



Consultation Document on Listing Eligibility and Conservation Actions

***Petrogale sharmani* (Sharman's rock-wallaby)**

You are invited to provide you evidence related to:

- 1) the eligibility of *Petrogale sharmani* (Sharman's rock-wallaby) for inclusion on the EPBC Act threatened species list in the Vulnerable category; and
- 2) the necessary conservation actions for the above species.

Evidence provided by experts, stakeholders and the general public are welcome. Responses can be provided by any interested person.

Anyone may nominate a native species, ecological community or threatening process for listing under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or for a transfer of an item already on the list to a new listing category. The Threatened Species Scientific Committee (the Committee) undertakes the assessment of species to determine eligibility for inclusion in the list of threatened species and provides its recommendation to the Australian Government Minister for the Environment.

Responses are to be provided in writing either by email to:
species.consultation@environment.gov.au

or by mail to:

The Director
Marine and Freshwater Species Conservation Section
Wildlife, Heritage and Marine Division
Department of the Environment
PO Box 787
Canberra ACT 2601

Responses are required to be submitted by 25 November 2015.

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General background information about listing threatened species

The Australian Government helps protect species at risk of extinction by listing them as threatened under Part 13 of the EPBC Act. Once listed under the EPBC Act, the species becomes a Matter of National Environmental Significance (MNES) and must be protected from significant impacts through the assessment and approval provisions of the EPBC Act. More information about threatened species is available on the department's website at:

<http://www.environment.gov.au/biodiversity/threatened/index.html>.

Public nominations to list threatened species under the EPBC Act are received annually by the department. In order to determine if a species is eligible for listing as threatened under the EPBC Act, the Threatened Species Scientific Committee (the Committee) undertakes a rigorous scientific assessment of its status to determine if the species is eligible for listing against a set of criteria. These criteria are available on the Department's website at:

<http://www.environment.gov.au/biodiversity/threatened/pubs/guidelines-species.pdf>.

As part of the assessment process, the Committee consults with the public and stakeholders to obtain specific details about the species, as well as advice on what conservation actions might be appropriate. Information provided through the consultation process is considered by the Committee in its assessment. The Committee provides its advice on the assessment (together with comments received) to the Minister regarding the eligibility of the species for listing under a particular category and what conservation actions might be appropriate. The Minister decides to add, or not to add, the species to the list of threatened species under the EPBC Act. More detailed information about the listing process is at:

<http://www.environment.gov.au/biodiversity/threatened/nominations.html>.

To promote the recovery of listed threatened species and ecological communities, conservation advices and where required, recovery plans are made or adopted in accordance with Part 13 of the EPBC Act. Conservation advices provide guidance at the time of listing on known threats and priority recovery actions that can be undertaken at a local and regional level. Recovery plans describe key threats and identify specific recovery actions that can be undertaken to enable recovery activities to occur within a planned and logical national framework. Information about recovery plans is available on the department's website at:

<http://www.environment.gov.au/biodiversity/threatened/recovery.html>.

Information about this consultation process

Responses to this consultation can be provided electronically or in hard copy to the contact addresses provided on Page 1. All responses received will be provided in full to the Committee and then to the Australian Government Minister for the Environment.

In providing comments, please provide references to published data where possible. Should the Committee use the information you provide in formulating its advice, the information will be attributed to you and referenced as a 'personal communication' unless you provide references or otherwise attribute this information (please specify if your organisation requires that this information is attributed to your organisation instead of yourself). The final advice by the Committee will be published on the department's website following the listing decision by the Minister.

Information provided through consultation may be subject to freedom of information legislation and court processes. It is also important to note that under the EPBC Act, the deliberations and recommendations of the Committee are confidential until the Minister has made a final decision on the nomination, unless otherwise determined by the Minister.

Petrogale sharmani

Sharman's 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 will be 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 are reflective of the desire to achieve efficiency over preparation of a large number of advices by adopting the approach of the Action Plan for Australian Mammals in presentation of information and do not reflect any difference in the evidence used to develop the recommendation.

