Tadarida ventralis – Giant Free-tailed Bat


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Regional Red List status (2016)	**Vulnerable D2***
National Red List status (2004)	Not Evaluated
Reasons for change	Non-genuine change: New information
Global Red List status (2008)	Data Deficient
TOPS listing (NEMBA) (2007)	None
CITES listing	None
Endemic	No

*Watch-list Data

This species was only re-discovered in 2014 in the western Soutpansberg Mountains, Limpopo Province – 138 years after its initial discovery (Taylor et al. in press).

Assessment Rationale

Within the assessment region, this species is known from only two records in Limpopo Province – collected 138 years apart. Its rediscovery in the western Soutpansberg Mountains in 2014 confirms its presence in the assessment region and adds a record to its sparse distribution in Zimbabwe, Mozambique and South Africa and northwards to Ethiopia. Its secluded roosts and high-flying habits means it is rarely collected by field surveys and suggests its distribution may be wider than currently known. Further studies are necessary to delimit distribution more accurately within the assessment region and this species should be reassessed once additional data are available. Although its roost sites are presumed to be granite precipices (unlikely to be transformed) and acoustic data suggest that the species is locally common, there is evidence to suggest continuing decline in habitat and habitat quality in the Soutpansberg (20% of woodland cover was lost from 1990 to 2006 in the Soutpansberg Mountains region due to fuelwood extraction). Thus we infer a potential ongoing decline in population and, as it is severely range-restricted (known from only one location), we list as Vulnerable D2. Should future research reveal a connection between the continuing decline in relevant habitat or habitat quality variables and mature individuals/colonies, this species could qualify for Critically Endangered B1ab(ii,iii,iv,v)+B2ab(ii,iii,iv,v).

Regional population effects: Unknown. As it is an open air forager, its dispersal capacity is assumed to be good. However, it has a disjunct distribution between the assessment region and the closest extra-regional subpopulation in Zimbabwe (Monadjem et al. 2010), and thus we assume no rescue effects are possible.

Taxonomy

Tadarida ventralis (Heuglin 1861)

ANIMALIA - CHORDATA - MAMMALIA - CHIROPTERA - MOLOSSIDAE - *Tadarida* - *ventralis*

Synonyms: *Nyctinomus africanus* (Dobson 1876); *Tadarida ventralis* subspecies *africana* (Kock 1975)

Common names: Giant Free-tailed Bat, Transvaal Free-tailed Bat, African Giant Free-tailed Bat (English), Transvaalse Losstertvlermuis (Afrikaans)

Taxonomic status: Species

Taxonomic notes: The Giant Free-tailed bat (*Tadarida ventralis*), originally described from Kérén, Eritrea, was reported in South Africa in 1876 as *Nyctinomus africanus* (Dobson, 1876), a name that is now seen as a junior synonym for *T. ventralis* (Heuglin, 1861). The locality of the type specimen for *africanus* in the Natural History Museum, London (BM 75.11.19.1), was listed imprecisely as "Transvaal", hence the alternative common name of Transvaal Free-tailed Bat (Hayman & Hill 1971).

Distribution

Tadarida ventralis is sparsely distributed in the northeast of southern Africa, known from four sites in Zimbabwe, two sites in central Mozambique, one site in southern Malawi, and one site in northeast Zambia (Monadjem et al. 2010). It is one of the most poorly collected bats in southern Africa with just five specimens (of eight southern African records) examined by Monadjem et al. (2010), although 37 specimens are known from Kenya (Cotterill 2001).

Within the assessment region, it was originally described from the Transvaal in 1876, but no exact locality was given and no further specimens have been recorded in the former Transvaal since (Skinner & Chimimba 2005). Since 1876, despite extensive surveys in the former Transvaal Province (Rautenbach 1982), no further specimens of *T. ventralis* have been collected, leading to this species being regarded as a rare vagrant in South Africa (Monadjem et al. 2010). However, in January 2014 (138 years after its original discovery), following a massive rain storm, a male specimen of *T. ventralis* (DM 14680) was found dead on the ground outside the house of the manager of the Lajuma Research Centre located in the Luvhondo Private Nature Reserve in the western Soutpansberg (altitude 1,270 m; Figure 1).

