Dendromus mesomelas – Brants' Climbing Mouse

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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

*Watch-list Data

The populations in northern Botswana, Zambia and Mozambique are widely isolated from the South African populations and may refer to different species (Monadjem et al. 2015).

Taxonomy

Dendromus mesomelas (Brants 1827)

ANIMALIA - CHORDATA - MAMMALIA - RODENTIA - NESOMYIDAE - *Dendromus* - *mesomelas*

Synonyms: *D. ayres*, *D. major, D. pumilio*, *D. typicus*, *D. typus*

Common names: Brant's Climbing Mouse, Chestnut Tree Mouse (English), Brants se Klimmuis, Rooiboommuis (Afrikaans)

Taxonomic status: Species complex

Taxonomic notes: Currently, this species complex is in the process of being reassessed. It is probable that *D. mesomelas* will become a confirmed species distributed south of the Zambezi River, whereas those occurring north of this will be described as *D. nyasae* (P.J. Taylor pers. comm. 2015). Additionally, although previously included within this species, *D. insignis*, *D. oreas* and *D. vernayi* are now considered valid species (Monadjem 2013; Monadjem et al. 2015). Recent chromosomal analysis by Solano et al. (2014) reveals further potential species splits; for example, populations in Mozambique, Zambia and Botswana that are isolated from those in South Africa may in fact reveal separate species. However, additional research is needed to clarify these taxonomic relationships.

Assessment Rationale

Listed as Least Concern, as this species is widespread along the eastern grassland regions of the assessment regions, occurs in many protected areas (but not Kruger National Park), and is fairly common. However, although there is no evidence for large-scale population decline at present, continued loss of grassland habitat would certainly impact it in the future. Although its fynbos habitat is well-protected in the south of its range, grassland habitats in the north are severely threatened and fragmented. This species needs high-quality grassland to survive. Loss of area of occupancy through grassland loss should be systematically monitored and this species should be reassessed when finer-scale data emerge. Taxonomic resolution, by assessing which subspecies qualify for being upgraded to species level, is required and may necessitate reassessment.

Regional population effects: Populations are isolated within countries, and rescue effect is unlikely because there is a disjunct distribution between the assessment region and rest of the species range.

Distribution

While previously considered to occur widely across African highlands, recent molecular evidence suggests *D. mesomelas* is restricted to south of the Zambezi River while north occur several taxa now listed as valid species including: *D. insignis, D. nyasae, D. oreas* and *D. vernayi* (Monadjem 2013; Monadjem et al. 2015). Within the assessment region, it occurs widely in the eastern and southwestern grassland regions of the country, including Swaziland and Lesotho along an altitudinal gradient, from sea level, in the southern portions of its range, to montane areas in the north (Skinner & Chimimba 2005; Monadjem 2013; Monadjem et al. 2015). The distribution is reported to marginally intrude into the North West Province (Skinner & Chimimba 2005), but was not detected during a recent survey (Power 2014). Further vetting of historical museum records is required to confirm this extension of their range.

Population

Within temperate grasslands and moist montane habitats of the assessment region, this species occurs commonly. For example, they are relatively numerous in the leaf-litter of afromontane forest in Swaziland (Monadjem 2013). No density estimates are available. Subpopulations are separated by regions of unsuitable habitat and fluctuations occur seasonally.

