Dendromus mystacalis – Chestnut African Climbing Mouse

Duncan MacFadyen

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

While the Grey African Climbing Mouse lives in drier areas with short grassland, the Chestnut African Climbing Mouse and Brants' Climbing Mouse prefer wet areas with long grass and forests (Solano et al. 2014).

Taxonomy

Dendromus mystacalis Heuglin 1863

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

Synonyms: *acraeus, ansorgei, capitis, jamesoni, nairobae, ochropus, pallescens, pangolensis, uthmoelleri, whytei*

Common names: Chestnut African Climbing Mouse, Chestnut Climbing Mouse (English), Roeskleurklimmuis (Afrikaans)

Taxonomic status: Species complex

Taxonomic notes: This widespread species complex includes many named subspecies with unconfirmed relationships between the groups (Monadjem et al. 2015). Recent chromosomal analysis by Solano et al. (2014) reveals further potential species splits, but additional research is urgently required to clarify their taxonomic relationships.

Assessment Rationale

Listed as Least Concern as the Chestnut African Climbing Mouse is widespread across the eastern regions of the assessment region, occurs in multiple protected areas (including Kruger National Park), is common and sampled consistently in different vegetation types and has a documented recent range expansion in the North West Province. It exhibits a degree of habitat tolerance, and there are no known threats that could cause widespread population decline. However, the impacts of grassland loss on this species should be monitored, particularly land cover change from mining and agriculture synergising with climate change. Low numbers were recorded in the Highveld Grasslands of Gauteng and Mpumalanga provinces. This species should be reassessed following taxonomic resolution.

Regional population effects: This species is expected to disperse from Mozambique, Zimbabwe and Botswana into South Africa. This species may disperse where suitable habitat of coarse-grassed grassland is continuous.

Distribution

This species is widely, but discontinuously, distributed in low-lying savannah and grasslands (typically below 1,000 m) of southern and East Africa (Monadjem et al. 2015). Currently, it is thought to occur from Sudan and Ethiopia southwards to Kenya and Tanzania, then westwards to the Democratic Republic of the Congo, Ghana, Angola and Nigeria. Further south its range extends into Zimbabwe, Zambia, Malawi, parts of Mozambique and extensively across eastern South Africa. The precise limits of its distribution are unknown, and it is perhaps more widespread than presently indicated. Further taxonomic resolution will help to delimit its distribution.

Within the assessment region, the species is confined to the eastern and northeastern parts of country, including parts of the Eastern Cape, KwaZulu-Natal, Gauteng, Mpumalanga, and Limpopo provinces (Skinner & Chimimba 2005). Additionally, there has been a recent range expansion westwards into the North West Province (Figure 1), as Power (2014) confirms that specimens recently collected from wetlands in the Marico and Molopo rivers are the most westerly recorded (see Newbery 1995). In Gauteng and Mpumalanga provinces this species was recently recorded in low numbers in Rocky Highveld Grassland and Moist Degraded Grassland on Ezemvelo Nature Reserve (Gauteng) and Telperion Nature Reserve (Mpumalanga) (MacFadyen 2014).

Population

This species is widespread across its range, but is not usually collected in large numbers. It is consistently trapped but not often. Population numbers also tend to fluctuate, with higher numbers recorded in autumn on the Highveld (MacFadyen 2014). Suitable habitat is often

Recommended citation: MacFadyen D, Schoeman C, Relton C. 2016. A conservation assessment of *Dendromus mystacalis*. 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.