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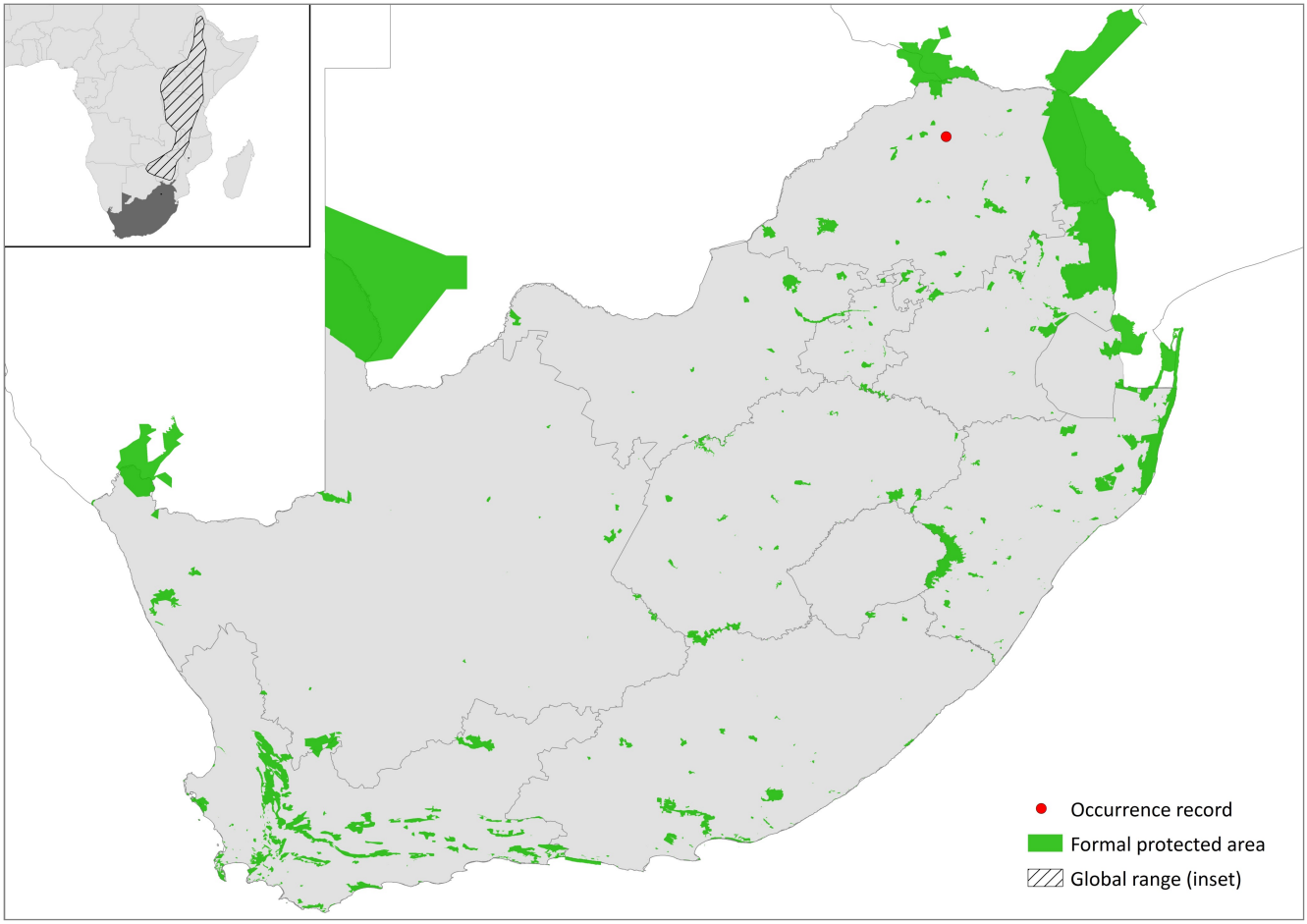

