The Minister approved this conservation advice and included this species in the Endangered category, effective from 3/12/15

Conservation Advice

Petrogale coenensis

Cape York rock-wallaby

Note: The information contained in this conservation advice was primarily sourced from 'The Action Plan for Australian Mammals 2012' (Woinarski et al., 2014). Any substantive additions obtained during the consultation on the draft are cited within the advice. Readers may note that conservation advices resulting from the Action Plan for Australian Mammals show minor differences in formatting relative to other conservation advices. These reflect the desire to efficiently prepare a large number of advices by adopting the presentation approach of the Action Plan for Australian Mammals, and do not reflect any difference in the evidence used to develop the recommendation.

Taxonomy

Conventionally accepted as *Petrogale coenensis* (Eldridge & Close, 1992).

Until recent taxonomic resolution (Eldridge & Close, 1992) this species was included as a race of Godman's rock-wallaby *Petrogale godmani*, from which it differs particularly in the shape and number of chromosomes (Eldridge et al., 2008). No subspecies are recognised.

Summary of assessment

Conservation status

Endangered: Criterion 2 B2(a),(b)(ii)(iii)(v) and Criterion 3 C2(a)(i)

Species can be listed as threatened under state and territory legislation. For information on the listing status of this species under relevant state or territory legislation, see http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl

Reason for conservation assessment by the Threatened Species Scientific Committee

This advice follows assessment of new information provided to the Committee to list *Petrogale coenensis.*

Public Consultation

Notice of the proposed amendment and a consultation document was made available for public comment for 32 business days between 24 March 2015 and 8 May 2015. Any comments received that were relevant to the survival of the species were considered by the Committee as part of the assessment process.

Species Information

Description

The Cape York rock-wallaby is grey-brown above, with the rest of the body a paler sandy brown to buff. It has a pale to buff cheek-stripe, and a mid-dorsal head-stripe extends down to its upper back. Its tail is darker than the body towards the base, with a slight brush at the tip. The increasing density of grey-white hairs towards the tip of the tail results in a distinct silvery tail tip in most specimens. Males have a head and body length of 54−56 cm and a tail length of 48−54 cm; females are slightly smaller (Eldridge et al., 2008).

Distribution

The Cape York rock-wallaby is restricted to eastern Cape York Peninsula, with a latitudinal extent of about 240 km from near Musgrave in the south to at least the Pascoe River (Eldridge et al., 2008). Within this area its distribution is fragmented and associated with rocky outcrops. Until the discovery of four populations near Coen, it was known only from 'several small, scattered colonies' (Eldridge et al., 2008) within an elevational range of sea level to 400 m a.s.l. (Winter et al., 2008). The extent of movement of individuals between sites is unknown but it is probably small, so that each site may be considered to represent a subpopulation. Most sites are sufficiently close and similar in habitat that they can be considered to fall within three locations - with clusters of colonies around Musgrave, Coen, and at Pascoe River (Woinarski et al, 2014).

Relevant Biology/Ecology

There have been no detailed studies of the ecology of the Cape York rock-wallaby. It occurs in a range of rocky habitats, including isolated rocky outcrops, well-vegetated ridges, rocky gullies, dry creek beds and associated pockets of deciduous vine thickets (Eldridge et al., 2008). During the day it shelters in rock piles or vine thickets, and emerges in the afternoon to feed in surrounding woodlands, grasslands and vine thickets. In some areas habitat quality has been reduced by livestock and changes to fire regimes (Eldridge et al., 2008).

Generation length is assumed to be around 6 years, derived from data taken from a range of *Petrogale* species (Jones et al., 2009).

Threats

Threats to the Cape York rock-wallaby are outlined in the table below (Woinarski et al., 2014).

