Malacothrix typica – Large-eared 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	No

Whilst this mouse is the only species within the animal genus *Malacothrix*, it does share the genus name with 20 plant species generally known as desert dandelions from North America.

Taxonomy

Malacothrix typica (Smith 1834)

ANIMALIA - CHORDATA - MAMMALIA - RODENTIA - NESOMYIDAE - *Malacothrix* - *typica*

Common names: Large-eared Mouse, Gerbil Mouse, Large-eared African Desert Mouse, Long-eared Mouse (English), Bakoormuis (Afrikaans)

Taxonomic status: Species complex

Taxonomic notes: Although currently a monotypic genus, this may be a species complex with six possible subspecies proposed. These include *Malacothrix typica typica* from the Graaff-Reinet region in the Eastern Cape, *M. t. fryi* Roberts 1917 from the North West Province, *M. t. molopensis* Roberts 1933 from southeastern Botswana, *M. t. kalaharicus* Roberts 1932 from southwestern Botswana, *M. t. egregia* Thomas 1926 from northern Namibia, and *M. t. damarensis* Roberts 1932 from central Namibia (Meester et al. 1986). Further taxonomic investigation is required to confirm the status of these subspecies (Skinner & Chimimba 2005; Monadjem et al. 2015).

Assessment Rationale

Listed as Least Concern because this species is widespread within the assessment region and occurs in areas of low human density. It is represented in several protected areas within its range. Although the effects of climate change are unknown, there are no obvious major threats, and there is no reason to infer a population decline at this stage, and the population trend is considered stable. However, this possible species complex may necessitate reassessment following taxonomic resolution.

Regional population effects: Rescue effect is possible through Namibia and Botswana across contiguous habitat. However, since dispersal ability is primarily a function of an animal's body size, tolerance for disturbance and recolonisation capabilities, this small rodent's rescue effect may be limited.

Distribution

This monotypic species was first described from a locality near Graaff-Reinet in the Eastern Cape. Endemic to southern Africa, its current range includes the central and southwestern regions of South Africa, southwestern Botswana, most of Namibia and into the extreme southwestern portions of Angola (Monadjem et al. 2015). Its range is composed of scattered records within the assessment region, including records from the North West, Gauteng, Free State, Western Cape provinces, the northwestern regions of the Eastern Cape Province and widely across the Northern Cape Province (Figure 1; Skinner & Chimimba 2005). Although, formerly present at Border Cave during the late Pleistocene period (Avery 1991), this species no longer occurs in KwaZulu-Natal. It is known to have occurred across a range of localities in the Northern Cape Province during the Holocene and Pleistocene periods (Avery & Avery 2011), and still does today.

The species was not detected in North West Province during a recent field survey (Power 2014), but it is difficult to trap (Skinner & Chimimba 2005). A pregnant female was trapped 22 km northwest of Vryburg in April 1985 (B. Wilson unpubl. data) indicating that the species was, and may still be, present in the region as suggested by historical records.

Population

Although this species is generally considered to be rare (Happold 2013), it can be locally abundant, particularly in areas supporting numerous dry calcrete pans. It is rarely captured using conventional trap methods and is best captured by hand with the aid of a spotlight (Smithers 1971; Rautenbach 1978). It was also caught by hand in Rolfontein Nature Reserve, Northern Cape Province (Jooste & Palmer 1982). A genetic study based on multiple nuclear genes estimated divergence date of muroid rodents. Results indicated high levels of gene flow in the past among isolated populations (Steppan et al.

