Zelotomys woosnami – Woosnam's Broad-headed Mouse

Pascal Parent

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	Edge of range

*Watch-list Threat

First described by the German zoologist Harold Schwann in 1906, this species was named after Richard Bowen Woosnam (1880–1915), a British soldier who, after serving in the army during the South African Anglo-Boer War in 1903, started collecting animals in Africa for the British Museum of Natural History and the Zoological Society of London (Beolens et al. 2009).

Taxonomy

Zelotomys woosnami (Schwann 1906)

ANIMALIA - CHORDATA - MAMMALIA - RODENTIA - MURIDAE - *Zelotomys* - *woosnami*

Common names: Woosnam's Broad-headed Mouse, Woosnam's Zelotomys, Woosnam's Desert Mouse (English), Woosnam se Woestynrot (Afrikaans), Sekuthê (Setswana)

Taxonomic status: Species

Taxonomic notes: The *Zelotomys* genus consists of two species with isolated ranges, of which only *Z. woosnami* occurs within the assessment region (Skinner & Chimimba 2005; Monadjem et al. 2015). *Zelotomys woosnami* exhibits no geographic variation, and no subspecies have been recognised (Skinner & Chimimba 2005; Monadjem et al. 2015).

Assessment Rationale

Because of their natural rarity, information on this species is sparse. It is a Kalahari endemic species that is peripheral and scarce within the assessment region. In a recent survey, this species was not recorded in the North West Province, despite it supposedly occurring there. However, search effort is minimal at present and the lack of current records is more likely an artefact of low sampling effort, in combination with natural rarity, rather than an indication of decline, especially as the species occurs in habitats that are not suspected to be threatened by anything other than overgrazing. However, the widespread construction of solar farms in the Northern Cape Province may represent an emerging threat to this species and should be monitored.

Although the species is scarce and its estimated extent of occurrence within the assessment region is < 20,000 km^2, the local population is probably augmented through dispersal across connected habitats from Namibia and Botswana where the majority of the species' population occurs. This species may face emerging threats in association with development of solar farms, but Least Concern is retained until new data are available that indicate the species is genuinely threatened within the assessment region. We recommend field surveys be conducted to gather information on distribution, dispersal and threats.

Regional population effects: There is possible dispersal of this species from Namibia and Botswana via the Kgalagadi Transfrontier Park and the northern border of the North West Province, as the preferred habitat is relatively contiguous. Thus rescue effects are possible.

Distribution

Occurring in arid and semi-arid habitats, this is a southern African Kalahari endemic, ranging from northwestern South Africa (Northern Cape Province) through central and western Botswana to eastern and northern Namibia (Skinner & Chimimba 2005) and into extreme southwestern Angola. Within the assessment region it is sparsely distributed where mean annual rainfall is 200–500 mm (Nel 2013).

The type specimen for the species is Kuruman, South Africa (Schwann 1906), indicating that at least until the early 1900s the species was present at this southern point. Avery and Avery (2011) have Holocene records from Blinkklipkop (cave) and Wonderwerk (cave) which are about 90 km and 60 km respectively south of Kuruman, as well as from Zoovoorbij which is 30 km southwest of Upington. They also had an even earlier Pleistocene record for Wonderwerk. This suggests that historically this species had a wider range than appears to be the current case and that the range is apparently shrinking northwards. Extensive field work in Wonderwerk during the late 1980s and early 1990s did not confirm the presence of this species (J. Erasmus unpubl. data; B. Wilson pers. comm.). Additionally, Power (2014) did not

