

Australian Capital Territory

Nature Conservation (Broad-toothed Rat) Conservation Advice 2019

Notifiable instrument NI2019–233

made under the

Nature Conservation Act 2014, s 90C (Conservation advice)

1 Name of instrument

This instrument is the *Nature Conservation (Broad-toothed Rat) Conservation Advice 2019*.

2 Commencement

This instrument commences on the day after its notification day.

3 Conservation advice for the Broad-toothed Rat

Schedule 1 sets out the conservation advice for the Broad-toothed Rat (*Mastacomys fuscus mordicus*).

Arthur Georges
Chair, Scientific Committee
1 May 2019

Schedule 1

(see s 3)



ACT
Government

Environment, Planning and
Sustainable Development



ACT Scientific
Committee

CONSERVATION ADVICE

BROAD-TOOTHED RAT (mainland)

Mastacomys fuscus mordicus

CONSERVATION STATUS

The Broad-toothed Rat (mainland) *Mastacomys fuscus mordicus* Thomas, 1922 is recognised as threatened in the following jurisdictions:

International	Near Threatened (species), International Union of Conservation of Nature (IUCN) Red List
National	Vulnerable , <i>Environment Protection and Biodiversity Conservation Act 1999</i> Vulnerable , <i>The Action Plan for Australian Mammals 2012</i>
ACT	Vulnerable , <i>Nature Conservation Act 2014</i>
NSW	Vulnerable (species) with Endangered Population , <i>Biodiversity Conservation Act 2016</i>

ELIGIBILITY

The Broad-toothed Rat (mainland) is eligible to be included in the Vulnerable category of the ACT Threatened Native Species List under the *Nature Conservation Act 2014* (NC Act) under the IUCN Criterion A — A2(b)(c)(e), A3(b)(c)(e), A4(b)(c)(e) and Criterion B — B2(a)(b)(i–v). The factors that make it eligible include a high risk of extinction in the wild in the medium-term future due to continuing decline in: habitat suitability and extent; area of occupancy; number of subpopulations; and population size (Woinarski et al. 2014).

DESCRIPTION AND ECOLOGY

The Broad-toothed Rat is a mostly nocturnal herbivorous rodent that has a head/body length of 14–17 cm and a tail length of 10–13 cm. It has a broad face, short tail and stocky body. It has characteristically large molars in a rounded head, with well-developed cheeks and large jaw muscles. The ears are small and round with tufts of hair inside. It has fine, dense fur which is brown tinged with rufous above, merging to a paler grey underneath and may have a green tinge due to the presence of algae. The feet are brown and the tail is lightly haired and darker above (Happold 2008 and Australian Museum 2018).



Broad-toothed Rat (Ken Green – ANU)

Breeding is seasonal, with females giving birth to one or two litters (of 1–4 young) per season between October and March (Happold 2011). Sexual maturity is reached in 8-10 months and longevity is up to two years (Happold 2011). Generation length is assumed to be 1–2 years (Woinarski et al. 2014; Woinarski and Burbidge 2016). The diet of the Broad-toothed Rat is mostly the stems of sedges and grasses, some seeds and moss sporangia, leaves and bark of shrubs (Carey et al. 2003).

DISTRIBUTION AND HABITAT

The Broad-toothed Rat (mainland) has a highly fragmented distribution, with scattered records across the Great Dividing Range from near Warburton (Victoria) to the Brindabella Range (Australian Capital Territory (ACT)) and around Barrington Tops (New South Wales (NSW)), with at least one poorly-known subpopulation in coastal areas of far East Gippsland and south-eastern NSW (Seebeck and Menkhorst 2000, Green and Osborne 2003, C. Dickman pers. comm. in Woinarski et al. 2014). Historically, the subspecies was far more widespread.

The Broad-toothed Rat habitat is characterised by mean annual temperatures less than 10°C and mean annual rainfall and greater than 1000 mm and is largely determined by the availability of cover and grasses (Green and Osborne 2003). It inhabits wet heaths and sphagnum bogs generally above 1400m in the ACT where it lives in burrows and forms extensive runways and systems through dense vegetation and sphagnum (Carey et al. 2003).

