

Approved Conservation Advice for
***Phascogale pirata* (Northern Brush-tailed Phascogale)**

(s266B of the *Environment Protection and Biodiversity Conservation Act 1999*)

This Conservation Advice has been developed based on the best available information at the time this Conservation Advice was approved; this includes existing plans, records or management prescriptions for this species.

Description

Phascogale pirata (Northern Brush-tailed Phascogale), Family Dasyuridae, 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.

Conservation Status

This species is eligible for listing as **vulnerable** under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act) as the total number of mature individuals is limited, continued decline is likely, and the geographic range is precarious. While the estimated extent of occurrence is 57 000 km², the area of occupancy is estimated to be less than 9 000 km² and populations within this appear to be discontinuous (TSSC, 2009).

The species is also listed as vulnerable under the Northern Territory's *Territory Parks and Wildlife Conservation Act 2000*.

Distribution and Habitat

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), Cobourg Peninsula and Gove Peninsula. Almost all other records are concentrated in a restricted area bounded by Kakadu, Katherine and Litchfield National Park (Woinarski et al., 2007).

Most records of the species are from tall open forests dominated by *Eucalyptus miniata* (Darwin Woollybutt) and *E. tetradonta* (Darwin Stringybark). It is a nocturnal mammal, feeding both in trees and on the ground. It shelters in tree hollows during the day. This species occurs as a series of discontinuous populations. Population size is unknown. The most recent account of the species (Rhind et al., 2008) reported fewer than 10 individuals recorded in the past decade. This species potentially occurs within the Tiwi Cobourg, Daly Basin, Pine Creek, Darwin Coastal, Arnhem Coast, Arnhem Plateau, Victoria Bonaparte and Gulf Coastal IBRA Bioregions and the Northern Territory Natural Resource Management Region.

The distribution of this species is not known to overlap with any EPBC Act-listed threatened ecological community.

Threats

The general decline in native mammals in the Northern Territory suggests that the Northern Brush-tailed Phascogale is likely to be affected by similar threats including habitat clearing, invasive species and changed fire regimes.

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 (*Felis catus*) predation and poisoning by Cane Toads (*Bufo marinus*). 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, 2009a), and alter fire regimes.

Changed fire regimes 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, 2009a). The incidence of severe cyclones is expected to increase in this region as a consequence of global climate change (NRETAS, 2009a).

Research Priorities

Research priorities that would inform future regional and local priority actions include:

- Design and implement a monitoring program or, if appropriate, support and enhance existing programs.
- Develop effective sampling techniques and more precisely assess population size, distribution, ecological requirements and the relative impacts of threatening processes including risks of inappropriate fire regimes, exotic plant and animal impacts, and continued clearing of prime habitat.
- Undertake survey work in suitable habitat and potential habitat to locate any additional populations/occurrences/remnants.

Regional Priority Actions

The following regional priority recovery and threat abatement actions can be done to support the recovery of the Northern Brush-tailed Phascogale.

Habitat Loss, Disturbance and Modification

- Identify populations of high conservation priority.
- Monitor known populations to identify key threats.
- Monitor the progress of recovery, including the effectiveness of management actions, particularly fire regimes, and the need to adapt them if necessary.
- Investigate formal conservation arrangements, management agreements and covenants on private land and Aboriginal Land, and for crown and private land investigate inclusion in reserve tenure if possible.
- Manage any other known, potential or emerging threats including potential risk of disease.

Invasive Weeds

- Develop and implement a management plan for the control of Mission Grasses (*Pennisetum polystachion* and *Pennisetum pedicellatum*). Finalise and implement the Weed Management Plan for Gamba Grass (*Andropogon gayanus*) which is currently in draft format (NRETAS, 2009b).
- Ensure chemicals or other mechanisms used to eradicate weeds do not have a significant adverse impact on the Northern Brush-tailed Phascogale.

Animal Predation or Competition

- Implement actions under the Threat Abatement Plan for predation by feral cats to control Feral Cat (*Felis catus*) in the region.
- Develop and implement a management plan for the control of the Cane Toad (*Bufo marinus*) in the region.

Fire

- Develop and implement a suitable fire management strategy for the habitat of the Northern Brush-tailed Phascogale to preserve natural understorey and tree hollows within tall open forests dominated by *Eucalyptus miniata* (Darwin Woollybutt) and *E. tetradonta* (Darwin Stringybark).
- Where appropriate provide maps of known occurrences to local and state Rural Fire Services and seek inclusion of mitigative measures in bush fire risk management plan(s), risk register and/or operation maps.

