Gerbilliscus vallinus – Brush-tailed Hairy-footed Gerbil


Galen Rathbun

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	No

In comparison to other *Gerbilliscus* species, *G. vallinus* is considered to be less aggressive and possibly semi-social; this is supported by the fact that they often huddle together and develop complex burrows (Dempster & Perrin 1989a, 1989b; Downs & Perrin 1989; Dempster et al. 1992).

Taxonomy

Gerbilliscus vallinus (A. Smith, 1834)

ANIMALIA - CHORDATA - MAMMALIA - RODENTIA - MURIDAE - *Gerbilliscus* - *vallinus*

Common names: Brush-tailed Hairy-footed Gerbil, Brush-tailed Gerbil (English), Borselsterthaarpootnagmuis, Borselstertnagmuis (Afrikaans)

Taxonomic status: Species

Taxonomic notes: *Gerbilliscus vallinus* was formerly described under the genus *Gerbillurus*. However, based on morphological differences (for example, larger body size, darker pelage colour, and naked hindfoot soles) between the *Gerbilliscus* species and those of *Gerbillurus*, these groups were separated (Monadjem et al. 2015). Based on chromosomal and molecular data, *G. setzeri* is this species' closest relative (Qumsiyeh et al. 1991; Granjon et al. 2012). Two subspecies have been recognised, namely *G. v. vallinus* from the Northern Cape Province and *G. v. seeheimi* from the Namib Desert, Namibia (Skinner & Chimimba 2005).

Assessment Rationale

Listed as Least Concern in view of its wide distribution within the assessment region, presumed long-term stable population, and because there are no major threats that could cause rapid population decline. Populations are subject to natural fluctuations. However, extensive overgrazing may result in local habitat deterioration and the effects of climate change on this species are currently unknown. Both potential threats need to be monitored systematically.

Regional population effects: The range extends across South Africa and Namibia and there is contiguous habitat, so dispersal is possible.

Distribution

This species occurs in southern Namibia and northwestern South Africa where it inhabits gravel plains or shallow sandy soils (Dempster et al. 1999). It occurs predominantly on the gravel plains north of the Kuiseb River in southwestern Namibia; and the Nama-Karoo and Succulent Karoo biomes of South Africa. An isolated population of the subspecies, *G. v. seeheini*, is located on the flood plain of the Tsondab River, Namibia (Griffin 1990).

Population

It is considered fairly common, but exhibits naturally fluctuating populations. It is the most abundant small mammal in some areas, such as Brukaros-Berseba in Namibia (Perrin & Dempster 2013). It is difficult to monitor population trends owing to its patchy distribution and low population densities which vary widely between years (not because it is difficult to sample). No abundance or density estimates are available for this species.

Current population trend: Stable

Continuing decline in mature individuals: Unknown

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

This species is typically restricted to areas of consolidated soils, bare gravel plains, dry river beds or shallow sand overlying gravels with scant vegetation (Perrin & Dempster 2013), in regions typically receiving less than 150 mm of rainfall. This gregarious species lives in sandy, complex (branched) burrows reaching depths of 1.5 m (Roberts 1951). Burrows are found in areas with fine surface gravel and constructed in mounds of loose soil around the base of bushes, especially *Phaeoptilum spinosum* and *Rhigozum trichotomum* (Downs 1989; Dempster et al.

Recommended citation: Palmer G, Perrin MR, Relton C. 2016. A conservation assessment of *Gerbilliscus vallinus*. 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.

