



## **Consultation Document on Listing Eligibility and Conservation Actions**

### ***Petrogale xanthopus celeris* (yellow-footed rock-wallaby (central-western Queensland))**

You are invited to provide your views, and reasons supporting them, related to:

- 1) the eligibility of *Petrogale xanthopus celeris* (yellow-footed rock-wallaby (central-western Queensland)) for inclusion on the EPBC Act threatened species list in the Vulnerable category; and
- 2) the necessary conservation actions for the above subspecies.

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](mailto: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 xanthopus celeris*

Yellow-footed rock-wallaby (central-western Queensland)

*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 xanthopus celeris* (Le Souef, 1924).

Two subspecies are recognised. The other subspecies is *P. x. xanthopus* (yellow-footed rock-wallaby (South Australia, New South Wales)).

*P. x. xanthopus* is proposed for listing in this assessment process as Vulnerable.

Pope et al. (1996) noted significant genetic differences in subpopulations of this subspecies separated by at least 70 km of unsuitable habitat, and advised that conservation management should treat each colony as an independent unit.

## **Subspecies Information**

### **Description**

The yellow-footed rock-wallaby (central-western Queensland) is fawn-grey above and white below, with a black mid-dorsal stripe from the crown of its head to the centre of its back, and a buff-white side-stripe. It has a distinct white cheek stripe, grey-brown ears, and light orange-brown above the eyes. Its forearms, hindlegs and base of its tail are a light orange-brown. The subspecies has a head and body length of 56-60 cm and a tail length of 56-67 cm. The tail is orange-brown with irregular dark brown annulations, with a dark brown or white tip (Eldridge, 2008).

### **Distribution**

The yellow-footed rock-wallaby (central-western Queensland) has a restricted distribution in rocky ranges of south-western Queensland, including the Gowan, Grey, Cheviot, Yangang and Macedon Ranges (Roache, 2011). Gordon et al. (1993) surveyed this taxon across its range between 1984 and 1987, and reported it from 44 'sites' to the north and north-west of Adayale. Many of these sites were clumped, and the number of locations is considerably fewer. There has been no more recent published comprehensive sampling across its small range (L. Lim pers. comm., cited in Woinarski et al, 2014).

### **Relevant Biology/Ecology**

The yellow-footed rock-wallaby (central-western Queensland) is mostly nocturnal, and shelters during the day in caves and rock crevices. It is closely associated with rugged rocky areas, along the edges of low sandstone tablelands and hills (Gordon et al., 1993), typically with low *Acacia* woodlands or shrublands (Maxwell et al., 1996).

It lives in colonies ranging in size from about 10 individuals to over 100 individuals (Sharp, 1997), in which several groups may be present. Each group typically contains a single older male, several females and several younger males. Dispersal between colonies is very limited,

especially where intervening habitat is unsuitable (Pope et al., 1996; Sharp, 1997; Lapidge, 2001). However, individuals have been reported to move regularly to water sources up to 1.5 km from core colony areas (Sharp, 2009). At one site with high habitat quality, home ranges (95% minimum convex polygon) were about 16 ha, with male home ranges larger than those of females (Lapidge, 2001; Sharp, 2009).

## Threats

Threats to the yellow-footed rock-wallaby (central-western Queensland) are outlined in the table below (Woinarski et al., 2014).

Threat factor	Consequence rating	Extent over which threat may operate	Evidence base
Predation by red foxes	severe	entire	for the species as a whole, some direct evidence of predation, and substantial circumstantial evidence of population-level impacts (Lapidge & Henshall, 2001)
Habitat change and resource depletion due to livestock and feral herbivores	severe	large	Gordon et al. (1993) considered that 'competition with other herbivores' was a threat; Pople et al. (1998) considered feral goats a 'serious threat' to this taxon; Allen (2001) measured high dietary overlap with feral goats which limited rock-wallabies' access to <i>Acacia</i> bushes which are an important sustaining food during dry periods
Climate change	moderate	entire	recruitment and population increase occurs mainly in good seasons, and longer periods of low rainfall periods may substantially reduce population viability (A. Sharp pers. comm., cited in Woinarski et al., 2014)
Predation by feral cats	minor	entire	little evidence of population-scale impact
Reduced access to water sources	moderate	moderate	closing of artificial water sources considered a possible threat by Sharp (2011)
Habitat loss and fragmentation	moderate	minor	Gordon et al. (1993) considered that 'property development' was a threat; and Maxwell et al. (1996) noted that 'clearing of mulga and other vegetation near cliff lines may threaten' it.
Inappropriate fire regimes	moderate	minor	extensive fires at particular times (e.g. at the beginning of long dry periods when regrowth is slow) could be detrimental to these refuge-dependent animals that can't travel far without risk of predation (Tuft et al. 2012)

**Assessment of available information in relation to the EPBC Act Criteria and Regulations**

<b>Criterion 1. Population size reduction (reduction in total numbers)</b>			
Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4			
	<b>Critically Endangered Very severe reduction</b>	<b>Endangered Severe reduction</b>	<b>Vulnerable Substantial reduction</b>
<b>A1</b>	≥ 90%	≥ 70%	≥ 50%
<b>A2, A3, A4</b>	≥ 80%	≥ 50%	≥ 30%
<p>A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.</p> <p>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.</p> <p>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]</p> <p>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.</p>	<p>based on any of the following</p> <ul style="list-style-type: none"> <li>(a) direct observation [except A3]</li> <li>(b) an index of abundance appropriate to the taxon</li> <li>(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat</li> <li>(d) actual or potential levels of exploitation</li> <li>(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites</li> </ul>		

**Evidence:**

Clancy and Close (1997) considered that the population trend of the yellow-footed rock-wallaby (central-western Queensland) was 'stable'. For the species as a whole, Copley et al. (2008) noted that some subpopulations had been extirpated, others had declined, and that others under intensive management had increased. For at least two sites, reintroductions of yellow-footed rock-wallabies (central-western Queensland) have restored formerly extirpated subpopulations (Lapidge, 2001).