Prior to the study by Milner et al. (2016), there was limited information in the ACT on the distribution, abundance and ecology of the Broad-toothed Rat. An individual was captured at Murrays Gap in 1973 (Eberhard and Schulz 1973 in Milner et al. 2016) and in 1986 (Lintermans 1986). During 1988–1990 and 1999–2001 evidence of Broad-toothed Rat activity (runways and scats) was recorded from sites, within or bordering the ACT, (Green and Osborne 2003). A skull was collected and runways and scats were commonly observed at Cotter hut from 1989–1992 (Lintermans pers. obs.). In 2003, fires burnt 70 to 90 % of habitat with moderate to high severity resulting in a lack of ground cover and exposed runways leading to probable reduced availability of food and increased susceptibility to predation. Despite this, droppings and other evidence of the species were found at unburnt survey sites at Ginini Flats and Snowy Flats, however, no droppings were found in the burnt areas surrounding these habitat refuges (Carey et al. 2003).

Evidence of Broad-toothed Rats was detected from 13 sub-alpine bogs in Namadgi National Park that were surveyed for scats and vegetation characteristics in March 2013 (Milner et al. 2016). The species showed a positive habitat preference for larger bogs, closer to drainage lines with heath, sedge and *Poa* dominated vegetation types and was found to occur across a variety of habitat types in the ACT, including rocky outcrops, tussock grasslands, sedgeland and heathlands, frequently within proximity to watercourses. The results of this study increased the number of known sites that may support the Broad-toothed Rat in the ACT from 14 to 23, suggesting that the populations of the species are currently relatively stable, albeit with a small and patchy distribution. Milner et al. (2016) provide a baseline for longer-term monitoring of distribution, abundance and habitat use of the Broad-toothed Rat.

THREATS

Threats to the Broad-toothed Rat (mainland) are detailed in the Commonwealth Conservation Advice (TSSC 2016) which are drawn from those in the Mammal Action Plan (Woinarski et al. 2014), as well as the study by Milner et al. (2016) in the ACT and include:

- climate change reducing habitat suitability

- too frequent burning
- habitat loss, fragmentation and degradation due to feral herbivores
- weed invasion
- competition with native rodents for food
- predation by foxes and feral cats.

Greville (1990) warned of possible extinction of marginal populations due to restriction of gene flow and a very real possibility of this occurring given a combination of threats from livestock grazing, the activities of feral animals and global climate change. Milner et al. (2016) found relative abundance in the ACT was: positively related to specific vegetation types (heath, sedge and *Poa*) and site size; and negatively related to disturbance due to feral animals, and distance from creek drainage lines. This study indicates that specific habitat preferences and threats associated with environmental change and introduced species may threaten populations in the ACT (Milner et al. 2016).

MAJOR CONSERVATION OBJECTIVES

The priority management objective is to contribute to regional and national conservation of the species to protect the species and its habitat, especially in the ACT.

CONSERVATION ISSUES AND PROPOSED MANAGEMENT ACTIONS

Recommended management actions are provided and prioritised in the Commonwealth Conservation Advice (TSSC 2016) and Mammal Action Plan (Woinarski et al. 2014). The most suitable habitat for this species exists in reserved areas. It is therefore unlikely that further areas will be required for the conservation of this species. However, the following summary of actions may be relevant in the ACT.

- maintain and protect habitat
- mitigate threats, particularly implementing predator control programs, reducing the frequency of extensive and intense fires, and reducing the impacts of feral herbivores
- monitor the abundance/incidence of and assess impacts of feral predators, feral herbivores and fire
- establish a long-term population monitoring and vegetation assessments to enable long-term trends to be identified. The methods used in the Milner et al. (2016) study are an efficient and repeatable method for identifying trends in abundance and distribution.

OTHER RELEVANT ADVICE, PLANS OR PRESCRIPTIONS

- ACT Conservation Advice — High Country Bogs and Fens (Scientific Committee 2019)
- Commonwealth Conservation Advice — Broad-toothed Rat (TSSC 2016)
- The Action Plan for Australian Mammals (Woinarski et al. 2012)

LISTING BACKGROUND

The Broad-toothed Rat (mainland) *Mastacomys fuscus mordicus* was listed as Vulnerable under the *Environment Protection and Biodiversity and Conservation Act 1999* (EPBC Act) on 15 May 2016. In 2019, under the *Nature Conservation Act 2014*, the ACT Scientific Committee recommended the Broad-toothed Rat (mainland) be listed in the Vulnerable category in the ACT Threatened Native Species List to align with the EPBC Act listing.

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FURTHER INFORMATION

Further information on this species or other threatened species and ecological communities can be obtained from Environment, Planning and Sustainable Development Directorate (EPSDD).

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