Amblysomus robustus – Robust Golden Mole

Gary Bronner

Regional Red List status (2016)	**Vulnerable B1ab(iii)***
National Red List status (2004)	Endangered B1,2ab(i-iv)
Reasons for change	Non-genuine: New information
Global Red List status (2015)	Vulnerable B1ab(iii)
TOPS listing (NEMBA)	None
CITES listing	None
Endemic	Yes

*Watch-list Data

This species was described as recently as 2000, and differs from *Amblysomus hottentotus* (in which it was formerly included) in size and diploid chromosome number.

Taxonomy

Amblysomus robustus (Bronner 2000)

ANIMALIA - CHORDATA - MAMMALIA - AFROSORICIDA - CHRYSOCHLORIDAE - *Amblysomus* - *robustus*

Common names: Robust Golden Mole (English)

Taxonomic status: Species

Taxonomic notes: Previously included in *A. hottentotus*; but elevated to a full species by Bronner (2000) based on unique karyotype, robust build and subtle craniometric differences from *A. hottentotus* and *A. septentrionalis*. No subspecies have been identified (Skinner & Chimimba 2005).

Assessment Rationale

This endemic species is listed as Vulnerable because the overall distribution is estimated to be 9,988 km², with

continuing decline and possible severe fragmentation of habitat. Currently known from only five locations but probably more widespread. Further field surveys and molecular data are needed to accurately delimit its range. The Highveld grasslands favoured by this species are being degraded by mining for shallow coal deposits to fuel numerous power stations that occur in the preferred high-altitude grassland habitats of this species, which is an inferred major threat. Rehabilitation attempts at these sites appear to have been largely ineffective. These power stations form the backbone of South Africa's electricity network, and disturbance is likely to increase as human populations grow and the demand for power increases. While no mining sites and power generation plants occur at the five localities where this species has been collected, an environmental authorisation application to mine coal at a site near Belfast, close to where this species occurs, is currently being assessed. Given the ubiquity of mines and power stations in the Mpumalanga grasslands, impacts on this species are likely if it is more widespread than current records indicate, which seems probable. Farming, tourism resort developments and agro-forestry (exotic pine and eucalyptus plantations) have also transformed habitat, but less dramatically; these do not appear to pose a major threat. More data is required on the distribution limits, ecology, densities and reproduction of this species.

Distribution

Endemic to South Africa, this species is known from only the Steenkampsberg Mountain Plateau and in the Dullstroom and Belfast areas of Mpumalanga (Figure 1), extending eastwards to Lydenburg and possibly southwards towards the Ermelo district where *A. septentrionalis* occurs. Currently known from only a few locations but probably more widespread than suggested by the sparse distribution records available (Bronner 2000, 2013). For example, based on mitochondrial DNA markers, this species may occur in Ngome Forest (KwaZulu-Natal), as well as Mariepskop (but could also pertain to *A. h. meesteri*) and Malelane (but could also pertain to *A. septentrionalis*) in Mpumalanga (Mynhardt et al. 2015); while the latter two records are displayed in Figure 1 for now, all three records require further validation through additional specimen collecting and gene sequencing. Distribution modelling similarly predicts that this species ranges northeastwards from confirmed localities to Mariepskop and Sabie (Rampartab 2016). The current estimated extent of occurrence is 9,988 km², while the area of occupancy is estimated to be 4,186 km², using quarter degree grid cells. Further field surveys and niche models are needed to refine these estimates.

