Petromyscus barbouri – Barbour's Rock Mouse

Beryl Wilson

Regional Red List status (2016)	Least Concern*†
National Red List status (2004)	Least Concern
Reasons for change	No change
Global Red List status (2016)	Least Concern
TOPS listing (NEMBA) (2007)	None
CITES listing	None
Endemic	Yes

*Watch-list Data †Watch-list Threat

Previously listed as a subspecies of *Petromyscus collinus*, this taxon has been recently elevated to species status, and can be distinguished from the former by several minor morphological attributes (Monadjem et al. 2015).

Taxonomy

Petromyscus barbouri Shortridge & Carter, 1938

ANIMALIA - CHORDATA - MAMMALIA - RODENTIA - NESOMYIDAE - *Petromyscus - barbouri*

Common names: Barbour's Rock Mouse (English), Barbour se Klipmuis (Afrikaans)

Taxonomic status: Species

Taxonomic notes: Barbour's Rock Mouse was formerly classified as a subspecies of *Petromyscus collinus* (Shortridge & Carter 1938; de Graaf 1981), but was elevated to species status by Musser and Carleton (2005), which is accepted by Monadjem et al. (2015). Although *P. barbouri* occur sympatrically with *P. collinus*, they can be comparatively distinguished by a shorter, bicoloured tail, smaller skull and shorter rostrum (Musser & Carleton 2005). Further taxonomic research is required.

Assessment Rationale

Although this species is endemic to northwest South Africa, and has a relatively small distributional range, we list it as Least Concern because most of its habitat falls within protected areas, its current population is considered stable, it exists in rocky areas unlikely to be transformed and no current major threats have been identified. Calculated using the available natural habitat within its geographic range, the estimated area of occupancy is 20,725 km^2. While the extensive construction of solar and wind projects across the Northern Cape may become a threat to this species, the effects should be minimal since much of the distribution is in protected areas. However, outside these areas, extensive alternative energy projects may be problematic. Additionally, goat farming could have harmful and destructive effects on the habitat outside protected areas due to the grazing and browsing of goats amongst the rocks. Thus, all impacts should be carefully monitored. Additionally, extreme climate change may represent an emerging threat, especially due to its restricted range. Further field surveys, vetting of museum records and molecular research is necessary to resolve the distribution of this species and to quantify potential threats. This species should be reassessed once such data are available.

Distribution

Endemic to the arid northwestern region of South Africa (Monadjem et al. 2015), this species has been identified from the Namaqua National Park, Skilpad Nature Reserve and Goegap Nature Reserve in the region of Springbok (Northern Cape) (Coetzee 2013), southeastwards to the Tankwa Karoo National Park (Western and Northern Cape) (Figure 1). It appears to be widely distributed in Namaqualand (Shortridge 1942; Coetzee 2013). In the lower Orange River basin, it is sympatric or parapatric with *P. collinus* and *P. monticularis* (Coetzee 2013). It ranges at altitudes between 100 m and 700 m asl. Further vetting of museum records is necessary to delimit distribution more accurately.

Population

The population size or density of the species is unknown. Although the geographic range of this species is limited, it is not considered uncommon within its range. However, Coetzee (2013) considers it to be rare.

Current population trend: Stable

Continuing decline in mature individuals: No

Number of mature individuals in population: Unknown

Number of mature individuals in largest subpopulation: Unknown

Number of subpopulations: Unknown

Severely fragmented: No

Habitats and Ecology

As a nocturnal and solitary species (Skinner & Chimimba 2005), the Barbour's Rock Mouse is restricted to the arid

Recommended citation: Wilson B, Schlitter D, Relton C. 2016. A conservation assessment of *Petromyscus barbouri*. In Child MF, Roxburgh L, Do Linh San E, Raimondo D, Davies-Mostert HT, editors. The Red List of Mammals of South Africa, Swaziland and Lesotho. South African National Biodiversity Institute and Endangered Wildlife Trust, South Africa.