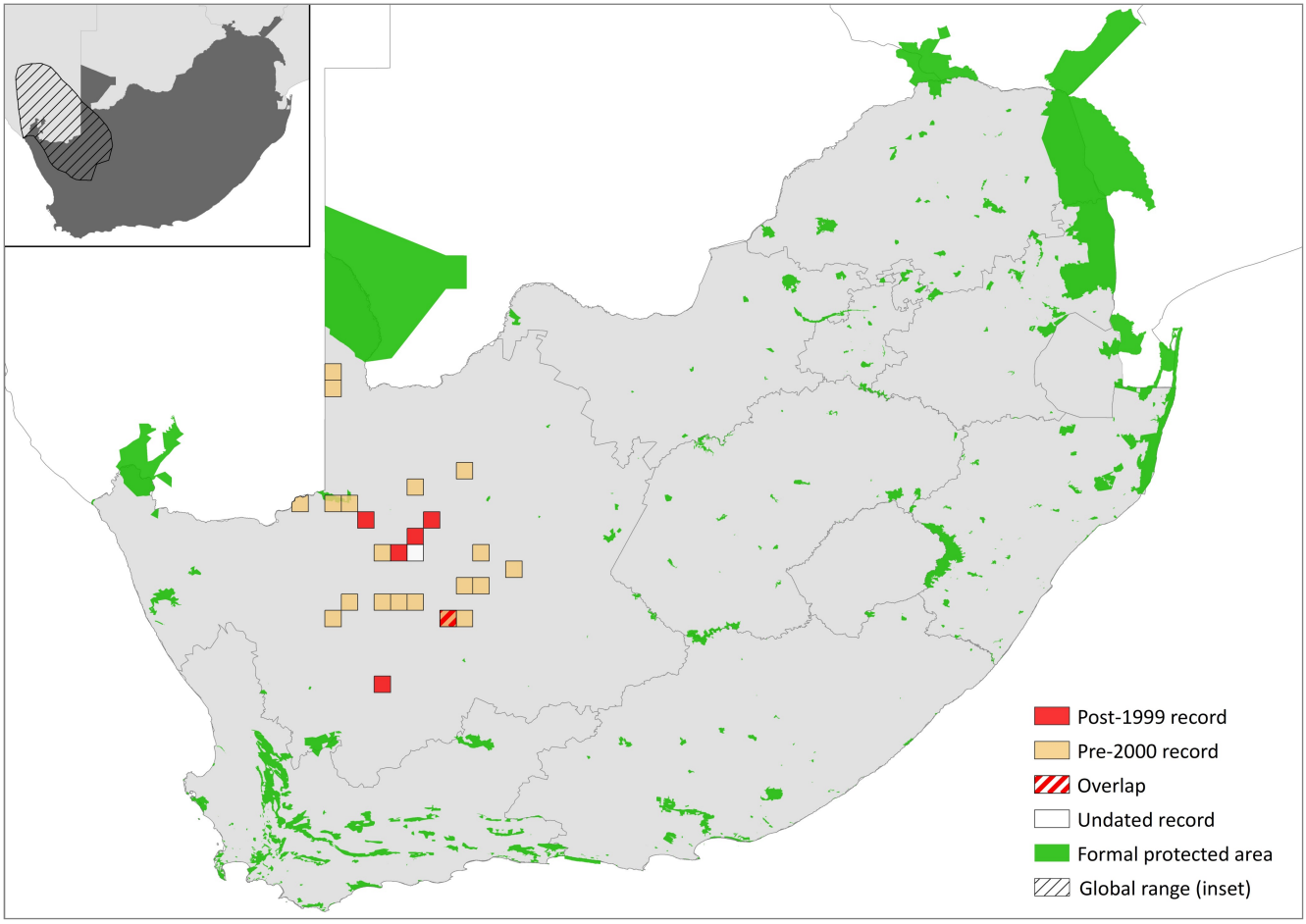

Figure 1. Distribution records for Brush-tailed Hairy-footed Gerbil (*Gerbilliscus vallinus*) within the assessment region

Table 1. Countries of occurrence within southern Africa

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

1999; Skinner & Chimimba 2005). The vegetation provides a diet of insects, spiders, seeds and the leaves of grasses. A litter size of 3.4 (range 1 – 5) was recorded in captivity (Dempster & Perrin 1991). They are adapted to live in arid and hot environments (Perrin & Dempster 2013).

Ecosystem and cultural services: Rodents are both predators and dispersers of plant seeds in the environment. Since these gerbils are hoarders, they may serve in a limited capacity as seed dispersers. Seeds taken into the burrows are likely to be consumed, but some of the seeds scatter-hoarded in caches or buried are often forgotten or abandoned, and if these escape other seed predators, they may germinate and establish seedlings. Additionally, this species is a valuable food source for small nocturnal carnivores and owls.

Use and Trade

This species is not known to be traded or utilised in any form.

Threats

No major threats have been identified for this species. However, overgrazing of arid vegetation and increased drought spells from climate change may potentially be causing a decline in habitat quality. The effects of climate change, however, cannot be verified without investigation as some of the changes may in fact be beneficial for this desert-adapted species.