Figure 1. Distribution records for Giant Free-tailed Bat (*Tadarida ventralis*) within the assessment region

Table 1. Countries of occurrence within southern Africa

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

It can easily be confused with other molossids (Taylor et al. *in press*). For example, Cotterill (1996) identified two specimens from Zimbabwe while re-examining a collection of *Tadarida fulminans*. Thus, its distribution within the assessment region and the rest of southern Africa may be wider than reflected by the available data. Further field surveys are needed to more accurately delimit its distribution within the assessment region.

Population

While some African molossids, notably *Mops condylurus*, are locally abundant, others are rare and poorly known, such as *Tadarida ventralis*. Their inconspicuous roosts and high-flying habits make them challenging to locate and study (Monadjem et al. 2010). Most records are collected serendipitously, thus precluding any analyses on population size and trends. This situation is exemplified by the current assessment where, after an extensive acoustic and capture survey of bats in the Luvhondo Private Nature Reserve, no additional specimens were recorded (Linden et al. 2014). However, based on acoustic surveys and subsequent comparisons of echolocation frequencies, the species may well be locally common in the Soutpansberg Mountains (Taylor et al. *in press*). Their choice of roosts in inaccessible cliff crevices and their high-flying behaviour makes conventional sampling through mist nets or harp traps difficult and may explain why they have not been recorded more often (Taylor et al. *in press*).

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: One currently known.

Severely fragmented: Unknown

Habitats and Ecology

The habitat of this species appears to be semi-arid savanna, associated with rocky hills and inselbergs (Cotterill 1996, 2001), but studies of actual roosting behaviour are a prerequisite for an accurate assessment of its habitat requirements. In Zimbabwe, a specimen has been collected from under a rock crevice about 20 m above ground level, a roost shared with *T. fulminans* and *Chaerephon ansorgei* (Monadjem et al. 2010). There is a single record of a specimen collected from the roof of a

Table 2. Threats to the Giant Free-tailed Bat (*Tadarida ventralis*) 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	*5.3.3 Logging & Wood Harvesting*: habitat degradation from fuelwood harvesting.	Munyati & Kabanda 2009	Indirect (remote sensing)	Regional	20% of woodland cover lost from 1990–2006.
2	*2.2.2 Wood & Pulp Plantations*: habitat loss from pine/*Eucalyptus* plantations.	Munyati & Kabanda 2009	Indirect (remote sensing)	Regional	20% of woodland cover lost from 1990–2006.
3	*1.1 Housing & Urban Areas*: habitat loss from settlement expansion. Current stress *1.2 Habitat Degradation*: from fuelwood harvesting and overgrazing.	GeoTerraImage 2015	Indirect (remote sensing)	Regional	Settlement expansion increased by 9–15% from 2000–2012.
4	*2.3.2 Small-holder Grazing, Ranching or Farming*: habitat loss from livestock ranching. Current stress *1.2 Habitat Degradation*: from overgrazing and bush encroachment.	-	Anecdotal	-	-

house but this appears to be unusual behaviour in this species (Cotterill 1996). The distributions of large molossid bats (*Tadarida fulminans*, *T. lobata*, and *T. ventralis*) are closely associated with crevice roosts in granite precipices (Cotterill & Fergusson 1993; Cotterill 2001), and thus granite outcrops may be important habitat areas.

Use and Trade

There is no evidence that this species is utilised in any way.

Threats

The potential threats facing this species need further investigation and quantification. As they occupy inaccessible habitats in mountainous and rocky areas, we suspect there is no significant population decline. However, research into their resource and habitat requirements may disprove this. The lower altitude habitats of the Soutpansberg Mountains are most susceptible to human impacts leading to habitat degradation due to overgrazing, bush encroachment, cultivation and denudation of large trees for firewood collection (Linden et al. 2014). Such disturbances could have negative impacts on this species and should be monitored.