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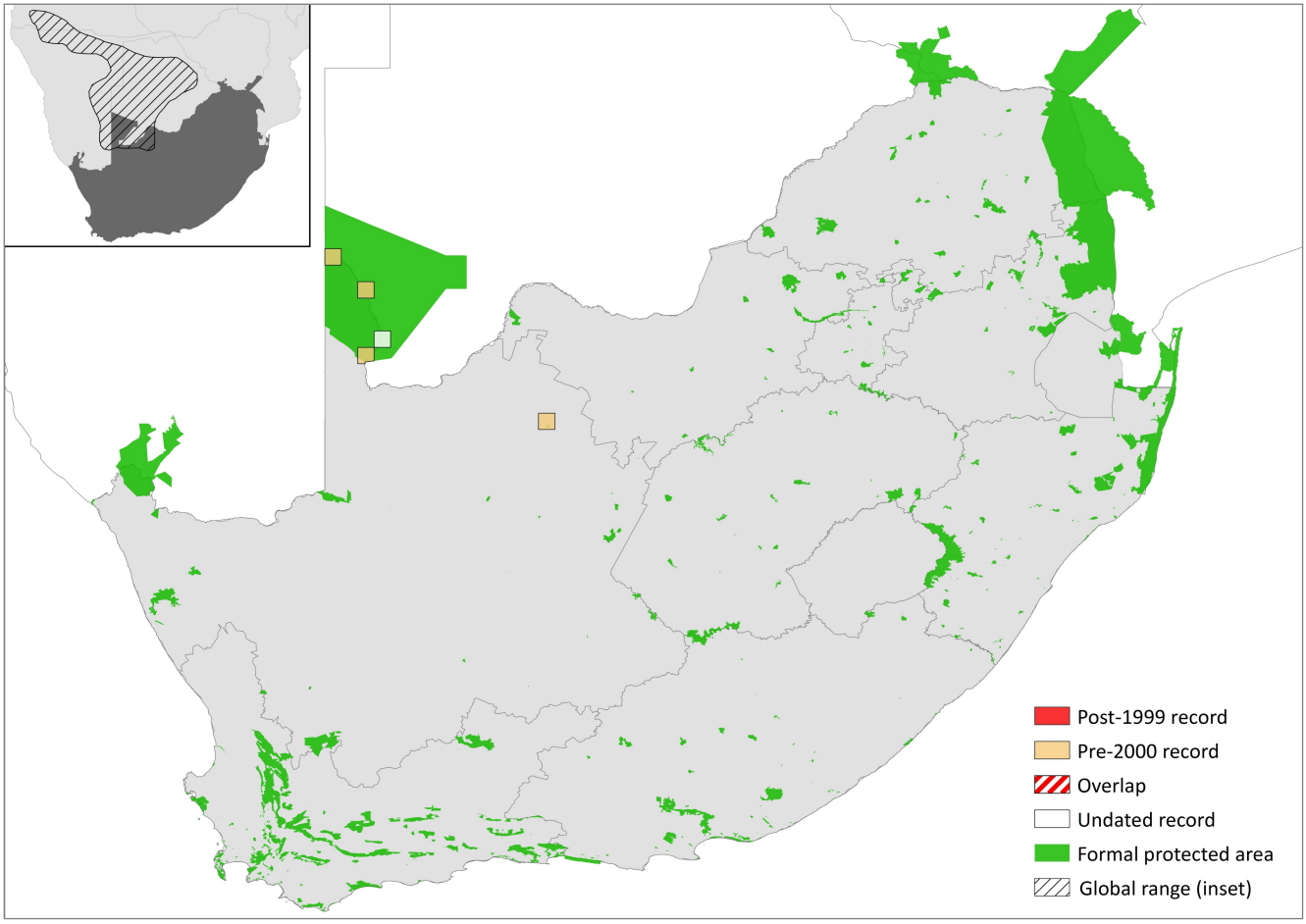

Figure 1. Distribution records for Woosnam's Broad-headed Mouse (*Zelotomys woosnami*) within the assessment region

Table 1. Countries of occurrence within southern Africa

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

capture any individuals in a recent survey in North West Province, and neither are there any Ditsong museum records for the province, though it has been mapped to occur throughout the northern Kalahari areas (Friedmann & Daly 2004; Skinner & Chimimba 2005).

Population

Zelotomys spp. are naturally a rare or uncommon species and usually only form a small percentage of rodent communities and numbers can fluctuate widely at the local scale (Nel 2013). There seem to be slightly higher concentrations in high dune veld compared to low dune veld areas (Nel 2013). The majority of the population is thought to exist in Botswana since most of its distribution occurs in this area. However, a study in Koanaka Hills, Botswana found this species to be relatively rare, exhibiting low population densities (Thies & Lewis 2015), suggesting that it is possibly rare or patchily distributed in this region as well.

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 has very specific micro-habitat requirements: it occurs along river beds and around pans frequently associated with sparsely-vegetated *Acacia* woodlands, savannahs, riparian *Acacia*, open shrublands of *Acacia*, *Grewia* and *Terminalia*, and *Rhigozum* woodlands (Skinner & Chimimba 2005). It prefers sandy to fine, consolidated Kalahari-type soils and lime-clay silty soils. It is usually restricted to regions exhibiting an average annual rainfall of between 200 and 500 mm (Skinner & Chimimba 2005).

