

Miniopterus fraterculus – Lesser Long-fingered Bat



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Regional Red List status (2016)	Least Concern*†
National Red List status (2004)	Near Threatened C1
Reasons for change	Non-genuine: New information
Global Red List status (2008)	Least Concern
TOPS listing (NEMBA) (2007)	None
CITES listing	None
Endemic	Near

*Watch-list Data †Watch-list Threat

Miniopterus fraterculus is endemic to southern Africa and possibly endemic to South Africa and Swaziland (Monadjem et al. 2010).

Taxonomy

Miniopterus fraterculus Thomas & Schwann 1906

ANIMALIA - CHORDATA - MAMMALIA - CHIROPTERA -
MINIOPTERIDAE - *Miniopterus* - *fraterculus*

Common names: Lesser Long-fingered Bat, Black Clinging Bat, Lesser Bent-winged Bat (English), Klein Grotvlermuis (Afrikaans)

Taxonomic status: Species complex

Taxonomic notes: The currently recognized *Miniopterus fraterculus* is possibly a complex of morphologically similar species (Monadjem et al. 2013). Although *Miniopterus fraterculus* is morphologically very similar to *M. natalensis*, these two are genetically distinct and have different echolocation calls (Miller-Butterworth et al. 2005). The specimens from Malawi and northern Mozambique fall within the size range of *M. fraterculus*, but have recently been shown to be a new species, *M. mossambicus* (Monadjem et al. 2013). Similarly, the population from Madagascar has been shown to be

specifically distinct from *M. fraterculus* (Goodman et al. 2007), possibly rendering *M. fraterculus* a South African and Swaziland endemic. No subspecies are recognised (Skinner & Chimimba 2005).

Assessment Rationale

Widespread in the assessment region with an extent of occurrence of 501,718 km² and more than 35 recorded subpopulations. Although this species may be experiencing localised declines due to disturbances to roost sites and loss of foraging habitat due to conversion of natural areas for agriculture, it remains sufficiently widespread to not qualify for a threatened category. There are no major identified threats to the species and thus we list as Least Concern in the absence of evidence to the contrary. However, the emerging threat of collisions with wind power turbines and disruption to migration routes should be monitored. Additionally, ongoing molecular research may reveal this species to be endemic to the assessment region and subpopulation estimates are needed to determine overall population size. Thus, this species should be reassessed once such data are available.

Regional population effects: This species occurs as one continuous population within the assessment region and into neighbouring countries of Mozambique and Zimbabwe. However, dispersal rates are unknown and thus rescue effects are uncertain. It has low wing-loading (*M. Happold unpubl. data*) and may be endemic or near endemic to the assessment region, thus limiting rescue effects.

Distribution

Although formerly thought to be present in Central Africa, East Africa and southern Africa in discrete ranges (ACR 2015), the largest of which stretches down southeastern Africa, from Malawi, Mozambique and Zimbabwe, down to South Africa (where it extends along the south coast), recent molecular work suggests that it may be endemic to the assessment region (Miller-Butterworth et al. 2005; Goodman et al. 2007; Monadjem et al. 2013).

Within the assessment region, it occurs widely in the eastern parts of South Africa and in Swaziland (Monadjem et al. 2010), having been recorded from Knysna in the Western Cape, east and north along the coast to southern and western KwaZulu-Natal, in western Swaziland and north along the Drakensberg to Limpopo and Mpumalanga provinces (Figure 1). Although historically recorded from Gauteng there are no recent records from this province. Indeed, these outliers from Krugersdrop (three specimens collected in 1944 and deposited in the Amathole Museum) belong to *M. fraterculus* on the basis of skull length but there is still the possibility that these specimens have been misidentified (Monadjem et al. 2010). Further vetting of museum records is necessary to delimit distribution more accurately.