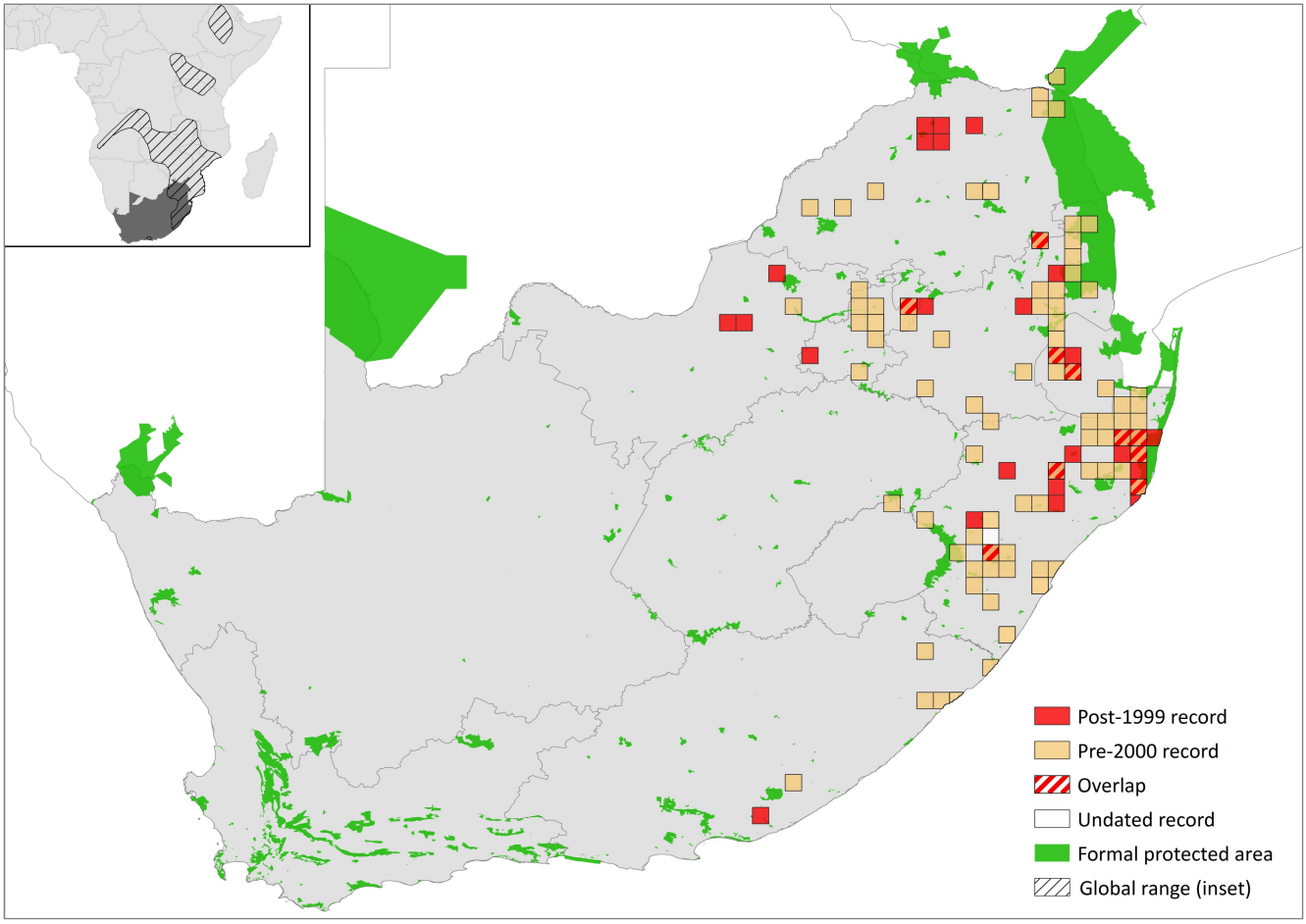

Figure 1. Distribution records for Chestnut African Climbing Mouse (*Dendromus mystacalis*) within the assessment region

Table 1. Countries of occurrence within southern Africa

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

fragmented, and the population is concentrated towards the north and eastern parts of the country. MacFadyen (2014) estimated the population of this species in Rocky Highveld Grassland at 2 animals / ha, with a lower density of 1 animal / ha recorded in Moist Degraded Grassland. Additionally, it was trapped by Rautenbach et al. (2014) at Phinda Private Game Reserve in a variety of habitats, and by Avenant and Kuyler (2002) in a cultivated area at Maguga Dam, Swaziland. These results are an indication that this species has the ability to inhabit a range of habitat types.

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. Can inhabit modified and cultivated habitats.

