Acomys spinosissimus – Spiny Mouse


Katarina Medger

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

As its name suggests, the hair on the Spiny Mouse is spiny and has a prickly appearance (Photo 1), which may be an adaptation to a lifestyle in rocky terrain (cf. Klipspringer).

Taxonomy

Acomys spinosissimus (Peters 1852)

ANIMALIA - CHORDATA - MAMMALIA - RODENTIA - MURIDAE - *Acomys* - *spinosissimus*

Synonyms: *Acomys selousi* (De Winton 1896); *Acomys transvaalensis* (Roberts 1926)

Common names: Spiny Mouse (English), Stekelmuis (Afrikaans)

Taxonomic status: Species complex

Taxonomic notes: This species has recently been shown to comprise a species complex including at least three distinct cryptic species in addition to *A. spinosissimus*: *A. muzei*, *A. ngurui* and *A. selousi* (Verheyen et al. 2011). *Acomys selousi* is a separate species endemic to southern Africa, but has not been formally described. According to craniometric analyses by Verheyen et al. (2011), *A. selousi* from South Africa (also eastern Botswana, southern parts of Zimbabwe and Mozambique) is distinct from *A. spinosissimus*, which occurs further north. We note that Monadjem et al. (2015) describe *A. selousi* separately from *A. spinossimus*.

Assessment Rationale

Listed as Least Concern because of its wide distribution within the assessment region and its presence in major protected areas, including Kruger National Park and a number of private conservation areas. There are currently no major identified threats that could cause overall population decline. This species inhabits rocky areas which are less likely to be transformed. However, we note that once *A. selousi* has been formally described, this species will need to be re-assessed.

Regional population effects: Dispersal is possible across regions when rocky areas are connected by suitable habitat corridors. For example, Spiny Mice have been recorded in a grassland saddle between sandstone outcrops (D. MacFadyen pers. obs.). However, as they are predominantly restricted to rocky habitats, and are not as numerous as other species (such as *Micaelamys namaquensis*), they may be relatively poor dispersers.

Distribution

Within the southern African sub-region, the species occurs widely across Zimbabwe and in Mozambique south of the Zambezi River, and marginally in eastern Botswana (Skinner & Chimimba 2005; Table 1). Within the assessment region, it occurs throughout the Limpopo Province, and northwestern parts of the North West Province, and into parts of Gauteng and Mpumalanga (Figure 1). It is widespread but limited to areas with suitable rocky habitat, and is not as uniformly spread as other rupicolous small mammal species. In the North West Province, it was captured in Pilanesberg National Park and Madikwe Game Reserve in the north (but not at Borakalalo), and was captured for the first time in the Enzelsberg and in the norite koppies at Bospoort Dam (Power 2014). It was not captured further south (for example, in the Magaliesberg), and thus, based on high sampling effort, it probably does not occur there. In Gauteng and Mpumalanga provinces this species was readily recorded in the red sandstone areas of Ezemvelo Nature Reserve (Gauteng) and Telperion (Mpumalanga) (MacFadyen 2014).

Population

This species is common, but seldom seen unless actively trapped in the right habitat and is not suspected to be declining, although its rocky habitat is naturally fragmented. At Telperion Nature Reserve in Mpumalanga, the mean minimum density of the species was 5 individuals / ha and total subpopulation size was thus estimated at 9,840 individuals (MacFadyen 2014). The species is usually solitary, in pairs or small family groups, so is never recorded in large numbers. Population numbers also tend to fluctuate seasonally, becoming more abundant in autumn (MacFadyen 2014).