Taxonomy

Conventionally accepted as *Petrogale sharmani* (Eldridge & Close, 1992). Its other common name is Mount Claro rock-wallaby.

Only recently recognised as a distinct species based on genetic studies (Eldridge and Close 1992). Morphologically it is almost indistinguishable from other nearby species – the Mareeba Rock-wallaby *P. mareeba* and the Allied Rock-wallaby *P. assimilis*. There are no subspecies.

Species Information

Description

Sharman's rock-wallaby is a small macropod. Males have a head and body length of 49-53 cm and a tail length of 50-53 cm; females are slightly smaller than males. Its fur is grey-brown above, and paler sandy brown on the underparts and limbs. The striped tail is sandy brown but darkens to almost black distally, with a slight brush at the tip. It has pale cheek stripes, with a slight mid-dorsal head stripe occasionally present (Eldridge & Close, 2008; Queensland Department of Environment and Heritage Protection, 2015).

Distribution

The range of Sharman's rock-wallaby is limited. It is known only from about 20 subpopulations, scattered within a 2000 km² area of the Seaview and Coane Ranges, west of Ingham in north-eastern Queensland (Eldridge et al., 2008; Winter et al., 2008; Eldridge, 2012; Mulder et al., 2012). Around 80% of known subpopulations are in the Australian Wildlife Conservancy's Mount Zero – Taravale wildlife sanctuary (Mulder et al., 2012).

Relevant Biology/Ecology

The species occurs in a variety of rocky habitats (including rocky outcrops, boulder piles, gorges, cliff lines and rocky slopes) within open forests or grassy woodlands. It shelters during the day in rocky refuges or dense vegetation, emerging at dusk to feed (Eldridge, 2012). It breeds continually throughout the year. Generation length is estimated at 6 years, derived from a mean of age at first breeding (1.5 years) and longevity (10-12 years) across a range of *Petrogale* species (Jones et al. 2009).

Threats

Threats to Sharman's rock-wallaby are outlined in the table below (Woinarski et al., 2014).

Threat factor	Consequence rating	Extent over which threat may operate	Evidence base
Habitat degradation	severe	moderate	no primary evidence, but

and resource depletion due to livestock and feral herbivores			plausible (based on data for other <i>Petrogale</i> spp.)
Predation by feral cats	moderate	large	no primary evidence, but plausible (based on data for other <i>Petrogale</i> spp.)
Habitat loss and fragmentation	severe	minor	clearing associated with pastoralism is cited as a possible threat by Eldridge (2012), but presumably restricted to non-rocky parts of its range, with impacts on dispersal and foraging
Inappropriate fire regimes	moderate	moderate	likely to be benefited by a fire regime of low intensity, patchy fires that maintain stable food resources in unburnt patches and provide a pulse of high quality food in burnt patches (Tuft <i>et al.</i> 2012); and likely to be disadvantaged by total fire exclusion or extensive fires
Competition with other native species	minor	minor	competition (and hybridisation) with congeners cited as a possible threat by Eldridge (2012), with possibility that this may be catalysed by climate change (Maxwell <i>et al.</i> 1996).

Assessment of available information 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.	(a)	direct observation [<i>except</i> A3]
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.	(b)	an index of abundance appropriate to the taxon
A3	Population reduction, projected or suspected to be met in the future (up to a maximum of 100 years) [(a) <i>cannot be used for A3</i>]	(c)	a decline in area of occupancy, extent of occurrence and/or quality of habitat
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.	(d)	actual or potential levels of exploitation
		(e)	the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites

based on any of the following

Evidence:

The majority (80%) of known subpopulations occur in the Mount Zero – Taravale wildlife sanctuary managed by the Australian Wildlife Conservancy. Baseline data on the distribution of Sharman's rock-wallaby in the sanctuary has been collected since 2007 using extensive camera-trap surveys, and the persistence of subpopulations in the sanctuary is being monitored.