Threat factor	Consequence rating	Extent over which threat may operate	Evidence base e
Inappropriate fire regimes	Moderate	Moderate	Habitat degradation ('serious decline') and consequent contraction in areas used was reported by Eldridge et al. (2008) and Winter et al. (2008). Causes food shortages post-fire as this species doesn't move far from cover (Kennedy, pers. comm. 2015).
Habitat degradation and resource depletion due to livestock and feral herbivores	Moderate	Moderate	Habitat degradation ('serious decline') and consequent contraction in areas used was reported by Eldridge et al. (2008) and Winter et al. (2008).
Predation by feral cats	Minor	Entire	Winter et al. (2008) considered that feral cats 'may take a few young animals'.

How judged by the Committee in relation to the EPBC Act Criteria and Regulations

Criterion 1. Population size reduction (reduction in total numbers)
Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4

	Critically Endangered Very severe reduction	Endangered Severe reduction	Vulnerable Substantial reduction
A1	**≥ 90%**	**≥ 70%**	**≥ 50%**
A2, A3, A4	**≥ 80%**	**≥ 50%**	**≥ 30%**

A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.

A2 Population reduction observed, estimated, inferred or suspected in the past where the causes of the reduction may not have ceased OR may not be understood OR may not be reversible.

A3 Population reduction, projected or suspected to be met in the future (up to a maximum of 100 years) [(*a) cannot be used for A3*]

A4 An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.

based on any of the following:

(a) direct observation [*except A3*]

(b) an index of abundance appropriate to the taxon

(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat

(d) actual or potential levels of exploitation

(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites

Evidence:

Insufficient data to determine eligibility

There is no robust estimate of population size or population trends. However, a decline in the population size is inferred based on a continuing decline in habitat quality and area of occupancy (Eldridge et al., 2008; Winter et al., 2008). Woinarski et al. (2014) consider that the decline is unlikely to be >30% over a three generation (18 year) period. However, this estimate is not precise enough to determine whether or not the species meets the threshold for listing under this criterion.

The Committee considers that there is insufficient information to determine the eligibility of the species for listing in any category under this criterion.

Criterion 2. Geographic distribution as indicators for either extent of occurrence AND/OR area of occupancy

	Critically Endangered Very restricted	Endangered Restricted	Vulnerable Limited
B1. Extent of occurrence (EOO)	**< 100 km²**	**< 5,000 km²**	**< 20,000 km²**
B2. Area of occupancy (AOO)	**< 10 km²**	**< 500 km²**	**< 2,000 km²**
AND at least 2 of the following 3 conditions:			
(a) Severely fragmented OR Number of locations	**= 1**	**≤ 5**	**≤ 10**
(b) Continuing decline observed, estimated, inferred or projected in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals			
(c) Extreme fluctuations in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals			

Evidence:

Eligible under Criterion 2 B2(a),(b)(ii)(iii)(v) for listing as Endangered

While there is no robust estimate of extent of occurrence or area of occupancy, experts consider that the total area of occupancy is likely to be 50–200 km^2, which meets the threshold for restricted under Criterion B2. Woinarski et al. (2014) estimate the area of occupancy to be < 50 km^2, based on 10 known colonies (subpopulations) each occupying a maximum area of <2 km^2. However, there may be some undiscovered colonies as survey effort has not been comprehensive. There is approximately 150 km^2 of potentially suitable unsurveyed habitat in the upper and middle Pascoe catchment (Kennedy, pers. comm. 2015).

The species is known to exist at three locations, which satisfies the condition for a restricted number of locations under Criterion B2(a). There is an inferred continuing decline in area of occupancy, habitat quality, area of occupancy and number of individuals (Woinarski et al., 2014), which meets Criterion B2(b)(ii)(iii)(v).

The Committee considers that the species has been demonstrated to have met the relevant elements of Criterion 2 to make it eligible for listing as Endangered.