Habitats and Ecology

Found within grassland and savannah mosaic habitats, where it prefers tall, rank grassland; but can also inhabit riparian forests, Afromontane forests, Sand Forest, wetlands, drainage lines and thickets (Monadjem 2013; Rautenbach et al. 2014; Delcros et al. 2015). In the North West Province, Power (2014) collected three specimens in wetlands of the dolomitic eyes of both the Marico and Molopo rivers (in *Phragmites australis* reedbeds), and elsewhere at Batlako vlei in the Pilanesberg uplands, which represents new information on their use of wetland habitats. MacFadyen (2014) recorded individuals in short grass in moist degraded grassland at Telperion Nature Reserve (Mpumalanga) and Ezemvelo Nature Reserve (Gauteng). Although preferring tall, rank grassland, this species is also recorded in areas with a low basal cover, and does not appear to have any particular key vegetation type. Interestingly, it was sampled, together with *Suncus infinitesimus* (together the two most uncommon species sampled), in Kikuyu (*Pennisetum clandestinum*) pastures in Umvoti Vlei Conservancy, KwaZulu-Natal Province, despite this habitat having low small mammal abundance overall (Fuller & Perrin 2001).

This species is omnivorous. It will feed on seeds and a wide range of invertebrates, including termites, crickets, moths and small beetles (Monadjem 1997). Like other species of climbing mice, this nocturnal and largely

Table 2. Threats to the Chestnut African Climbing Mouse (*Dendromus mystacalis*) 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, 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

terrestrial species accesses seeds and invertebrates in low bushes and grass stalks, using its prehensile tail for balance while climbing. Similarly, like other climbing mice, it constructs nests in low bushes and trees up to approximately 2 m off the ground. These nests are used during the warm, wet seasons, primarily for rearing young and resting (Skinner & Chimimba 2005). The species is of similar size to *Dendromus melanotis*, differentiated by the bright chestnut colouration and also has a similar dark band running from behind the shoulders to the base of the tail. It is solitary or found in pairs or small family groups.

Ecosystem and cultural services: There are no known cultural services or folklores associated with this species. Similar to other small mammals, this species plays a role in regulating invertebrate numbers, seed dispersal, nutrient cycling, and is an important prey species for predators such as Barn Owls (*Tyto alba*) and Black-shouldered Kites (*Elanus caeruleus*).

Use and Trade

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

Threats

Currently no major threats have been identified for this species, but grassland habitat loss from agricultural expansion (especially monocultures), forestry and mining developments and 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 impact of these threats on the population remains to be quantified.

Current habitat trend: Stable. No substantial declines in habitat quantity or quality as it can occur in modified habitats, where tall grass structure is retained. However, areas that have been severely overgrazed are expected to impact the species. Increased urbanisation and urban spread are also expected to have decreased the area, extent and quality of suitable habitat for the species. 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, including Kruger National Park (Limpopo), uMkhuze and Phinda Game Reserves (KwaZulu-Natal), Telperion Nature Reserve (Mpumalanga), and Ezemvelo Nature Reserve (Gauteng). No direct interventions are necessary but protected area expansion to incorporate grassland habitats would certainly benefit

Table 3. Conservation interventions for the Chestnut African Climbing Mouse (*Dendromus mystacalis*) 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	-	-	-

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 (Lotter et al. 2014). Grassland restoration projects through post-mining rehabilitation programs are also likely to benefit this species. Grasslands are restored in a number of ways, most importantly, the ground should be contoured, top soil replaced, and grass seed sowed. Seeds were successfully sowed and grassland rehabilitated on old lands on Telperion Nature Reserve (D. MacFadyen unpubl. data). It is the mining and agricultural industries' responsibility to rehabilitate mined and ploughed areas, respectively. Additionally, land owners are responsible for managing the land and vegetation, ensuring over-utilisation of grasses is avoided.

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.

Research priorities:

- This species complex requires an urgent 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 the 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 illegal mining practice.
- Plant indigenous grasses in urban and peri-urban gardens.
- Create corridors to offset the impacts of urbanisation and ensure movement and gene flow between populations, especially corridors of natural grassland in agricultural and mining areas.
- Reduce use of insecticides and herbicides as much as possible.
- Reduce over-stocking on cattle and game ranches.
- Proclaim private land nature reserves/protected areas under government stewardship programmes.

Data Sources and Quality

Table 4. Information and interpretation qualifiers for the Chestnut African Climbing Mouse (*Dendromus mystacalis*) assessment

Data sources	Field survey (literature, unpublished), museum records
Data quality (max)	Estimated
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.*

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