Current population trend: Stable

Continuing decline in mature individuals: Unknown

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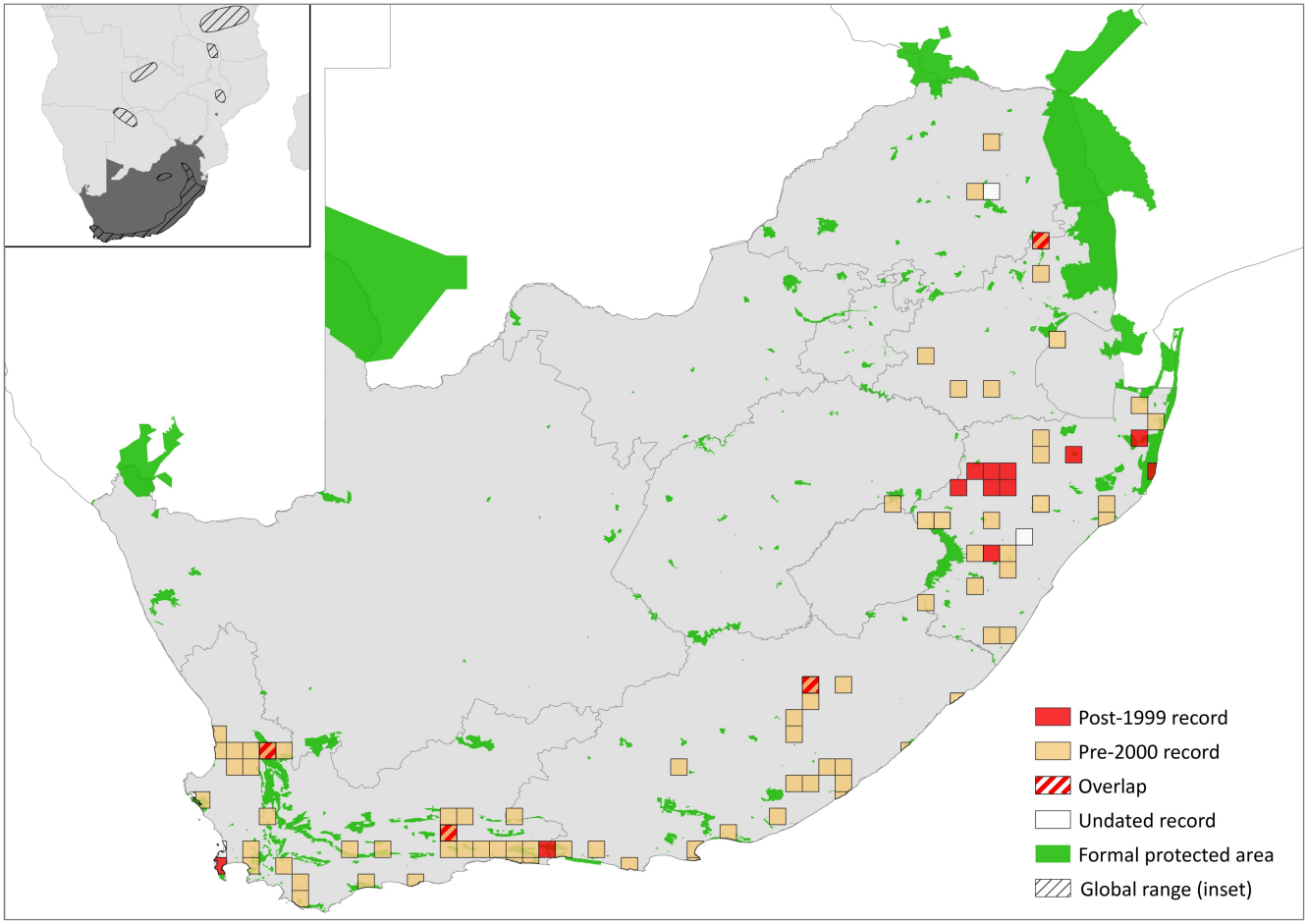

Figure 1. Distribution records for Brant's Climbing Mouse (*Dendromus mesomelas*) within the assessment region

Table 1. Countries of occurrence within southern Africa

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

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

Similar to other *Dendromus* species, Brants' Climbing Mouse is associated with grassland or marsh vegetation, especially in tall grasses with shrub (Taylor 1998; Monadjem 2013). In the southern portions of its range, they have been recorded within forest – grassland mosaic and fynbos habitats. It has also been sampled in Palmveld (*Hyphaene coriacea*) in KwaZulu-Natal (Rautenbach et al. 2014), swamps and Afromontane forests (Rowe-Rowe & Meester 1982; Monadjem 1998). However, they appear to be more restricted to high quality grassland habitats further north. During recent surveys in Gauteng and Mpumalanga, this species was not recorded in the Rocky Highveld Grassland of Ezemvelo Nature Reserve (Gauteng) and Telperion (Mpumalanga) (MacFadyen 2014). This species prefers tall, rank grassland with a high plant biomass, but is also recorded in areas with low woody vegetation. It appears more specific in its habitat requirement when compared with *D. melanotis* and *D. mystacalis*. As such, it does not occur in modified landscapes and thus loss of natural grasslands impacts severely on the species.

This species feeds on seeds, as well as a wide range of invertebrates, which contribute to their diets at varying proportions depending on their local conditions. For example, in the Okavango Delta, where they have no access to seeds, they were found to feed exclusively on insects (Smithers 1971). In the Drakensberg and Swaziland, their diets comprised mostly of grass seeds (Rowe-Rowe 1986; Monadjem 1997). Like other species of climbing mice, this nocturnal and largely terrestrial species accesses seeds and invertebrates in low bushes and grass stalks, using its prehensile tail to steady itself. The species is usually solitary, in pairs or small family groups.

Ecosystem and cultural services: There are no cultural services or folklores associated with this species. However, similar to other small mammals, this species plays a role in regulating invertebrate numbers, seed predation, nutrient cycling, and is an important prey species for predators.