Criterion 3. Population size and decline				
		Critically Endangered Very low	**Endangered Low**	**Vulnerable Limited**
Estimated number of mature individuals		**< 250**	**< 2,500**	**< 10,000**
AND either (C1) or (C2) is true				
C1	An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future)	**Very high rate 25% in 3 years or 1 generation (whichever is longer)**	**High rate 20% in 5 years or 2 generations (whichever is longer)**	**Substantial rate 10% in 10 years or 3 generations (whichever is longer)**
C2	An observed, estimated, projected or inferred continuing decline AND its geographic distribution is precarious for its survival based on at least 1 of the following 3 conditions:			
(a)	(i) Number of mature individuals in each subpopulation	**≤ 50**	**≤ 250**	**≤ 1,000**
	(ii) % of mature individuals in one subpopulation =	**90 – 100%**	**95 – 100%**	**100%**
(b)	Extreme fluctuations in the number of mature individuals			

Evidence:

Eligible under Criterion 3 C2(a)(i) for listing as Endangered

Eldridge et al. (2008) noted that 'colonies' were 'small', but that there had been relatively little intensive survey for the species, and that it 'may not be as rare as previously thought' (although this comment was in the context that previously the species was known from only 10 specimens and three sites: M. Eldridge pers. comm., cited in Woinarski et al, 2014). Maxwell et al. (1996) considered the Cape York rock-wallaby to be 'uncommon'. Clancy and Close (1997) considered it to be 'rare', with an unknown population trend. Winter et al. (2008) considered that the population trend was unknown.

While there is no robust estimate of population size, it is known that most colonies have <15 individuals, with the largest known colony having around 100 individuals (M. Eldridge pers. comm., cited in Woinarski et al, 2014). Given that there are < 20 colonies, the total population

size is therefore likely to be < 2000 mature individuals (Woinarski et al., 2014), which meets the threshold for low under this Criterion.

There is an inferred continuing decline in population size, based on declines in habitat quality and area of occupancy (Eldridge et al., 2008; Winter et al., 2008). This satisfies Criterion C2. The largest known colony has around 100 individuals (M. Eldridge pers. comm., cited in Woinarski et al, 2014), which meets the threshold for a low number of individuals in each subpopulation under Criterion C2(a)(i).

The Committee considers that the species has been demonstrated to have met the relevant elements of Criterion 3 to make it eligible for listing as Endangered.

Criterion 4. Number of mature individuals			
	Critically Endangered Extremely low	**Endangered Very Low**	**Vulnerable Low**
Number of mature individuals	**< 50**	**< 250**	**< 1,000**

Evidence:

Insufficient data to determine eligibility

There is no robust estimate of population size. Based on the average colony size of < 15 individuals, a largest colony size of 100 individuals, and < 20 known colonies (Woinarski et al., 2014), the population size is likely to be 250–2000 mature individuals. Woinarski et al. (2014) estimate the number of mature individuals to be around 1000, but this estimate is not precise enough to determine whether the species meets the threshold for listing under this criterion.

The Committee considers that there is insufficient information to determine the eligibility of the species for listing in any category under this criterion.

Criterion 5. Quantitative Analysis			
	Critically Endangered Immediate future	**Endangered Near future**	**Vulnerable Medium-term future**
Indicating the probability of extinction in the wild to be:	**≥ 50% in 10 years or 3 generations, whichever is longer (100 years max.)**	**≥ 20% in 20 years or 5 generations, whichever is longer (100 years max.)**	**≥ 10% in 100 years**

Evidence:

Insufficient data to determine eligibility

Population viability analysis has not been undertaken.

Conservation Actions

Recovery Plan

The Committee recommends that there should not be a recovery plan for *Petrogale coenensis* (Cape York rock-wallaby), as approved conservation advice provides sufficient direction to implement priority actions and mitigate against key threats.

Conservation and Management Actions

There is currently no targeted management for this species. However, part of its distribution lies within a conservation reserve (Mungkan Kandju National Park, now Oyala Thumotang National Park) where it is protected from some threats (Winter et al., 2008). The Pascoe subpopulation also resides within the Kaanju Ngaachi Indigenous Protected Area, which is managed by the Chuulangun Aboriginal Corporation (Kennedy, pers. comm. 2015). Recommended management actions are outlined below (Woinarski et al., 2014). A series of management recommendations is also given in Roache (2011).