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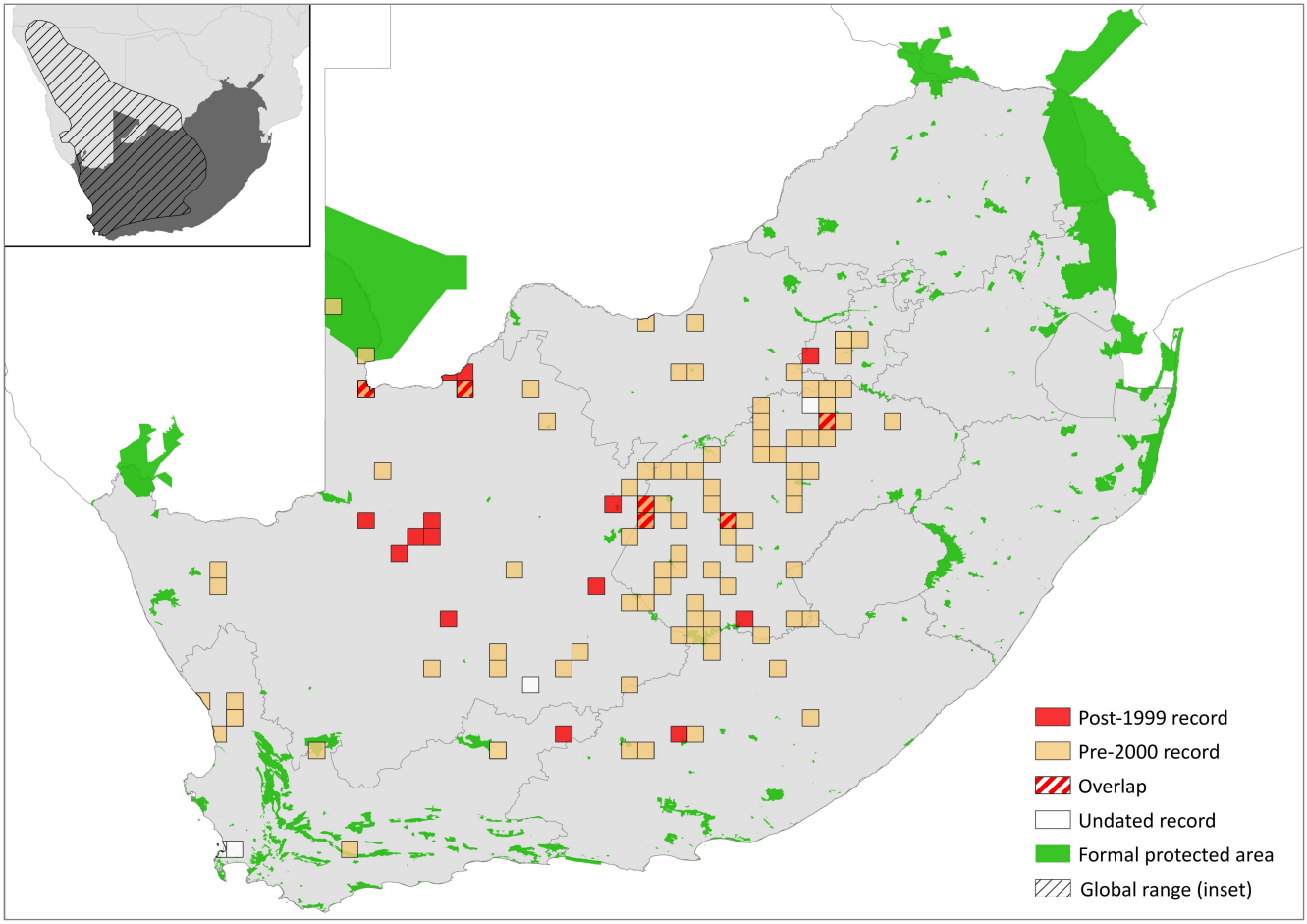

Figure 1. Distribution records for Large-eared Mouse (*Malacothrix typica*) within the assessment region

Table 1. Countries of occurrence within southern Africa

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

2004). The population is naturally fragmented by unsuitable habitats, and this may be further supported by genetic investigations.

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, naturally fragmented.

Habitats and Ecology

Predominantly found in semi-desert areas with a mean annual rainfall of 150–500 mm (Skinner & Chimimba 2005). It also occurs readily in the Nama and Succulent Karoo, and grassland areas, preferring habitats with short grass on a hard substrate covered with pebbles, and generally lives on panveld fringes where there is a cover of karoo bushes, while avoiding sandy areas in duneveld and *Acacia* savannah. It is terrestrial and nocturnal, mostly active from 19:00 to 04:00 (Happold 2013; B. Wilson pers. obs.), when it can be seen foraging on green vegetation and seeds at least 100 m from the burrow entrance (Smithers 1971; Monadjem et al. 2015). Occasionally insects will also form part of its diet. In Rolfontein Nature Reserve, Northern Cape Province, specimens were caught at night among *Chloris virgata* and they were commonly associated with short stands of *Cynodon dactylon* (Jooste & Palmer 1982).