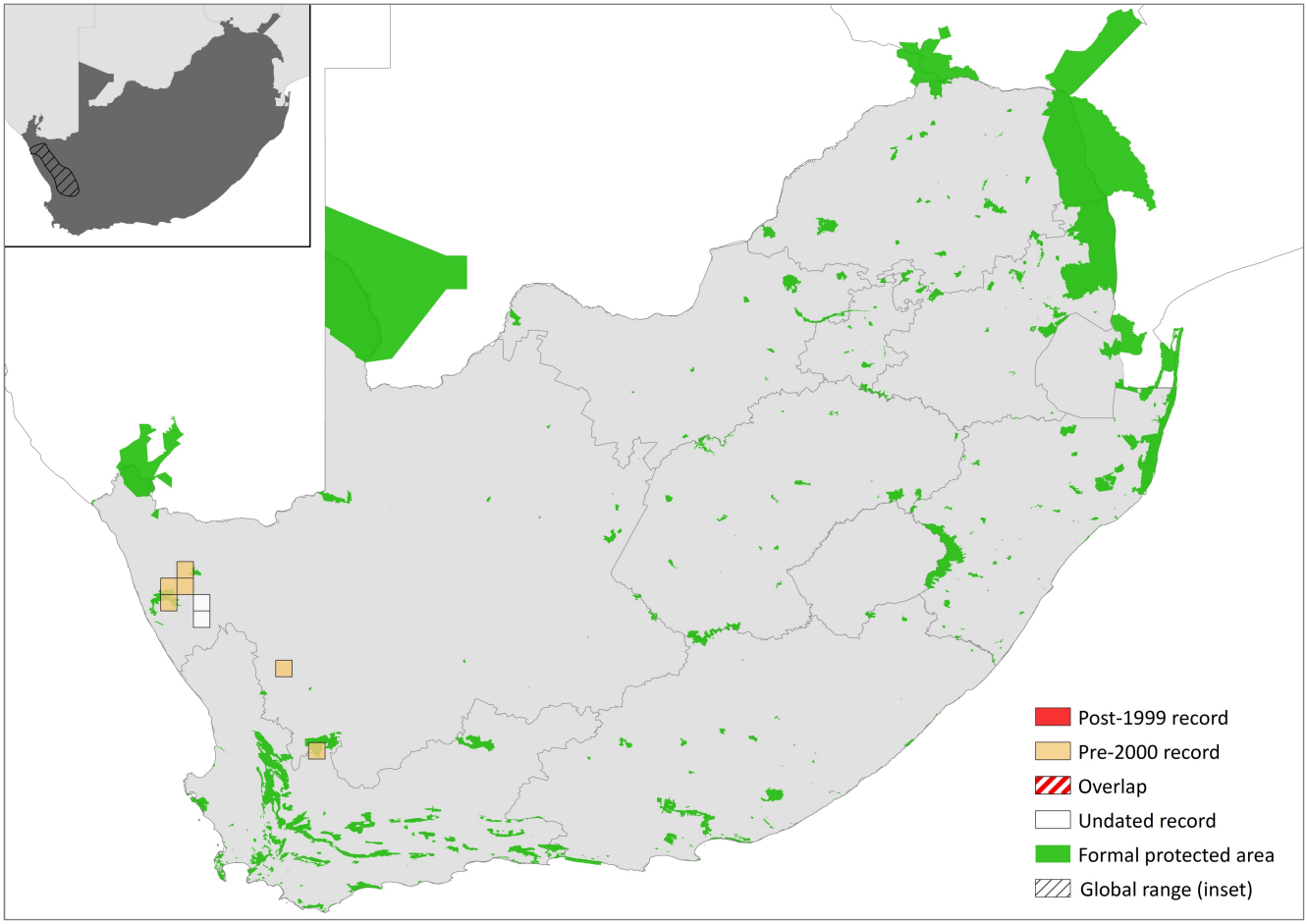

Figure 1. Distribution records for Barbour's Rock Mouse (*Petromyscus barbouri*) within the assessment region

Table 1. Countries of occurrence within southern Africa

Country	Presence	Origin
Botswana	Absent	
Lesotho	Absent	
Mozambique	Absent	
Namibia	Absent	
South Africa	Extant	Native
Swaziland	Absent	
Zimbabwe	Absent	

regions of western South Africa, specifically within rocky areas of succulent shrubland. It is mainly granivorous (Coetzee 2013). There is limited research pertaining to its diet, reproduction and behaviour.

Ecosystem and cultural services: This species is not known to provide any specific cultural services, but as a small rodent of the Succulent Karoo, it may be a valuable prey species for small predators and birds of prey, and may also contribute to seed dispersal.

Use and Trade

This species does not appear to be utilised or traded in any form.

Threats

There are no major threats that have been recognised for this species. However, overgrazing by nomadic livestock, in particular goats, may become a threat in parts of its range as they graze and browse the vegetation amongst the rocks (*sensu* Anderson & Hoffman 2007; Coetzee 2013). Additionally, alternative energy projects are expanding across much of the Northern Cape (van der Westhuizen 2013), and may pose a threat in the form of habitat fragmentation and/or alteration in areas outside of projected areas. Finally, climate change is predicted to affect resource availability and distribution in the region of the Succulent Karoo (Hoffman et al. 2009), which may have negative implications for this species.