Current habitat trend: Stable

Table 2. Threats to the Brush-tailed Hairy-footed Gerbil (*Gerbilliscus vallinus*) 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	*2.3.2 Small-holder Grazing, Ranching or Farming*. Current stress *1.2 Ecosystem Degradation*: overgrazing leading to habitat quality decline.	-	Anecdotal	-	Ongoing

Conservation

No conservation interventions are currently necessary for this species. It is present within several protected areas within the assessment region, including Augrabies Falls National Park and the Kgalagadi Transfrontier Park.

Recommendations for land managers and practitioners:

- The species would benefit from suitable land management practices: land owners should leave corridors of grassland between grazed areas and decrease stocking rates.

Research priorities:

- Effects of climate change on habitat quality and distribution.
- Threats associated with livestock farming practices, and the current status of overgrazing in the Nama-Karoo Biome.
- Continued studies into the general ecology and current population status of this species.

Encouraged citizen actions:

- Report sightings on virtual museum platforms (for example, iSpot and MammalMAP), especially outside protected areas.
- Barn Owl (*Tyto alba*) pellets should be collected and deposited at an appropriate museum.

Data Sources and Quality

Table 3. Information and interpretation qualifiers for the Brush-tailed Hairy-footed Gerbil (*Gerbilliscus vallinus*) assessment

Data sources	Field study (unpublished), indirect information (expert knowledge), museum records
Data quality (max)	Inferred
Data quality (min)	Suspected
Uncertainty resolution	Expert consensus
Risk tolerance	Evidentiary

References

Dempster ER, Dempster R, Perrin MR. 1992. A comparative study of the behaviour of six taxa of male and female gerbils (Rodentia) in intra- and interspecific encounters. Ethology **91**:25–45.

Dempster ER, Perrin MR. 1989a. A comparative study of agonistic behaviour in hairy-footed gerbils (Genus *Gerbillurus*). Ethology **83**:43–59.

Dempster ER, Perrin MR. 1989b. Male-female interactions in hairy-footed gerbils (Genus *Gerbillurus*). Ethology **83**:326–334.

Dempster ER, Perrin MR. 1991. Neonatal development of *Gerbillurus vallinus* and *G. setzeri*. Madoqua **18**:51–53.

Dempster ER, Perrin MR, Downs CT. 1999. *Gerbillurus vallinus*. Mammalian Species **605**:1–4.

Downs CT. 1989. The ecophysiology of four *Gerbillurus* species with special reference to their temperature and water relations. Ph.D. Thesis. University of Natal, Pietermaritzburg, South Africa.

Downs CT, Perrin MR. 1989. An investigation of the macro-and micro-environments of four *Gerbillurus* species. Cimbebasia **11**:41–54.

Granjon L, Colangelo P, Tatard C, Colyn M, Dobigny G, Nicolas V. 2012. Intrageneric relationships within *Gerbilliscus* (Rodentia, Muridae, Gerbillinae), with characterization of an additional West African species. Zootaxa **3325**:1–25.

Griffin M. 1990. A review of taxonomy and ecology of gerbilline rodents of the central Namib Desert, with keys to the species (Rodentia: Muridae). Pages 83–98 in Seely MK, editor. Namib Ecology: 25 years of Namib research. Transvaal Museum Monograph No. 7, Transvaal Museum, Pretoria, South Africa.

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

Perrin MR, Dempster ER. 2013. *Gerbillurus vallinus* Brush-tailed Hairy-footed Gerbil. Pages 293–295 in Happold DCD, editor. Mammals of Africa. Volume III: Rodents, Hares and Rabbits. Bloomsbury Publishing, London, UK.

Qumsiyeh MB, Hamilton MJ, Dempster ER, Baker RJ. 1991. Cytogenetics and systematics of the rodent genus *Gerbillurus*. Journal of Mammalogy **72**:89–96.

Roberts A. 1951. The mammals of South Africa. News Agency, Cape Town, South Africa.

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

Assessors and Reviewers

Guy Palmer[1], Mike Perrin[2], Claire Relton[3]

[1]Western Cape Nature Conservation Board, [2]University of KwaZulu-Natal, [3]Endangered Wildlife Trust

Contributors

Matthew F. Child[1], Nico L. Avenant[2], Margaret Avery[3], Rod Baxter[4], Duncan MacFadyen[5], Ara Monadjem[6], Peter Taylor[4], Beryl Wilson[7]

[1]Endangered Wildlife Trust, [2]National Museum, Bloemfontein, [3]Iziko South African Museums, [4]University of Venda, [5]E Oppenheimer & Son, [6]University of Swaziland, [7]McGregor Museum

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