Current habitat trend: Unknown, but possibly declining in habitat quality. For example, 20% of woodland cover was lost from 1990 to 2006 in the Soutpansberg Mountains region due to fuelwood extraction from settlement expansion and pine/*Eucalyptus* plantations (Munyati & Kabanda 2009). Between 2000 and 2013, there was a 9% and 15% increase in rural and urban settlement expansion respectively, in Limpopo Province (GeoTerraImage 2015), which is inferred to correlate with increasing habitat degradation.

Data Sources and Quality

Table 4. Information and interpretation qualifiers for the Giant Free-tailed Bat (*Tadarida ventralis*) assessment

Data sources	Field study (literature), Indirect information (literature, expert knowledge)
Data quality (max)	Inferred
Data quality (min)	Suspected
Uncertainty resolution	Expert consensus
Risk tolerance	Evidentiary

Conservation

The species is known to occur in the Luvhondo Private Nature Reserve and is thus at least partially protected. Further surveys are required to identify other areas in which it occurs to inform protected area expansion or biodiversity stewardship schemes. However, no direct interventions are possible currently until research has revealed basic data on its ecology and distribution.

Recommendations for land managers and practitioners: None

Research priorities:

- Capture and radio-tagging thus enabling the use of biotelemetric methods to locate daylight roosts.
- Field surveys to locate additional subpopulations.

Table 3. Conservation interventions for the Giant Free-tailed Bat (*Tadarida ventralis*) 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 protect future identified subpopulations.	-	Anecdotal	-	-	Lajuma Research Centre (data collection to inform protected area expansion)

- Habitat assessments of known roost sites to assess threat severity.
- Research into its foraging ecology to identify potential threats to key resources.

Encouraged citizen actions:

- Deposit any dead specimens with your local conservation agency or museum and alert the Lajuma Research Centre.

References

Cotterill FPD. 1996. New distribution records of free-tailed bats (Microchiroptera: Molossidae) in Zimbabwe. Arnoldia Zimbabwe **10**:91–102.

Cotterill FPD. 2001. Further notes on large Afrotropical free-tailed bats of the genus *Tadarida* (Molossidae: Mammalia). Arnoldia Zimbabwe **10**:199–210.

Cotterill FPD, Fergusson RA. 1993. Capturing free-tailed bats (Chiroptera: Molossidae): the description of a new trapping device. Journal of Zoology **231**:645–651.

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

Hayman RW, Hill JE. 1971. Chiroptera. Pages 1–73 in Meester J, Setzer HW, editors. The Mammals of Africa: an Identification Manual, Part 2. Smithsonian Institution Press, Washington, DC, USA.

Linden VM, Weier SM, Gaigher I, Kuipers HJ, Weterings MJ, Taylor PJ. 2014. Changes of bat activity, species richness, diversity and community composition over an altitudinal gradient in the Soutpansberg range, South Africa. Acta Chiropterologica **16**:27–40.

Monadjem A, Taylor PJ, Cotterill FPD, Schoeman MC. 2010. Bats of Southern and Central Africa: a Biogeographic and Taxonomic Synthesis. University of the Witwatersrand Press, Johannesburg, South Africa.

Munyati C, Kabanda TA. 2009. Using multitemporal Landsat TM imagery to establish land use pressure induced trends in forest and woodland cover in sections of the Soutpansberg Mountains of Venda region, Limpopo Province, South Africa. Regional Environmental Change **9**:41–56.

Rautenbach IL. 1982. Mammals of the Transvaal. No. 1, Ecoplan Monograph. Pretoria, South Africa.

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

Taylor PJ, Richards LR, Bayliss J, Cotterill FPD. *in press*. Rediscovery of the Transvaal free-tailed bat (*Tadarida ventralis africana*) in South Africa, with an additional record of the Malagasy free-tailed bat (*T. fulminans*) from northern Mozambique. Durban Natural Science Museum Novitates.

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