Otomys angoniensis – Angoni Vlei Rat


John Power

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)	None
CITES listing	None
Endemic	No

Cranial size of the Angoni Vlei Rat has decreased significantly over the past 100 years, possibly due to the effects of climate change (Nengovhela et al. 2016).

Taxonomy

Otomys angoniensis Wroughton 1906

ANIMALIA - CHORDATA - MAMMALIA - RODENTIA - MURIDAE - *Otomys - angoniensis*

Synonyms: *Otomys maximus* Roberts 1924

Common names: Angoni Vlei Rat (English), Angoni-vleirot (Afrikaans)

Taxonomic status: Species

Taxonomic notes: Unpublished molecular data show that East and southern African *Otomys angoniensis* may be distinct species (Monadjem et al. 2015). While *O. a. maximus* has been regarded as a separate species, it is provisionally included in *O. angoniensis* due to mitochondrial DNA similarity (S. Maree unpubl. data) and morphometric overlap (Bronner & Meester 1988). Three subspecies are recognised (Taylor 2013).

Assessment Rationale

Listed as Least Concern in view of its wide distribution within the assessment region, observed range expansions in Limpopo and North West provinces, ability to survive in modified habits, and because there are no threats likely to cause range-wide population decline. The savannah habitat is well-protected and thus this species is not expected to be significantly impacted by habitat loss. Conversely, climate change is projected to expand its area of occupancy by 30–123% between 1975 and 2050, mirroring the expansion of savannah habitat in the region. For example, recent evidence suggests it is usurping the grassland-adapted species *O. auratus* in the Soutpansberg Mountains, due to shifts in vegetation structure.

Regional population effects: It is a widespread species existing in largely intact habitats. Thus, the regional population is presumably connected.

Distribution

This is the most widespread of all *Otomys* species, occurring in mesic savannahs in southern and central Africa, as well as the foothills of major mountain ranges in Malawi, the western slopes of the Albertine Rift, Uganda, Kenya and northern Tanzania (Monadjem et al. 2015). Similarly, in the Drakensberg Range, it occurs on the lower slopes in savannah habitats. It occurs in the northern and northeastern provinces of South Africa, including Swaziland. Records from the Eastern Cape (De Graaff 1981; Bronner & Meester 1988) are not corroborated by museum specimens (Taylor 2013).

It has mostly an allopatric distribution with *O. auratus* overlapping only at the interface of the Grassland and Savannah biomes, around 1,000 m asl in KwaZulu-Natal and Swaziland and 1,300 m asl in Limpopo (Monadjem 1998; Taylor 1998; Nengovhela 2014). However, a recent range expansion has been documented in the Soutpansberg Mountains, Limpopo where it has expanded from the foothills to the peaks and has displaced *O. auratus* (savannah species replacing grassland species) due to vegetation transition from grassland to thicket (Taylor et al. 2016). Similarly, range expansions have been documented in North West Province where Power (2014) confirmed new local records at both S. A. Lombard and Bloemhof Nature Reserves, where previous intensive surveys in the areas did not reveal this species (Newbery 1995). Range expansion is projected to continue due to expansion of savannah habitats in response to climate change. Taylor et al. (2016) used MaxEnt models to determine an increase in area of occupancy between 30% (with limited dispersal) to 123% (with unrestricted dispersal) between 1975 and 2050.

Population

It is common to abundant in suitable habitats (Taylor 2013) and, given its currently expanding range, we suspect there are over 10,000 mature individuals within the assessment region and the population is likely to be increasing. More field surveys and long-term monitoring should be undertaken to confirm this. In Kenya, a population was recorded at a density of 30 animals / ha (Taylor 2013).

Current population trend: Increasing

Recommended citation: Taylor P, Baxter R, Child MF. 2016. A conservation assessment of *Otomys angoniensis*. 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.