Current population trend: Stable

Continuing decline in mature individuals: Unknown

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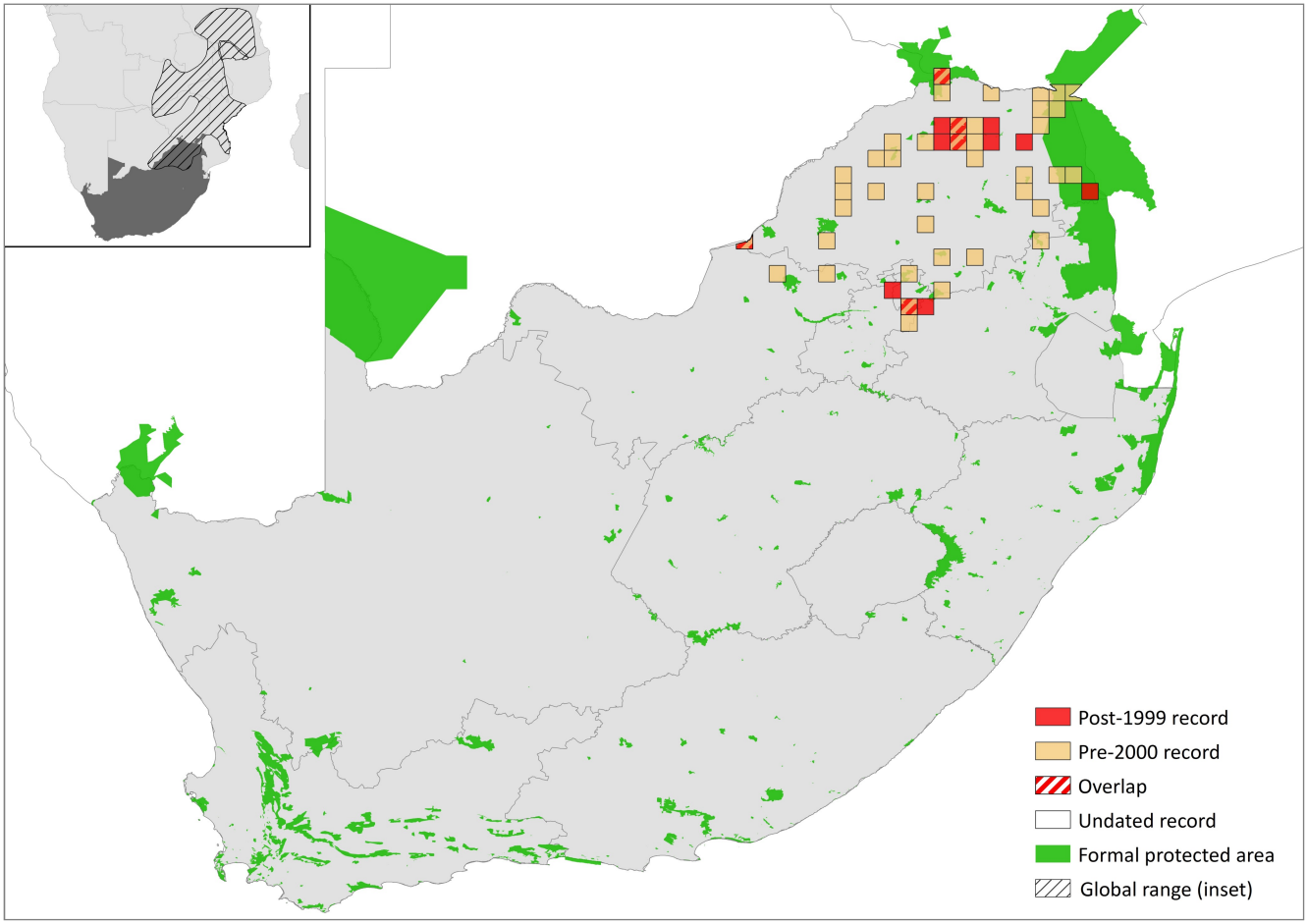

Figure 1. Distribution records for Spiny Mouse (*Acomys spinosissimus*) within the assessment region

Table 1. Countries of occurrence within southern Africa

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

Number of mature individuals in population: Unknown

Number of mature individuals in largest subpopulation: Unknown

Number of subpopulations: Unknown

Severely fragmented: Naturally fragmented

Habitats and Ecology

The species is largely associated with rocky terrain and usually found living under and among boulders in rocky habitat, favouring sheltered overhanging rocks and exfoliated pieces of rock, occasionally using holes in termite mounds or tree roots (Skinner & Chimimba 2005), and sometimes recorded in areas with scattered rocks and scree fields. In Gauteng and Mpumalanga, they have been regularly recorded in grassy saddles between rocky areas (MacFadyen 2014). It is not known if the species can persist in disturbed or modified habitats.

It is largely nocturnal and terrestrial in habits (Hoole et al. 2012; MacFadyen 2014), although it may show some crepuscular activity, especially on overcast days. It reproduces seasonally during the South African spring and summer months (Medger et al. 2010, 2012; MacFadyen 2014), and has a litter size of two to four. Its diet consists predominantly of grass seeds and the seeds of other herbaceous plants, although they have been recorded to feed on termites and other insects, including millipedes, spiders and small snails (Vesey-Fitzgerald 1966).

