and R Strahan) pp. 103–104. Reed New Holland. Sydney.
- Van Dyck S and Strahan R. (eds) (2008). In 'The Mammals of Australia'. Third edition. Reed New Holland. Sydney.
- Ward S, Hooper D, Rankmore B, Brennan K, Templeton S, Graham Friday G, Simon T, Pracy D, Charlie A, Friday B, Harvey D, Chapman F, Wurst D, Senge B, and Evans S (2006). Mammal surveys of the Sir Edward Pellew Islands – 2004/05. Report to the Threatened Species Network.
- Williams RJ, Cook GD, Gill AM, and Moore PHR (1999). Fire regimes, fire intensity and tree survival in a tropical savanna in northern Australia. *Australian Journal of Ecology*: 24, pp. 50–59.
- Woinarski J, Pavey C, Kerrigan R, Cowie I, and Ward S (2007). Lost from our landscape: threatened species of the Northern Territory. Northern Territory Government Printer. Darwin.