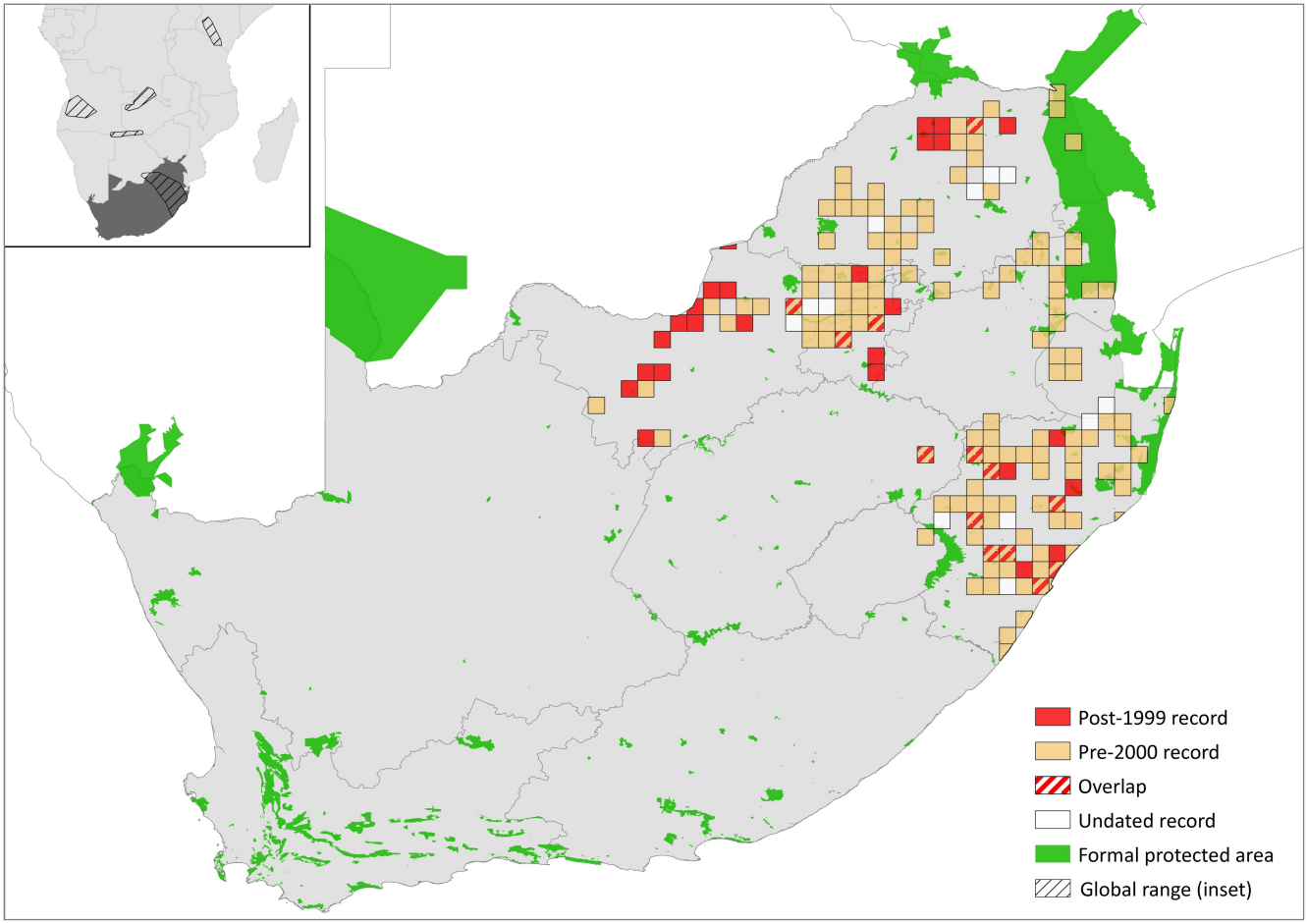

Figure 1. Distribution records for Angoni Vlei Rat (*Otomys angoniensis*) within the assessment region

Table 1. Countries of occurrence within southern Africa

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

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

Habitats and Ecology

It occurs in well-watered savannah grassland, seasonally flooded grassland and wetlands generally below 1,000 m asl. It is usually found near water but drier habitats can be occupied during the wet season (Taylor 2013). It can be found in modified habitats, such as in pastureland but usually not when livestock is present. Where *O. auratus* and *O. angoniensis* co-occur, the former is associated with sedges and grasses adapted to densely vegetated wetlands with wet soils, while the latter is associated with plants that typically grow in the drier margins of wetlands (Davis 1973). Distinctive trails are made through dense grass and used by other small mammals (Taylor 2013).