Eldridge (2012) and Winter et al. (2008) considered that the species' population size, habitat extent and habitat quality are stable. However, there are few monitoring data to determine medium- to longer-term trends, and it is likely that fire, weeds, livestock and feral animals are having some detrimental impacts on habitat quality (M. Eldridge pers. comm., cited in Woinarski et al., 2014.).

The data presented above appear to be insufficient to demonstrate if the species is eligible for listing under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the species' status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

Criterion 2. Geographic distribution is precarious for either extent of occurrence AND/OR area of occupancy			
	Critically Endangered Very restricted	Endangered Restricted	Vulnerable Limited
B1. Extent of occurrence (EOO)	< 100 km ²	< 5,000 km ²	< 20,000 km ²
B2. Area of occupancy (AOO)	< 10 km ²	< 500 km ²	< 2,000 km ²
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:

Woinarski et al. (2014) estimate the extent of occurrence to be 2000 km² and the area of occupancy to be 12 km². Both are considered to be stable. The species exists at 2 locations. There is no evidence of a decline in population size or number of locations/subpopulations. A

decline in habitat quality may be occurring, but there is no substantial evidence to support this. There have been no extreme fluctuations in population size or distribution (Woinarski et al., 2014).

The data presented above appear to be insufficient to demonstrate if the species is eligible for listing under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the species' status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

Criterion 3. Small 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:

The total population size of Sharman's rock-wallaby is small, with an estimate by Eldridge (2012) of probably fewer than 800 individuals. However, the population appears to be stable. Within its very small range, Winter et al. (2008) considered it may be 'common', and it is a sociable species with aggregations (or colonies) of more than 40 individuals present at some sites (Eldridge, 2012).

The data presented above appear to be insufficient to demonstrate if the species is eligible for listing under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the species' status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

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

Evidence:

Eldridge (2012) estimate the total population size at 800 mature individuals.

The data presented above appear to demonstrate that the species is **eligible for listing as Vulnerable** under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the species' status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

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:

No population viability analysis has been undertaken.

There are insufficient data to demonstrate if the species is eligible for listing under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the species' status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

Conservation Actions

Recovery Plan

A decision about whether there should be a national recovery plan for this species has not yet been determined. The purpose of this consultation document is to elicit additional information to help inform this decision.

Primary Conservation Objectives

1. Manage threats to secure or increase overall population size.

Conservation and Management Actions

The majority (80%) of known subpopulations occur in the Mount Zero – Taravale wildlife sanctuary managed by the Australian Wildlife Conservancy, which is implementing fire management, destocking and control of feral herbivores, in programs specifically targeting the conservation of Sharman's rock-wallaby.

Recommended management actions are outlined in the table below (Woinarski et al., 2014).

Theme	Specific actions	Priority
Active mitigation of threats	implement control mechanisms for non-native predators, that minimise adverse impacts upon this species	medium
	reduce impacts of non-native herbivores upon habitat and food resources	medium
	manage fire to benefit this species	medium
Captive breeding	n/a	
Quarantining isolated	n/a	

populations		
Translocation	n/a	
Monitoring	implement integrated monitoring program linked to assessment of management effectiveness	medium
Community engagement	develop conservation covenants on lands with high value for this species	medium

Information and research priorities

Information and research priorities are outlined in the table below (Woinarski et al., 2014).

Theme	Specific actions	Priority
Survey to better define distribution	continue to define fine-scale distribution patterns and the number of individuals in subpopulations	medium-high
Assess relative impacts of threats	assess impacts of a range of possible fire regimes	medium-high
	assess abundance and impacts of feral predators	medium
	assess impacts of non-native herbivores	medium
Establish or enhance monitoring program	design integrated monitoring across range	medium-high
	monitor distribution of nearby rock-wallaby species, to evaluate risks of inter-specific competition	low
Assess effectiveness of threat mitigation options	assess efficacy of a range of management regimes for non-native predators	medium-high
	assess responses to removal of livestock, and of control of feral herbivores	medium
	assess effectiveness of fire management practices	low-medium
Resolve taxonomic uncertainties	develop fine-scale mapping of genetic variability to identify population connectivity	low-medium
Assess habitat requirements	identify key habitat requirements	medium
Assess diet, life history	identify key food resources	medium
	assess the extent to which food availability may limit population size or reproductive success	medium