Population

The Robust Golden Mole is common in suitable natural habitats, also in gardens, orchards and cultivated lands; no quantitative data are available on population sizes or trends.
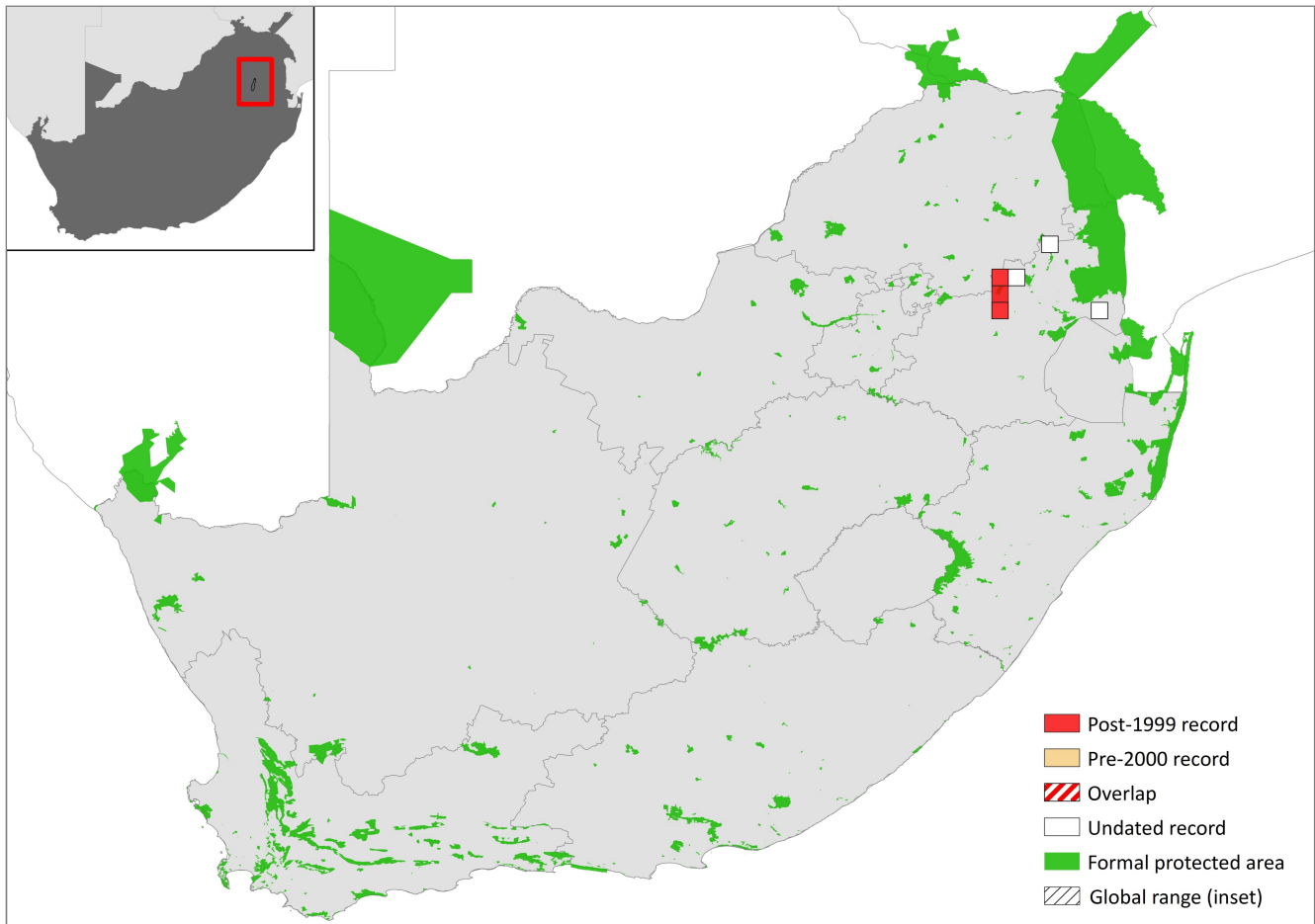
Figure 1. Distribution records for Robust Golden Mole (*Amblysomus robustus*) within the assessment region

Table 1. Countries of occurrence within southern Africa

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

Current population trend: Unknown

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 occurs within montane grasslands and marshes in Moist Sandy Highveld Grassland in eastern Mpumalanga, South Africa. They prefer friable soils, from sands to quite heavy clays, but avoid shallow substrates along rocky ridges (which may act as dispersal barriers) and waterlogged areas. Although it can survive in gardens and farmyards (Bronner 2013), its core grassland habitats are being lost to mining activities in the region.

Use and Trade

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

Threats

The Highveld grasslands favoured by this species have been, and continue to be, altered and degraded by mining of shallow coal deposits to fuel numerous power stations in the region. Although these activities are not currently occurring at the five known localities, an environmental authorisation application to mine coal in the Belfast area, where this species occurs, is currently being assessed. Given the ubiquity of mines and power stations in the Mpumalanga grasslands, this species is likely to be impacted if it is more widespread than current records indicate.

Agricultural activities, the development of numerous tourism resorts, and agroforestry have, and continue, to transform the habitat of this species, but it appears to survive (perhaps at lower densities) in such disturbed areas, suggesting that the nature and intensity of these alterations does not yet pose a major threat. Otherwise, predation by domestic pets, and persecution by gardeners in urban areas, likely represent more localized threats, which are inferred to be increasing along with urban and rural settlement expansion in Mpumalanga.