Ecosystem and cultural services: They are an important prey species (sensu Malan 2001; Taylor 2013).

Use and Trade

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

Threats

There are no major threats to this species. However, it can be locally threatened by habitat degradation due to overgrazing by domestic livestock and/or wildlife ranching. Further studies are needed to determine the resilience of this species to land-cover change. Unlike other *Otomys* species, climate change is projected to increase its area of occupancy along with savannah expansion and extend widely into grassland areas currently occupied by *O. auratus* (Taylor et al. 2016). For example, habitat change from open grassy plains to dense thicket has seen *O. angoniensis* completely replace *O. auratus* at a key zone of sympatry in the Soutpansberg Mountains, Limpopo between 1923 and 2015 (Taylor et al. 2016).

Current habitat trend: Increasing. Savannah habitat is largely intact (Driver et al. 2012) and climate change is projected to increase its range (Taylor et al. 2016).

Table 2. Threats to the Angoni Vlei Rat (*Otomys angoniensis*) ranked in order of severity with corresponding evidence (based on IUCN threat categories, with regional context)

Rank	Threat description	Evidence in the	Data quality	Scale of	Current
1	*2.3.2 Small-holder Grazing, Ranching or Farming*. Current stress *1.2 Habitat Degradation*: from overgrazing.	-	Anecdotal	-	Ongoing
2	*2.3.3 Agro-industry Grazing, Ranching or Farming*. Current stress *1.2 Habitat Degradation*: from overgrazing.	-	Anecdotal	-	Ongoing

However, wetlands are the most threatened ecosystem in South Africa (Driver et al. 2012). The South African National Land-Cover change report found a 32.8% decline in natural wetlands nationally from 1990–2013/14, which is a combination of both genuine wetland loss through anthropogenic activities and the generally drier conditions currently than in 1990 (GeoTerraImage 2015). Wetland loss should thus be monitored for its impacts on this species.

Conservation

This species is present in many protected areas, including Kruger National Park. Although no specific interventions are necessary at present, the following interventions are encouraged that will benefit all small mammals:

1. Using previously cultivated areas for development instead of remaining natural areas.
2. Land managers should maintain a vegetation buffer around wetlands to reduce impacts of land-use practices (Driver et al. 2012).
3. Holistic management of ranchlands: including de-stocking, rotational grazing and buffering wetland vegetation, are encouraged.

Recommendations for land managers and practitioners:

- Land managers should decrease stocking rates to maintain vegetation around wetlands.
- Prioritise old fields for development in systematic conservation planning.

Research priorities:

- Effects of savannah habitat loss and degradation.
- Effects of range expansion on other *Otomys* species.

Encouraged citizen actions:

- Report vlei rat sightings on virtual museum platforms (for example, iSpot and MammalMAP): The feeding signs of this species are easy to detect by short chopped lengths of grass and green moist faecal pellets (Skinner & Chimimba 2005; Taylor 2013).

Data Sources and Quality

Table 4. Information and interpretation qualifiers for the Angoni Vlei Rat (*Otomys angoniensis*) assessment

Data sources	Field study (literature, unpublished), museum records, indirect information (literature)
Data quality (max)	Estimated/projected
Data quality (min)	Estimated/projected
Uncertainty resolution	Maximum/minimum values
Risk tolerance	Evidentiary

References

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Table 3. Conservation interventions for the Angoni Vlei Rat (*Otomys angoniensis*) 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	*5.2 Policies & Regulations*: prioritising previously cultivated areas "old lands" for development.	-	Anecdotal	-	Unknown	-
2	*2.3 Habitat & Natural Process Restoration*: wetland conservation and restoration	-	Anecdotal	-	Unknown	-
3	*2.1 Site/Area Management*: holistic management of ranchlands to reduce impacts of overgrazing	-	Anecdotal	-	Unknown	-

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