It is relatively slow-moving, preferring to remain motionless when threatened. The patchy markings on the back likely serve as a cryptic camouflage (Knight & Skinner 1981). Its slow-moving behaviour may be a disadvantage as this species is one of the key prey items of Black-footed Cats (*Felis nigripes*), particularly during their reproductive season when female cats have young (Sliwa 1994). It has also been recorded as prey for Barn Owls (*Tyto alba*), as well as various other smaller carnivores and snakes (Happold 2013). To combat itsr slow movements, it has large ears to aid in predator detection, and will often freeze when it senses danger, with its body colouration aiding in concealment (Knight & Skinner 1981).

Large-eared Mice are solitary and believed to be asocial. Smithers (1971) recorded the majority of young being born during warm wet months (August to March), but one female caught in the North West Province in late April was

Table 2. Threats to the Large-eared Mouse (*Malacothrix typica*) 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 Nomadic Grazing* and *2.3.2 Small-holder Grazing, Ranching or Farming*: livestock induced overgrazing in and around panveld fringes.	-	Anecdotal	-	-

pregnant with five foetuses measuring 1 x 1 mm. With a gestation period of 23–27 days, litter sizes vary from two to eight young and weaning takes place at around 32 days. Males are larger at about 16 g with females averaging only 10.4 g. In captivity Smithers (1971) recorded them surviving up to two and half years. They have an unusual burrow system (Happold 2013): a burrow, 20–25 mm in diameter, is made deep into the ground with a nest chamber lined with grass and feathers at the end. A new burrow is then built vertically from the chamber back to the surface with the soil being pushed back into the original burrow blocking it entirely.

This species has characteristically large ears, which give rise to some of its common names, as well as a short, naked tail. It has patchy, black-tipped hairs on the back resembling grease marks which make it easy to distinguish from the young of other larger species or similar-sized species such as *Dendromus*. There is some colour variation throughout its range, which may be linked to either habitat or explained by possible sub-speciation. "*Malacothrix*", is from the Greek word "*malakos*" meaning "soft" and "thrix" meaning "hair", which aptly describes this very small mouse with long and soft hair.

Ecosystem and cultural services: This species is a valuable prey item for Black-footed Cats as well as Barn Owls, other small carnivores and snakes (Happold 2013). Similar to other small mammals, this species likely plays a role in regulating invertebrate numbers, seed predation and nutrient cycling. De Graaf (1981) suggested that this species may be a reservoir of plague, but this was not indicated by the National Institute for Communicable Diseases (National Institute for Communicable Diseases 2005).

Use and Trade

The Large-eared Mouse is not traded or utilised in any form. This species has never been considered for the pet trade industry. One reason for this is because their solitary and asocial nature makes them unsuitable pets.

Threats

There are no major threats to this species. However, long-term overgrazing by small-holder and nomadic livestock can cause declines in habitat quality for this species in some areas such as the North West Province, most particularly around large panveld areas (B. Wilson pers. obs.). This could potentially result in localised extinctions.

Current habitat trend: Stable, the extent of habitat is not expected to decline by expanding human settlements. This species is not generally common in heavily utilised areas, probably due to its preference for green vegetation, which becomes reduced in these circumstances. Wildlife ranching may be positive for this species, as the habitat and water systems for herbivore species tend to be better managed and this may result in key niche panveld fringe areas being less disturbed compared to communal or small-holder livestock farming areas. However, this should be investigated.

Conservation

This species is present within several protected areas of the assessment region, including Kgalagadi Transfrontier Park, Mokala National Park, Karoo National Park, Tankwa Karoo National Park, West Coast National Park, Namaqualand National Park, Tussen-die-Riviere Nature Reserve, Mountain Zebra National Park and Goegap Nature Reserve. No specific conservation interventions are necessary at present.

Recommendations for land managers and practitioners:

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

Research priorities:

- Taxonomic resolution of the six proposed subspecies is required.
- Phylogeographical differences between subspecies need to be determined.

Encouraged citizen actions:

- Report sightings on virtual museum platforms (for example, iSpot and MammalMAP), especially outside protected areas.

Data Sources and Quality

Table 3. Information and interpretation qualifiers for the Large-eared Mouse (*Malacothrix typica*) assessment

Data sources	Museum records, field study (unpublished), indirect information (expert knowledge)
Data quality (max)	Inferred
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.*