

Threatened Species of the Northern Territory

NORTHERN BRUSH-TAILED PHASCOGALE

Phascogale pirata

Conservation status

Australia: Vulnerable

Northern Territory: Endangered



Photo: K. Brennan

Description

The northern brush-tailed phascogale is a carnivorous marsupial about midway in size between the larger northern quoll and the small antechinus and dunnarts. Its most notable feature is the long dark hairs on the tail, which form a distinctive brush. The hairs can be stiffened when alarmed, giving a bottle-brush appearance. The general body colour is dark grey, the snout is notably pointed and the eyes are large. Body weight is about 150-200 g.

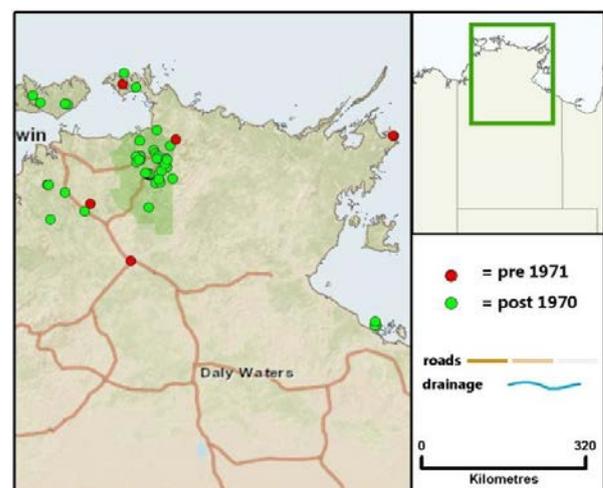
Distribution

Recent taxonomic studies (Rhind *et al.* 2001, Spencer *et al.* 2001) have suggested that the northern population of brush-tailed phascogale is specifically distinct from that in south-western and south-eastern Australia. As redefined, the northern brush-tailed phascogale is restricted to the Top End of the Northern Territory (NT), and is taxonomically distinct from populations in the Kimberley and Cape York Peninsula.

There are relatively few records in the NT: the most recent (since 1980) are from the Tiwi Islands, Cobourg Peninsula, West Island (in the Sir Edward Pellew group, but now

considered extinct there), Kakadu National Park (notably around Jabiru and near Jim Jim ranger station), and Litchfield National Park. There are older records from the Gove and Katherine areas.

Conservation reserves where reported: Garig Gunak Barlu National Park, Kakadu National Park and Litchfield National Park.



Known locations of the northern brush-tailed phascogale

Ecology

There have been no detailed studies of the northern brush-tailed phascogale, but its ecology is probably similar to that reported for its temperate relatives (Rhind 1998). The

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 *Eucalyptus miniata* (Darwin woollybutt) and *E. tetrodonta* (Darwin stringybark).

Conservation assessment

Categorisation of this species is difficult, because it is recorded very infrequently in conventional systematic sampling and monitoring. Decline is evident from variation between historic statements about status and current assessments: most notably Dahl (1897) reported that “*on the rivers Mary and Katherine it was frequently observed. In fact nearly everywhere inland it was very constant, and on a moonlight walk one would generally expect to see this little animal*”. This is certainly no longer the case. Biodiversity surveys across the Top End over the last decade have resulted in fewer than ten captures of brush-tailed phascogales in more than 350 000 trap-nights. However this meagre tally may also partly reflect some degree of trap-shyness. Targeted surveys for the species at two previously recorded sites in Kakadu National Park in 2009 failed to capture the species, but a road-kill was collected within the park, from the Arnhem Highway, at this time.

Specific searches were undertaken in 2004 and 2005 to attempt to re-locate (from 1988 records) this species on West Island in the Sir Edward Pellew group, using traps and a large series of nest boxes (Ward *et al.* 2006). The island was also sampled in 2009. These searches failed to record any phascogales, and the species has probably become locally extinct on that island (Woinarski *et al.* in press).

The species has been recorded from so few quadrats (<5 across all programs) in Territory Government main monitoring programs

(Kakadu, Litchfield and Garig Gunak Barlu National Parks) that it is impossible to use those programs to detect any trend.