Conservation Information

- Continue to raise awareness of the Northern Brush-tailed Phascogale within local communities. Traditional owners, public and private land owners/managers, developers and fire authorities can play an important part in raising awareness and maintaining habitat for the species.
- Frequently engage with private landholders and land managers responsible for the land on which populations occur and encourage these key stakeholders to contribute to the implementation of conservation management actions.

Enable Recovery of Additional Sites and/or Populations

- Investigate options for linking, enhancing or establishing additional populations.

Local Priority Actions

The following local priority recovery and threat abatement actions can be done to support the recovery of the Northern Brush-tailed Phascogale.

Habitat Loss, Disturbance and Modification

- Control access routes to suitably constrain public access to known sites on public land.
- Suitably control and manage access on private land and other land tenure.
- Minimise adverse impacts from land use at known sites.
- Protect populations of the listed species through the development of conservation agreements and/or covenants.

Invasive Weeds

- Identify and remove weeds in the local area, which could become a threat to the Northern Brush-tailed Phascogale, using appropriate methods.
- Manage sites to prevent introduction of invasive weeds, which could become a threat to the Northern Brush-tailed Phascogale, using appropriate methods.

Animal Predation or Competition

- Control introduced pests such as the Feral Cat and Cane Toad to manage threats at known sites on public and private land.

Fire

- Implement an appropriate fire management regime for the species' habitat.

This list does not necessarily encompass all actions that may be of benefit to the Northern Brush-tailed Phascogale, but highlights those that are considered to be of highest priority at the time of preparing the Conservation Advice.

Existing Plans/Management Prescriptions that are Relevant to the Species

Draft Weed Management Plan for Gamba Grass (*Andropogon gayanus*) (NRETAS, 2009b), available at:

http://www.nt.gov.au/nreta/natres/weeds/find/gamba/pdf/draft_weedmgmtplan.pdf

Kakadu National Park Management Plan 2007 - 2014 (Director National Parks, 2007), available at:

<http://www.environment.gov.au/parks/publications/kakadu/management-plan.html>

Litchfield National Park Plan of Management (CCNT, 1992) available at:

<http://www.nt.gov.au/nreta/parks/manage/plans/index.html>

Threat Abatement Plan for predation by feral cats (DEWHA, 2008), available at:

<http://www.environment.gov.au/biodiversity/threatened/publications/tap/cats08.html>

These prescriptions were current at the time of publishing; please refer to the relevant agency's website for any updated versions.

Information Sources:

CCNT (Conservation Commission of the Northern Territory) (1992). Litchfield National Park Plan of Management. Conservation Commission of the Northern Territory.

Viewed: 10 November 2009

Available on the Internet at:

<http://www.nt.gov.au/nreta/parks/manage/plans/index.html>

DEWHA (Department of the Environment, Water, Heritage and the Arts) (2008). Threat abatement plan for predation by feral cats, DEWHA, Canberra.

Viewed: 10 November 2009

Available on the Internet at:

<http://www.environment.gov.au/biodiversity/threatened/publications/tap/cats08.html>

Director National Parks (2007). Kakadu National Park Management Plan 2007 - 2014.

Director of National Parks. Australian Government.

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Available on the Internet at:

<http://www.environment.gov.au/parks/publications/kakadu/management-plan.html>

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) (2009a). Unpublished information provided to the Department of the Environment, Water, Heritage and the Arts. Canberra

NRETAS (Natural Resources, Environment, The Arts and Sport) (2009b). Draft Weed Management Plan for Gamba Grass (*Andropogon gayanus*), August 2009. Department of Natural Resources, Environment, The Arts and Sport. Northern Territory Government.

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Available on the Internet at:

http://www.nt.gov.au/nreta/natres/weeds/find/gamba/pdf/draft_weedmgmtplan.pdf

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- Taylor R, Woinarski J, Charlie A, Dixon R, Pracy D, and Rhind S (2004). Report on mammal survey of the Pellew Islands, October 2003. Northern Territory Department of Infrastructure Planning and Environment. Darwin.
- TSSC (Threatened Species Scientific Committee) (2009). Listing advice for *Phascogale pirata* (Northern Brush-tailed Phascogale).
- 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. NT Government Printer. Darwin.