There have been some medium-long term population studies on this species at Idalia National Park, notably by Sharp between 1991 and 1994 (Sharp 1997; Sharp & McCallum, 2010). Over this period the population size decreased by about 50%, probably due to seasonal conditions.

Although trends in population size are not well defined, a continuing decline is suspected. Woinarski et al. (2014) consider that the rate of population reduction is unlikely to exceed 30% over a 3 generation period (15-18 years).

The data presented above appear to be insufficient to demonstrate if the subspecies is eligible for listing under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the subspecies' 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.

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

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 15 000 km<sup>2</sup> and the area of occupancy likely to be < 2000 km<sup>2</sup>. The subspecies occurs at 6 locations. There is an inferred continuing decline in the extent and quality of habitat, area of occupancy and population size.

The data presented above appear to demonstrate that the species is **eligible for listing as Vulnerable** under criteria B1a,b(iii,iv,iv) and B2a,b(iii,iv,v). However, the purpose of this consultation document is to elicit additional information to better understand the subspecies' 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
(a) (ii) % of mature individuals in one subpopulation =	90 – 100%	95 – 100%	100%
(b) Extreme fluctuations in the number of mature individuals			

**Evidence:**

Gordon et al. (1993) surveyed the subspecies across its range between 1984 and 1987, and noted that the population size 'could not be estimated with accuracy, but is considered to be of the order of 5000-10 000 animals'. Copley et al. (2008) considered the population size was unknown. Population size ebbs and flows somewhat with seasonal conditions (Sharp & McCallum, 2010).

Clancy and Close (1997) considered the subspecies to be 'common'. Sharp (1997) estimated the population size of a 'large' colony (in about 20 ha of Idalia National Park), sampled between 1991-1994, at about 100 individuals, but this declined by 54% over the course of that study.

Sharp (1997) noted that this colony occurred in 'prime' habitat and had high population densities.

Woinarski et al. (2014) estimate the population size at 4000 mature individuals, with an inferred continuing decline. The largest subpopulation is inferred to have <1000 mature individuals.

The data presented above appear to demonstrate that the species is **eligible for listing as Vulnerable** under criterion C2a(i). However, the purpose of this consultation document is to elicit additional information to better understand the subspecies' 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:**

The population size is estimated at 4000 mature individuals (Woinarski et al., 2014).

The data presented above appear to demonstrate that the subspecies is not eligible for listing under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the subspecies' 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 subspecies is eligible for listing under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the subspecies' 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 subspecies 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.
2. Maintain viable populations at all known localities.
3. Restore extirpated subpopulations (following reduction in threat pressures)

## Conservation and Management Actions

The yellow-footed rock-wallaby (central-western Queensland) is present in some conservation reserves (notably Idalia and Welford National Parks: Clancy & Close, 1997), where it is protected from some threats and has been subject to intensive research and control of predators and feral competitors (e.g. Pople et al., 1998). A captive population has been established, which from 1998 has been used to source animals for reintroductions (to Lambert Station and Mariala National Park) within its former range (Lapidge & Munn, 2012).

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

Theme	Specific actions	Priority
Active mitigation of threats	constrain grazing by livestock and feral herbivores to within acceptable limits in and around important subpopulations	high
	implement control mechanisms for non-native predators, that minimise adverse impacts upon this species	high
	undertake landscape-scale fire control or management, to increase heterogeneity and decrease incidence of frequent extensive and intense fire	low-medium
	preserve and manage natural water sources	medium
Captive breeding	n/a	
Quarantining isolated populations	n/a	
Translocation	reintroduce to parts of former range, once threat management is effective	medium
Monitoring	implement integrated monitoring program linked to assessment of management effectiveness	medium-high
	monitor abundance of feral predators at key subpopulations, in response to management actions	medium
	monitor abundance of feral herbivores, and vegetation condition, at key subpopulations, in response to management actions	medium
	monitor incidence of fire, and vegetation response, at key subpopulations	low-medium
Community engagement	seek conservation covenants on private land holding important subpopulations	medium-high

## 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	undertake a targeted survey across all suitable habitat within range	high
	assess population size of all	medium-high



	subpopulations, and then prioritise subpopulations for management focus	
Assess relative impacts of threats	assess impacts of feral predators (including changes in the abundance and impacts of feral cats in response to fox control)	medium-high
	assess impacts of livestock and feral herbivores	medium-high
	assess impacts of fire, and identify a preferred fire regime	low-medium
Establish or enhance monitoring program	design an integrated monitoring programs across subpopulations	medium
Assess relative effectiveness of threat mitigation options	assess efficacy of a range of management regimes for non-native predators	medium
Resolve taxonomic uncertainties	n/a	
Assess habitat requirements	assess options for manipulation of water and food supplies to enhance habitat suitability	low-medium
Assess diet, life history	n/a	

### **References cited in the advice**

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- Tuft, K. D., Crowther, M. S., and McArthur, C. (2012). Fire and grazing influence food resources of an endangered rock-wallaby. *Wildlife Research* 39, 436-445.
- Woinarski, J. C. Z., Burbidge, A. A., and 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 km<sup>2</sup>) 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?