References cited in the advice

- Eldridge, M. (2012). Sharman's rock-wallaby *Petrogale sharmani*. In 'Queensland's threatened animals'. (Eds L. K. Curtis, A. J. Dennis, K. R. McDonald, P. M. Kyne and S. J. S. Debus.) pp. 364-365. CSIRO Publishing: Collingwood.
- 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., and Close, R. L. (2008). Sharman's Rock-wallaby *Petrogale sharmani*. In 'The mammals of Australia'. Third edition. (Eds S. Van Dyck and R. Strahan.) pp. 391-392. Reed New Holland: Sydney.
- Eldridge, M. D. B., Johnson, P. M., Hensler, P., Holden, J. K., and Close, R. L. (2008). The distribution of three parapatric, cryptic species of rock-wallaby (*Petrogale*) in north-east Queensland: *P. assimilis*, *P. mareeba* and *P. sharmani*. *Australian Mammalogy* 30, 37-42.
- 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.
- Maxwell, S., Burbidge, A. A., and Morris, K. (1996). *The 1996 Action Plan for Australian Marsupials and Monotremes*. Wildlife Australia: Canberra.
- Mulder, E., Kanowski, J., and Jensen, R. (2012). Mount Zero - Taravale Fauna and Flora Survey May 2012. Australian Wildlife Conservancy.
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https://www.ehp.qld.gov.au/wildlife/animals-az/sharmans_rockwallaby.html
- Tuft, K., Crowther, M., and McArthur, C. (2012). Fire and grazing influence food resources of an endangered rock-wallaby. *Wildlife Research* 39, 436 – 445.
- Winter, J., Burnett, S., and Martin, R. (2008). *Petrogale sharmani*. In 'IUCN red list of threatened species.' Version 2011.2. <www.iucnredlist.org>. Accessed 8 May 2012.
- Woinarski, J. C. Z., Burbidge, A. A., & Harrison, P. L. (2014). *The Action Plan for Australian Mammals 2012*. Collingwood, Australia: CSIRO Publishing.

Consultation questions

1. Do you agree with the current taxonomic position of the Australian Faunal Directory for this taxon (as identified in the draft conservation advice)
2. Can you provide any additional references, information or estimates on longevity, age of maturity, average life span and generation length?
3. Has the survey effort for this taxon been adequate to determine its national distribution and adult population size?
4. Do you accept the estimate provided in the nomination for the current population size of the taxon?
5. For any population with which you are familiar, do you agree with the population estimate provided? If not, are you able to provide a plausible estimate based on your own knowledge? If so, please provide in the form:
 Lower bound (estimated minimum):
 Upper bound (estimated maximum):
 Best Estimate:
 Estimated level of Confidence: %

6. Can you provide any additional data, not contained in the current nomination, on declines in population numbers over the past or next 10 years or 3 generations, whichever is the longer?
7. Is the distribution as described in the nomination valid? Can you provide an estimate of the current geographic distribution (extent of occurrence or area of occupancy in km²) of this taxon?
8. Has this geographic distribution declined and if so by how much and over what period of time?
9. Do you agree that the taxon is eligible for inclusion on the threatened species list, in the category listed in the nomination?
10. Do you agree that the threats listed are correct and that their effects on the taxon are significant?
11. To what degree are the identified threats likely to impact on the taxon in the future?
12. Can you provide additional or alternative information on threats, past, current or potential that may adversely affect this taxon at any stage of its life cycle?
13. In seeking to facilitate the recovery of this taxon, can you provide management advice for the following:
 - What individuals or organisations are currently, or need to be, involved in planning to abate threats and any other relevant planning issues?
 - What threats are impacting on different populations, how variable are the threats and what is the relative importance of the different populations?
 - What recovery actions are currently in place, and can you suggest other actions that would help recover the taxon? Please provide evidence and background information.
14. Can you provide additional data or information relevant to this assessment?