Current habitat trend: Stable

Conservation

Barbour's Rock Mouse is present within at least four protected areas within the assessment region, namely: Goegap Nature Reserve, Namaqua National Park, Skilpad Nature Reserve and the Tankwa Karoo National Park. Currently, no species-specific conservation interventions are necessary. However, further research is necessary to delineate the population dynamics, quantify current and potential threats, and investigate the general ecology and life history traits of this species.

Recommendations for land managers and practitioners:

- Systematic surveys needed to gather information on population size, trend and distribution.

Research priorities:

- Accurate distribution mapping and the identification of population size and trend estimates is necessary.

Table 2. Threats to the Barbour's Rock Mouse (*Petromyscus barbouri*) ranked in order of severity with corresponding evidence (based on IUCN threat categories, with regional context)

Rank	Threat description	Evidence in the scientific literature	Data quality	Scale of study	Current trend
1	*2.3.1 and 2.3.2 Livestock Farming & Ranching*: overgrazing by livestock, especially goats. Current stress *1.2 Ecosystem Degradation*.	-	Anecdotal	-	Unknown but possibly increasing with settlement expansion.
2	*3.3 Renewable Energy*: habitat loss from the development of alternative energy projects in the Northern Cape.	van der Westhuizen 2013	Indirect	National	Increasing
3	*11.1 Habitat shifting & alteration* and *11.2 Droughts*: climate change altering habitat suitability. Current stress *1.2 Ecosystem Degradation*.	Hoffman et al. 2009	Indirect	Regional	Increasing

- Potential threats to this species, as well as the implications and type of habitat loss and fragmentation impacting this species. For example, an analysis of the impact of alternative energy projects.
- Understanding the life history and ecology, paying particular attention to food and dispersal mechanisms.
- Research into the reproductive rate and breeding success of this species.
- Species contribution to ecosystem functioning.
- Vetting of museum records to delimit distribution more accurately.

Encouraged citizen actions:

- Report sightings on virtual museum platforms (for example, iSpot and MammalMAP), especially outside protected areas.
- Save electricity and fuel to mitigate CO_2 emissions and hence the rate of climate change.

References

Anderson PML, Hoffman MT. 2007. The impacts of sustained heavy grazing on plant diversity and composition in lowland and upland habitats across the Kamiesberg mountain range in the Succulent Karoo, South Africa. Journal of Arid Environments **70**:686–700.

Coetzee CG. 2013. *Petromyscus barbouri* Barbour's Rock Mouse. Pages 204–205 in Happold DCD, editor. Mammals of Africa. Volume III: Rodents, Hares and Rabbits. Bloomsbury Publishing, London, UK.

de Graaf G. 1981. The Rodents of Southern Africa. Butterworths & Co. Publishing, Durban, South Africa.

Hoffman MT, Carrick PJ, Gillson L, West AG. 2009. Drought, climate change and vegetation response in the succulent karoo, South Africa. South African Journal of Science **105**:54–60.

Monadjem A, Taylor PJ, Denys C, Cotterill FPD. 2015. Rodents of Sub-Saharan Africa: A Biogeographic and Taxonomic Synthesis. De Gruyter, Berlin, Germany.

Musser GG, Carleton MD. 2005. Superfamily Muroidea. Pages 894–1531 in Wilson DE, Reeder DA, editors. Mammal Species of the World: a Geographic and Taxonomic Reference. The John Hopkins University Press, Baltimore, USA.

Shortridge GC. 1942. Field notes on the first and second expeditions of the Cape Museums mammal survey of the Cape Province and descriptions of some new subgenera and species. Annals of the South African Museum **36**:27–100.

Shortridge GC, Carter D. 1938. A new genus and new species and subspecies of mammals from Little Namaqualand and the North-West Cape Province; and a new subspecies of *Gerbillus paeba* from the Eastern Cape Province. Annals of the South African Museum **32**:282–291.

Skinner JD, Chimimba CT. 2005. The Mammals of the Southern African Subregion. Cambridge University Press, Cambridge, England.

van der Westhuizen C. 2013. Determination of Development Potential: Department of Environmental Affairs National Wind and Solar PV Strategic Environmental Assessments - To facilitate the efficient and effective rollout of wind and solar PV energy in South Africa. Second Expert Reference Group Meeting. Centre for Scientific and Industrial Research, Pretoria, South Africa.

Data Sources and Quality

Table 3. Information and interpretation qualifiers for the Barbour's Rock Mouse (*Petromyscus barbouri*) assessment

Data sources	Museum records, indirect information (expert knowledge)
Data quality (max)	Suspected
Data quality (min)	Suspected
Uncertainty resolution	Expert consensus
Risk tolerance	Evidentiary

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Details of the methods used to make this assessment can be found in *Mammal Red List 2016: Introduction and Methodology.*