The Red List of Mammals of South Africa, Lesotho and Swaziland

Table 2. Threats to the Robust Golden Mole (*Amblysomus robustus*) 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 activities.	Lötter et al. 2014	Indirect	Regional	Increasing
2	*1.2 Commercial & Industrial Areas*: habitat loss from power stations.	Lötter et al. 2014	Indirect	Regional	Increasing
3	*2.1.2 Small-holder Farming*: habitat loss from agricultural expansion.	Lötter et al. 2014	Indirect	Regional	Increasing
4	*2.1.3 Agro-industry Farming*: habitat loss from agricultural expansion.	Lötter et al. 2014	Indirect	Regional	Increasing
5	*2.2.2 Agro-industry Plantations*: habitat loss from plantations.	Lötter et al. 2014	Indirect (land change from remote sensing)	Regional	Increasing
6	*1.1 Housing & Urban Areas*: habitat loss from residential and urban development. Current stresses *1.1 Ecosystem Conversion* and *2.1 Species Mortality*: direct conversion of the ecosystem and direct killing of the species by domestic pets.	GeoterraImage 2015	Indirect (land change from remote sensing)	Regional	Increasing
7	*2.3.3 Agro-industry Grazing, Ranching or Farming*: habitat loss and degradation through livestock ranching.	Lötter et al. 2014	Indirect (land change from remote sensing)	Regional	Increasing
8	*2.3.2 Small-holder Grazing, Ranching or Farming*: habitat degradation through overgrazing.	-	Anecdotal	-	-

Current habitat trend: Decreasing in area and quality. The Mpumalanga Tourism and Parks Agency (MTPA) mapped all development applications received at a cadastral scale over a 14-year period (2000–2014), which showed that greatest pressure for land-use change has come from prospecting applications (54.2% of the land surface area of Mpumalanga) and mining (24.5% of land surface area), together accounting for 61.3% of the surface area of the province, and can anticipate much greater expansion in the mining sector than ever before (Lötter et al. 2014). Additionally, there has been a 7.2% and 10.5% increase in rural and urban settlements in Mpumalanga between 2000 and 2013 (GeoTerraImage 2015).

Conservation

Amblysomus robustus has been recorded from the provincial Verloren-Vallei Nature Reserve in Mpumalanga. Research is currently underway to accurately determine the distribution limits of this species, and to confirm its distinctness from *A. hottentotus* and *A. septentrionalis* using molecular data. Further research is required to document its basic ecology and reproductive parameters.

This species would benefit from protected area expansion and land management practices that reduce overgrazing and degradation.

Recommendations for land managers and practitioners:

- Field surveys to discover additional subpopulations.
- Incentivise landowners to de-stock to reduce overgrazing impacts and to stop cattle grazing in vleiland refugia during winter.

Research priorities:

- Field studies to determine life history traits and ecological tolerances of this species.
- Studies on population size, trends and distribution.
- Determine the severity of threats, specifically quantifying the impact from mining activities.

Encouraged citizen actions:

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

Table 3. Conservation interventions for the Robust Golden Mole (*Amblysomus robustus*) 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.	-	Anecdotal	-	--	-
2	*2.1 Site/Area Management*: reduce overgrazing and overlogging.	-	Anecdotal	-	-	-

- Deposit any dead specimens found in a state or provincial museum, together with information on the date and site where found.
- Create native vegetation gardens.

References

Bronner GN. 2000. New species and subspecies of golden mole (Chrysochloridae: *Amblysomus*) from Mpumalanga, South Africa. Mammalia **64**:41–54.

Bronner GN. 2013. *Amblysomus robustus* Robust Golden-mole. Pages 231–232 in Kingdon J, Happold D, Hoffmann M, Butynski T, Happold M, Kalina J, editors. Mammals of Africa, Volume I: Introductory Chapters and Afrotheria. Bloomsbury Publishing, London, UK.

GeoTerraImage. 2015. Quantifying settlement and built-up land use change in South Africa.

Lötter MC, Cadman MJ, Lechmere-Oertel RG. 2014. Mpumalanga Biodiversity Sector Plan Handbook. Mpumalanga Tourism & Parks Agency, Mbombela (Nelspruit), South Africa.

Mynhardt S, Maree S, Pelser I, Bennett NC, Bronner GN, Wilson JW, Bloomer P. 2015. Phylogeography of a morphologically cryptic golden mole assemblage from south-eastern Africa. PloS one 10:e0144995.

Rampartab C. 2016. Facilitating golden mole conservation in South African highland grasslands: a predictive modelling approach. M.Sc. Thesis. University of Cape Town, Cape Town, South Africa.

Skinner JD, Chimimba CT. 2005. The Mammals of the Southern African Subregion. Third edition. Cambridge University Press, Cambridge, UK.

Data Sources and Quality

Table 4. Information and interpretation qualifiers for the Robust Golden Mole (*Amblysomus robustus*) assessment

Data sources	Museum records, indirect information (unpublished)
Data quality (max)	Inferred
Data quality (min)	Suspected
Uncertainty resolution	Best estimate
Risk tolerance	Evidentiary

Assessors and Reviewers

Chanel Rampartab[1], Gary Bronner[1†]

[1]*University of Cape Town*

[†]*IUCN SSC Afrotheria Specialist Group*

Contributors

Andrew Taylor[1], Claire Relton[1], Matthew F. Child[1]

[1]*Endangered Wildlife Trust*

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