

THREATENED SPECIES SCIENTIFIC COMMITTEE

Established under the *Environment Protection and Biodiversity Conservation Act 1999*

The Minister's delegate approved this conservation advice on 01/10/2015

Conservation Advice

Sminthopsis butleri

Butler's dunnart

Conservation Status

Sminthopsis butleri (Butler's dunnart) is listed as Vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act). The species is eligible for listing as Vulnerable as, prior to the commencement of the EPBC Act, it was listed as Vulnerable under Schedule 1 of the *Endangered Species Protection Act 1992* (Cwlth).

The main factors that are the cause of the species remaining eligible for listing in the Vulnerable category are a restricted extent of occurrence, and continuing decline in habitat quality, number of mature individuals, and area of occupancy (Woinarski et al., 2014).

Description

Butler's dunnart is a small marsupial, with a head and body length of around 88 mm and a tail length of around 90 mm (Woolley, 2008). Its tail is thin and sparsely furred (Woolley, 2008). The species is similar in general appearance to a range of small dasyurids occurring across Australia, including the Kakadu dunnart (*S. bindi*) and red-cheeked dunnart (*S. virginiae*) in northern Australia (Woinarski, 2004). All are generally grey-brown above and pale below, with large ears and eyes, and a sharply pointed muzzle (Woinarski, 2004). Butler's dunnart probably feeds on a variety of invertebrates and small vertebrates (Woinarski, 2004).

Distribution

Butler's dunnart was described from three specimens collected at Kalumburu (north Kimberley) in 1965 and 1966 (Woinarski et al., 2014). It has not been recorded from Western Australia since, despite some targeted searches (Woolley, 2008; P. Woolley pers. comm. cited in Woinarski et al., 2014). Butler's dunnart has not been recorded from the Northern Territory mainland despite substantial general survey effort (Woinarski, 2004).

All subsequent records of the species have been from the Tiwi Islands (Bathurst and Melville Islands, which have a total area of 7400 km²). On the Tiwi Islands it has been recorded mostly in tall forests dominated by Darwin Woollybutt (*Eucalyptus miniata*), Darwin Stringybark (*E. Tetrodonta*) and/or Melville Island Bloodwood (*Corymbia nesophila*) (Woinarski et al., 2003; Firth et al., 2006).

Building information on the distribution of this species is hampered by its low trappability using conventional trapping techniques (Woinarski, 2004). However, large arrays of deep pitfall buckets have been successful (Ward, 2009) and showed a 'reasonable abundance' on the Tiwi Islands (Woinarski et al., 2014).

Threats

There is a lack of specific information on threats to Butler's dunnart. However, some assessment of threats likely to be affecting this species may be inferred from evidence of a more general decline in native mammal assemblages across much of northern Australia (Woinarski et al., 2001; Pardon et al., 2003; Watson and Woinarski, 2003; McKenzie and Burbidge, 2002). Butler's dunnart is likely subject to at least some of the pervasive

threatening processes of vegetation change through altered fire regimes, introduced herbivores and predation by feral cats. It is also subject to some impacts of vegetation clearance for forest plantation on Melville Island (Woinarski, 2004).

Woinarski et al., (2014) identifies current and potential threats to the species as follows:

Threat factor	Consequence rating	Extent over which threat may operate	Evidence base
Inappropriate fire regimes	Moderate/severe	Large	Not demonstrated, but possible
Habitat loss and fragmentation	Catastrophic	Minor	c. 320 km ² of optimum habitat have been cleared in the last two decades (Firth et al., 2006); there have been no records of Butler's dunnart from such cleared lands and plantations
Predation by feral cats	Moderate	Large	Not demonstrated, but plausible; the distribution and abundance of feral cats in the range area of Butler's dunnart is poorly known
Poisoning by cane toads	Severe/catastrophic	Toads currently absent from the Tiwi islands, but high likelihood of colonisation within 1–2 decades.	Unknown: some small dasyurids rapidly learn to avoid toads (Webb et al., 2008, 2011)
Habitat change caused by introduced herbivores	Minor	Large	Not demonstrated, but plausible; cattle (managed and feral), donkeys and horses occur in the dunnart's distribution, often at high densities
Habitat change caused by weed invasion (exotic pasture grasses)	Minor	Minor-moderate, and increasing, extent	No evidence of direct impact, but there are probable indirect impacts with increasingly severe fire regimes

Conservation Actions

The conservation actions below are based on information provided in Woinarski (2004) and Woinarski et al., (2014).

Conservation and Management Actions

Theme	Specific actions	Priority
Active mitigation of threats	Implement cost-effective control measures for feral cats that minimise impacts of predation	High
	Implement fire management that reduces the frequency, intensity and extent of fires	Medium-High
	Implement control of feral herbivores	Medium-High
	Manage existing plantation estate on Melville Island to minimise the impacts of fire and weeds	Medium
Captive breeding	Determine threshold of decline at which some captive breeding should be instigated	Low–Medium
Quarantining isolated populations	Maintain or establish quarantine, surveillance and response measures to minimise likelihood of invasion of Tiwi Islands by cane toads	High
Translocation	n/a	
Community engagement	Involve Indigenous ranger groups in survey, monitoring and management	Medium

Survey and Monitoring priorities

Theme	Specific actions	Priority
Survey to better define distribution	Investigate the occurrence of the species at the mainland site where previously recorded (near Kalumburu), and in other mainland sites with potentially suitable habitat	Medium-High
	Estimate population size (or relative abundance) of all subpopulations using suitable trapping methods	Medium
Establish or enhance monitoring program	Establish an integrated monitoring program to describe long-term trends in abundance, and responses to management actions	Medium-High
	Assess the effectiveness of management actions, and adapt/refine them accordingly	Medium-High

Information and research priorities

Theme	Specific actions	Priority
Assess relative impacts of threats	Undertake detailed autecological study to more specifically identify impacts of threatening processes	Medium-High
	Assess response to habitat loss and fragmentation, and requirements for patch size and connectivity	Medium-High
	Quantify the relative impacts upon the population of a range of current fire regimes, and the mechanisms by which those fire regimes have impacts on this species	Medium-High
	Assess the extent to which predation by feral cats jeopardises population viability	Medium
	Assess susceptibility to poisoning by cane toads	Low-Medium
	Assess use of transformed landscapes (plantation forests)	Low-Medium
Assess effectiveness of threat mitigation options	Assess the extent to which management options for feral cats could lead to population recovery	Medium-High
	Assess options for restoring habitat connectivity in modified landscapes	Medium
	Assess landscape-scale options for retention of longer-unburnt (>5 years) habitat patches (assuming that research confirms importance of these long-unburnt patches)	Medium
Resolve taxonomic uncertainties	Assess genetic relatedness of spatially disparate populations to identify whether there are genetically distinct subpopulations, and to inform genetic management of re-introductions	Low-Medium
Assess habitat requirements	Model known habitat associations to identify sites of potential occurrence on mainland areas	Low-Medium
Assess diet, life history	n/a	
Undertake research to develop new or enhance existing management mechanisms	Develop broad-scale, targeted feral cat control methods	Medium

References cited in the advice

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