The main indicator of trends is anecdotal records from rangers and others, mostly in Kakadu (particularly around Jabiru, and Cooida). Whereas one to two decades ago, this species was seen reasonably frequently, there have been no or remarkably few such records in the last several years.

It best fits the status of **Endangered** in the NT (under criteria A2(b,c,e)) based on:

- population reduction of >50 per cent over the last three generations (ten years) where causes of reduction have not ceased;
- calculated using an index of abundance appropriate to the taxon;
- a decline in area or quality of habitat; and
- effects of an introduced taxon (cane toads).

Threatening processes

There are no empirical data available to evaluate threatening processes. The precipitous decline of the species at the best-known locations coincided with the arrival of cane toads. As a predator of small vertebrates, van Dam *et al.* (2002) considered the potential impacts of cane toads on the species as uncertain, but gave it a high priority for monitoring. Certainly other dasyurid species, such as the northern quoll, are very susceptible to cane toad toxins. However, declines in the phascogale population were apparent prior to the arrival of cane toads and the apparent retraction of the range to coastal areas, and especially islands, suggests either exotic predators (cats) or disease. On West Island in the Sir Edward Pellew group, phascogales were recorded in surveys in 1988 but have not been recorded there since

(surveys in 2004, 2005, 2009 and 2010). Neither cats nor cane toads were recorded from the extensive fauna survey effort on West Island in 1988, but cats probably arrived there in the early 1990's and cane toads arrived on the floodwaters of the McArthur River in the Wet season of 2001/02.

Other factors potentially involved in the decline of phascogales in the NT include vegetation change due to altered fire regimes and/or pastoralism. This species may be severely disadvantaged by extensive clearing of eucalypt forests, especially those with hollow-bearing trees (Firth *et al.* 2006), for horticulture or forestry plantations.

Conservation objectives and management

There is no existing explicit recovery plan or management program for this species. In the interim, the major priority is to firm up knowledge of the distribution, abundance, habitat requirements and trends for this species. This will require a detailed autecological study and a distributional survey.

Complied by

John Woinarski
Simon Ward
[updated December 2012]

References

- Dahl, K. (1897). Biological notes on north-Australian mammalia. *Zoologist*, Series 4, 1, 189-216.
- Firth, R.S.C., Woinarski, J.C.Z., Brennan, K.G., and Hempel, C. (2006). Environmental relationships of the brush-tailed rabbit-rat *Conilurus penicillatus* and other small mammals on the Tiwi Islands, northern Australia. *Journal of Biogeography* 33, 1820-1837.
- Rhind, S.G. (1998). Ecology of the brush-tailed phascogale in jarrah forest of southwestern Australia. PhD thesis. (Murdoch University, Perth.)

- Rhind, S.G., Bradley, J.S., and Cooper, N.K. (2001). Morphometric variation and taxonomic status of brush-tailed phascogales, *Phascogale tapoatafa* (Meyer, 1793) (Marsupialia: Dasyuridae). *Australian Journal of Zoology* 49, 345-368.
- Spencer, P.B.S., Rhind, S.G., and Eldridge, M.D.B. (2001). Phylogeographic structure within *Phascogale* (Marsupialia: Dasyuridae) based on partial cytochrome b sequence. *Australian Journal of Zoology* 49, 369-377.
- Taylor, R., Woinarski, J., Charlie, A., Dixon, R., Pracy, D., and Rhind, S. (2004). Report on mammal survey of the Pellew Islands, October 2003. (NT Department of Infrastructure Planning and Environment, Darwin.)
- Ward, S., Hooper, D., Rankmore, B., Brennan, K., Templeton, S., Friday, G., Simon, T., Pracy, D., Charlie, A., Friday, B., Harvey, D., Chapman, F., Wurst, D., Senge, B., vans, S., Holmes, J., Menkhorst, P. (2006). Mammal surveys of the Sir Edward Pellew Islands - 2004/05. (NT Department of Natural Resources Environment and the Arts, Darwin.)
- Woinarski, J.C.Z., Ward, S., Mahoney, T., Bradley, J., Brennan, K., Ziembicki, M. & Fisher, A. (2011) The mammal fauna of the Sir Edward Pellew Islands, Northern Territory, Australia: refuge and death-trap. *Wildlife Research* 39, 307-322