The colloquial name of *A. spinosissimus* refers to the spiny pelage (Photo 1), which is not soft as in other species of murids but has a prickly appearance. The tail of the Spiny Mouse is sparsely bristled and darker above than below. Its skin is very thin and tears easily. Additionally, the skin around the tail is easily lost resulting in the loss of that part or the entire tail. Both are predator defence strategies, which confuse the attacker and enable the mouse to escape. Although the skin on the body grows back (Seifert et al. 2012), the tail is permanently lost. Individuals without tails are found frequently, which suggests that tail loss is not detrimental to their survival. Care needs to be taken when handling individuals.

Ecosystem and cultural services: Similar to other small mammals, this species probably plays a role in regulating invertebrate numbers (and thus pest outbreaks), being an important forage species for predators (including felids, jackals, mongooses, genets, snakes and owls) in rocky areas, and breaking down vegetation for nest materials.

Photo 1. Sharp bristles of the Cape Spiny Mouse (*Acomys spinosissimus*). Photo: R. John Power.

Use and Trade

This species is utilised for ecological research purposes and museum records in small numbers. It is not traded or utilised otherwise.

Threats

There are no major threats to this species as it occupies largely inaccessible rocky areas that are unsuitable for agriculture, livestock production and forestry. However, mining for gravel and rock (specifically granite) could lead to localised habitat loss and subpopulation decline.

Current habitat trend: The mining sector is suspected to be expanding rapidly in Limpopo, Mpumalanga and North West provinces (NW READ 2014; Desmet & Schaller 2015), but the extent of impacts from this sector is currently poorly known (V. Egan pers. comm. 2015; Lötter 2015).

Conservation

The Spiny Mouse occurs in many protected areas across its range in South Africa, including Kruger National Park and a number of provincial and private protected areas; for example, Ezemvelo Nature Reserve (Gauteng), Telperion Nature Reserve (Mpumalanga), Mapungubwe National Park, De Beers Venetia Limpopo Nature Reserve, Blouberg Nature Reserve and Musina Nature Reserve (Limpopo). Large numbers are found in the Soutpansberg region. The Soutpansberg and the Blouberg ranges are separated from other suitable habitats and thus may contain genetically distinct subpopulations. Another key site may include the Waterberg region. Protected area expansion should thus prioritise the Soutpansberg and Waterberg regions, as they encompass large areas with suitable habitat and potentially distinct subpopulations.

No specific interventions are currently necessary. However, legislation regarding the protection of habitat from mining rock (especially granite) and mitigating rock crushing in Limpopo, Mpumalanga and North West provinces, would benefit this species.

Recommendations for land managers and practitioners:

- No specific management plan is necessary.

Research priorities:

- Taxonomic resolution: formally describing *A. selousi* and re-assessing this species.
- Assessment of species abundance and habitat preference in all provinces.

Encouraged citizen actions:

- Report sightings on virtual museum platforms (for example, iSpot and MammalMAP). This species is distinctive and easily identifiable as it looks like a small hedgehog.

Table 2. Threats to the Spiny Mouse (*Acomys spinosissimus*) 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	*3.2 Mining & Quarrying*: habitat loss from mining for gravel and rock.	Lötter et al. 2014 Desmet & Schaller 2015	Indirect Indirect	Regional Regional	Increasing (numbers of prospecting and mining applications received).

Table 3. Conservation interventions for the Spiny Mouse (*Acomys spinosissimus*) 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	*5.1 Legislation*: legislation to limit area mined, allowing for suitable habitat to remain post mining.	-	Anecdotal	-	-	None
2	*1.1 Site/Area Protection*: protected area expansion in the Soutpansberg and Waterberg regions.	-	Anecdotal	-	-	None

- Become more aware of habitat destruction and protest mining applications in sensitive areas.
- Avoid using harmful chemicals and insecticides.
- For people who live near rocky areas, specifically koppies, build rock gardens with lots of crevices to create suitable habitat patches.
- Learn about the importance of small mammals in a healthy, balanced environment.

Data Sources and Quality

Table 4. Information and interpretation qualifiers for the Spiny Mouse (*A. spinosissimus*) assessment

Data sources	Field studies (unpublished); indirect information (expert knowledge); museum records
Data quality (max)	Inferred
Data quality (min)	Suspected
Uncertainty resolution	Author 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.*