Table 2. Threats to the Brant's Climbing Mouse (*Dendromus mesomelas*) 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	*2.1.3 Agro-industry Farming*, *2.2.2 Agro-industry Plantations* and *3.2 Mining & Quarrying*: habitat loss from agricultural expansion, mining, and forestry.	Jewitt et al. 2015	Indirect (remote sensing)	Regional	Increasing
		Lötter et al. 2014	Prospecting applications	Regional	Increasing
2	*2.3.2 Small-holder Grazing, Ranching or Farming*: habitat degradation from overgrazing. Current stress *1.2 Ecosystem Degradation*.	-	Anecdotal	-	-
3	*11.1 Habitat Shifting & Alteration*: reduction in afromontane grassland due to climate change.	Taylor et al. 2016	Simulated	National	Increasing

Use and Trade

There is no known subsistence or commercial use of this species.

Threats

Although not believed to be currently declining, threats to this species are grassland habitat loss from agricultural expansion, forestry and mining developments. Loss of habitat quality from overgrazing and incorrect fire management may also cause local declines. Climate change is also expected to reduce afromontane grassland, further jeopardising the species similar to other afromontane species (Taylor et al. 2016). The indiscriminate use of chemicals in agricultural industry and urbanisation is also expected to have an impact on this species. The impact of these threats on the population remains to be quantified.

Current habitat trend: Declining in area and quality. Northern grasslands are increasingly threatened: between 2005 and 2011 there was a loss of 7.6% of the natural habitat of KwaZulu-Natal Province (Jewitt et al. 2015). In Mpumalanga, only 50.7% of the grasslands are still natural and previously not ploughed; further loss is expected from prospecting and mining developments (Lötter et al. 2014). Similarly, in Limpopo, the mining sector is expanding rapidly and the extent of impacts from this sector is currently poorly known (V. Egan, pers. comm. 2015). Agriculture and forestry practices are also expected to impact suitable habitat for this species.

Conservation

This species occurs in several protected areas within its range in the assessment region (for example, Tsitsikamma National Park is a key protected area for this species), but are not found in Kruger National Park (G. Zambatis and D. MacFadyen unpubl. data). Protected area expansion to incorporate grassland habitats is a key intervention for the species, specifically to create habitat linkages where connectivity between natural habitat patches has been lost. Planners should prioritise previously cultivated areas for development instead of remaining natural areas. For example, previously ploughed areas now left fallow make up 8.9% of the grassland biome in Mpumalanga, and these areas should be prioritised for further development (Lötter et al. 2014). Grassland restoration projects are also likely to benefit this species. Land owners are responsible for managing the land and vegetation, ensuring that under- or overutilisation of grasses is avoided. This species would also benefit from correct fire and land management practices that conserve grassland habitats.

Recommendations for land managers and practitioners:

- Land owners should leave corridors of grassland between cultivated areas.
- Employ correct land management practices to prevent overgrazing and indiscriminate burning.
- Protected areas expansion through provincial stewardship programmes.

Table 3. Conservation interventions for the Brant's Climbing Mouse (*Dendromus mesomelas*) ranked in order of effectiveness with corresponding evidence (based on IUCN action categories, with regional context)

Rank	Intervention description	Evidence in the scientific literature	Data quality	Scale of evidence	Demonstrated impact	Current conservation projects
1	*1.1 Site/Area Protection*: protected area expansion to connect grassland patches. Prioritise previously ploughed land for development to conserve grassland.	-	Anecdotal	-	-	SANParks protected area expansion strategy
2	*2.3 Habitat & Natural Process Restoration*: conservation and restoration of overgrazed habitats.	-	Anecdotal	-	-	-
3	*2.1 Site/Area Management*: employ ecological burning and grazing regimes.	-	Anecdotal	-	-	-

Research priorities:

- This is a species complex that requires taxonomic revision. The species might be split along biome boundaries.
- Land cover maps and climate-based modelling must be used to project future decline in grassland biome.
- Quantifying habitat preferences and understanding local movements and dispersal mechanisms between habitats; quantifying the species' habitat under formal protection.
- Research into the contribution of this species complex to ecosystem functioning.

Encouraged citizen actions:

- Report sightings on virtual museum platforms (for example, iSpot and MammalMAP), especially outside protected areas.
- Report any evidence of illegal mining practices.
- Plant indigenous species in gardens.
- Create corridors to offset the impacts of urbanisation and ensure movement and gene flow between populations.
- Reduce use of insecticides and herbicides.
- Reduce over-stocking on cattle and game ranches.
- Proclaim private land nature reserves/protected areas under government stewardship program.

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Data Sources and Quality

Table 4. Information and interpretation qualifiers for the Brant's Climbing Mouse (*Dendromus mesomelas*) assessment

Data sources	Field survey (literature, unpublished), indirect information (expert knowledge), museum records
Data quality (max)	Inferred
Data quality (min)	Inferred
Uncertainty resolution	Best estimate
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.*