Woosnam's Broad-headed Mouse is medium-sized, has a scaly white tail and bears a superficial resemblance to *Mastomys*, which has a slightly longer grey tail and a greater number of nipples (24 vs 10). It is a nocturnal and mainly terrestrial species that digs its own burrows under shrubs and trees. These burrows are 40–55 cm deep and the nest chambers are filled with finely-shredded grass (Birkenstock & Nel 1977).

Table 2. Threats to the Woosnam's Broad-headed Mouse (*Zelotomys woosnami*) 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 Livestock Farming & Ranching*: woodland clearing for pasture. Current stress *1.2 Ecosystem Degradation*: overgrazing leading to reduced habitat quality such as bush encroachment.	-	Anecdotal	-	Ongoing
2	*7.1.1 Fire & Fire Suppression*: incorrect fire regime reduces habitat quality.	-	Anecdotal	-	Increasing
3	*5.3.3 Logging & Wood Harvesting*: harvesting of *Acacia* trees for firewood and charcoal production.	-	Anecdotal	-	Ongoing
4	*3.3 Renewable Energy*: habitat loss from solar farm construction.	-	Anecdotal	-	Increasing

Whilst it is largely granivorous, it has been recorded eating insects, vegetable matter and meat, with the latter having been possibly scavenged from other rodent carcasses (Nel 2013). These mice are usually solitary and mutually intolerant, with individuals attacking, killing and partially consuming others in captivity (Nel 2013). Interactions such as allogrooming are a prelude to mating.

The reproductive data is sparse for this species, but it appears that the birthing peaks during wet, summer months (December to April). Litter sizes range from four to 11 with the female characteristically having 10 nipples (Nel 2013). Young are weaned at 30 days and the minimum time between litters appears to be 31 days.

Ecosystem and cultural services: There is a possibility that they utilise disused burrows of other rodent species, including *Tatera* (now *Gerbilliscus*) (Shortridge 1934) and *Desmodillus* (Roberts 1951). Both these species are known to be reservoirs of bubonic plague (NICD 2005), and De Graaf (1981) recorded a bubonic vector flea species from this mouse. It is therefore possible that this species may also be a reservoir host, although due to the rarity of the species, the threat is not significant.

Use and Trade

This species is not traded or utilised in any form.

Threats

No major threats have been identified for this species. However, habitat loss and deterioration through overgrazing, frequent fires and bush encroachment may cause local declines. Mining activities which impact on historical watercourses such as the Gama Gara and Kuruman Rivers may also have local negative impacts on populations. The construction of large-scale solar farms in the Northern Cape may represent an emerging threat.

Current habitat trend: Declining, overgrazing and bush encroachment may alter suitable environments. Additionally, ongoing illegal harvesting of tall trees for firewood or charcoal production may also cause declines in habitat quality.

Conservation

This species occurs within the Kgalagadi Transfrontier National Park (South Africa), and although currently unconfirmed, presumably this species may occur in other protected areas within the assessment region, such as Augrabies Falls National Park. This species would likely benefit from protected area expansion, as well as stewardship schemes to protect woodland and historic water courses.

Recommendations for land managers and practitioners:

- Populations should be monitored to record any changes in abundance and distribution.
- Land managers should be encouraged to conserve woodlands and old trees.
- Future mining activities in the Kuruman area and northwards should be assessed for potential impacts on preferred habitats for this species.
- The species would benefit from suitable land management: land owners should leave corridors of grassland between grazed areas and decrease stocking rates.

Table 3. Conservation interventions for the Woosnam's Broad-headed Mouse (*Zelotomys woosnami*) 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 suitable habitats, including the fringes of pans, river valleys and historic water courses.	-	Anecdotal	-	-	-
2	*1.2 Resource & Habitat Protection*: conservation planning to protect suitable habitat through conservancies and biodiversity stewardship schemes.	-	Anecdotal	-	-	-

Research priorities:

- Additional studies are needed into the geographic distribution of this species.
- Current population trends and the intensity of threats faced by local populations.

Encouraged citizen actions:

- Report sightings on virtual museum platforms (for example, iSpot and MammalMAP), especially outside protected areas.
- Landowners should preserve *Acacia* trees, both living and dead.

Data Sources and Quality

Table 4. Information and interpretation qualifiers for the Woosnam's Broad-headed Mouse (*Zelotomys woosnami*) 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.*