Theme	Specific actions	Priority
Active mitigation of threats	Implement control mechanisms for feral cats, that minimise adverse impacts upon this species.	Medium
	Reduce impacts of non-native herbivores upon habitat and food resources.	Medium
	Reduce the extent and intensity of fires, and frequency of late dry season fires.	High
Captive breeding	n/a	
Quarantining isolated populations	n/a	
Translocation	n/a	
Community engagement	Involve Indigenous ranger groups in survey, monitoring and management.	Medium-high

Survey and monitoring priorities

Theme	Specific actions	Priority
Survey to better define distribution	Undertake a targeted survey of all suitable habitat within range.	Medium-High
	Assess population size (or relative abundance) of all subpopulations.	Medium-High
Establish or enhance monitoring program	Design an integrated monitoring program across subpopulations.	Medium-High
	Implement integrated monitoring program linked to assessment of management effectiveness.	Medium-High

Information and research priorities

Theme	Specific actions	Priority
Assess relative impacts of threats	Assess impacts of a range of possible fire regimes.	Medium-High
	Assess abundance and impacts of feral cats.	Medium
	Assess impacts of livestock.	Medium
Assess relative effectiveness of threat mitigation options	Assess efficacy of a range of management regimes for feral cats.	Medium
	Assess responses to removal of livestock, and of control of feral herbivores.	Medium
	Assess effectiveness of fire management practices.	Medium
Resolve taxonomic uncertainties	Assess extent of genetic variation and exchange between subpopulations.	Low
Assess habitat requirements	Identify critical habitat factors.	Medium

Assess diet, life history	Identify key dietary items, and their responses to habitat change, fire regimes and management actions.	Medium

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 Endangered category:

Petrogale coenensis

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

Threatened Species Scientific Committee

02/09/2015

References cited in the advice

Clancy, T. F., and Close, R. L. (1997). The Queensland rock-wallabies – an overview of their conservation status, threats and management. *Australian Mammalogy 19*, 169-174.

Eldridge, M. D. B., and Close, R. L. (1992). Taxonomy of Rock-wallabies, *Petrogale* (Marsupialia: Macropodidae). I. A revision of the eastern Petrogale with the description of three new species. *Australian Journal of Zoology 40*, 605-625.

Eldridge, M. D. B., Moore, L. A., and Close, R. L. (2008). Cape York rock-wallaby *Petrogale coenensis*. In 'The mammals of Australia'. Third edition. (Eds S. Van Dyck and R. Strahan.). pp. 368-369. Reed New Holland: Sydney.

Jones, K. E., Bielby, J., Cardillo, M., Fritz, S. A., O'Dell, J., Orme, C. D. L., Safi, K., Sechrest, W., Boakes, E. H., Carbone, C., Connolly, C., Cutts, M. J., Foster, J. K., Grenyer, R., Habib, M., Plaster, C. A., Price, S. A., Rigby, E. A., Rist, J., Teacher, A., Bininda-Emonds, O. R. P., Gittleman, J. L., Mace, G. M., and Purvis, A. (2009). PanTHERIA: a species-level database of life history, ecology and geography of extant and recently extinct mammals. *Ecology 90*, 2648.

Kennedy, S. (2015). Personal communication by email, 8 May 2015. Chuulangun Aboriginal Corporation.

Maxwell, S., Burbidge, A. A., and Morris, K. (1996). *The 1996 action plan for Australian marsupials and monotremes*. (Wildlife Australia: Canberra.)

Roache, M. (2011). *The Action Plan for threatened Australian macropods*' (WWF-Australia: Sydney.)

Winter, J., Burnett, S., and Martin, R. (2008). *Petrogale coenensis*. In 'IUCN red list of threatened species.' Version 2012.1. <www.iucnredlist.org>. Accessed 4 July 2012.

Woinarski, J. C. Z., Burbidge, A. A., & Harrison, P. L. (2014). *The action plan for Australian mammals 2012*. Collingwood, Australia: CSIRO Publishing.