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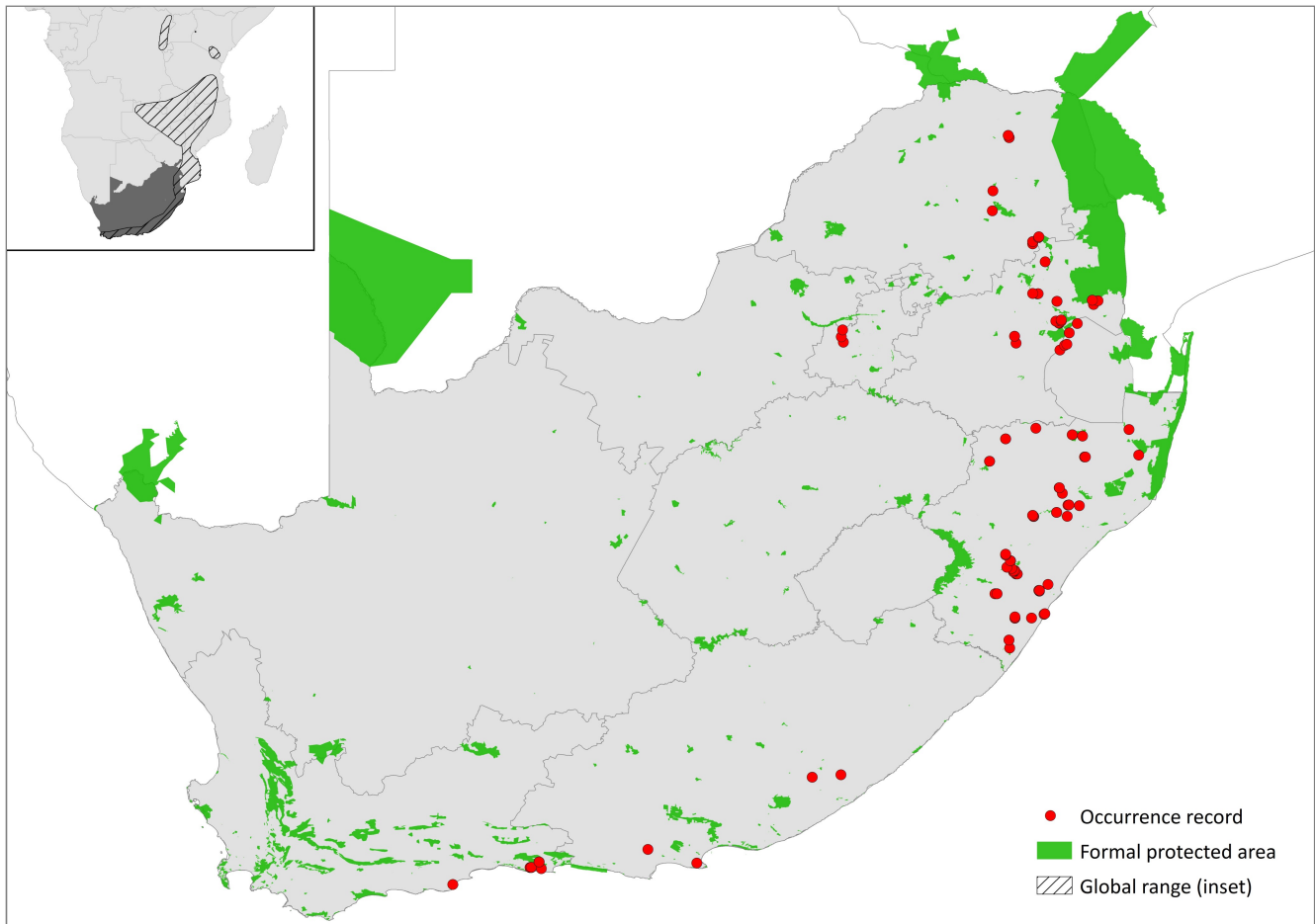


Figure 1. Distribution records for Lesser Long-fingered Bat (*Miniopterus fraterculus*) within the assessment region

Table 1. Countries of occurrence within southern Africa

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

Population

The species is widespread but uncommonly recorded and is not well represented in museums, with 55 specimens examined in Monadjem et al. (2010). Like *M. inflatus*, it occurs alongside *M. natalensis* but congregates in far smaller numbers (Taylor 2000). Although Friedmann and Daly (2004) listed this species as Near Threatened C1 based on presumed small population but uncertainty of continuing decline, there is no evidence that the population is fewer than 10,000 mature individuals. Subpopulation estimates are needed.

Current population trend: Stable overall but possibly local declines.

Continuing decline in mature individuals: Possible but not confirmed.

Number of mature individuals in population: Unknown

Number of mature individuals in largest subpopulation: Unknown

Number of subpopulations: More than 35

Severely fragmented: No

Habitats and Ecology

Miniopterus fraterculus is predominantly a temperate species with the core of its distribution in the montane grasslands of the South African escarpment (Monadjem et al. 2010). It is cave-dependent and hence the availability of suitable roosting sites is a critical factor in determining its distribution, but it occurs in a wide range of habitats from drier savannah bushveld to moister mistbelt and coastal forest habitats. Most localities in KwaZulu-Natal seem associated with major river valleys. Suitable cover can take the form of caves, overhangs, and unused mine and railway tunnels (Taylor 1998). For example, in KwaZulu-Natal, it has been found in damp sandstone caves, a solution cave of poorly consolidated glacio-fluvial boulder clay, a rocky overhang over a forest stream, a rock fissure, a railway tunnel as well as in unused mine adits (Taylor 1998). This species probably uses separate caves as winter hibernacula and summer maternity roosts, as in *M. natalensis* (Monadjem et al. 2010). It is a clutter-edge forager, feeding on a variety of aerial prey including Lepidoptera, Diptera, Hemiptera and Coleoptera (Miller-Butterworth et al. 2005). This is the smallest of the three species of long-fingered bats occurring in the assessment region (Stoffberg et al. 2004; Skinner & Chimimba 2005).

Ecosystem and cultural services: As this species is insectivorous, it may play an important role in controlling

Table 2. Threats to the Lesser Long-fingered Bat (*Miniopterus fraterculus*) 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	2.1.3 <i>Agro-industry Farming</i> : loss of natural habitats. Current stress 1.3 <i>Indirect Ecosystem Effects</i> : loss of insect prey base.	Driver et al. 2012 Jewitt et al. 2015	Indirect (land cover change from remote sensing)	National Regional	Ongoing
2	6.1 <i>Recreational Activities</i> : recreational activities and traditional ceremonies disturb roost sites.	-	Anecdotal	-	Ongoing
3	3.3 <i>Renewable Energy</i> : mortality from collision with wind turbine blades.	-	Anecdotal	-	Increasing

insect populations (Boyles et al. 2011; Kunz et al. 2011). Often, bats prey on the insect species that destroy crops (Boyles et al. 2011; Kunz et al. 2011). Ensuring a healthy population of insectivorous bats can result a decrease in the use of pesticides.

Use and Trade

Not known to be traded or utilised in any form.

Threats

Although there are no major identified threats that could cause range-wide declines, this species is threatened by disturbances to roost sites (maternity and winter roosts) as a result of religious and traditional ceremonies by local communities, as well as tourist activities, carried out in caves in South Africa. The tendency of this species to roost in a few localised sites places it at risk of future population declines (Friedmann & Daly 2004). Extensive transformation of natural habitat, particularly in KwaZulu-Natal (Jewitt et al. 2015), is likely to be causing declines where the insect prey base is depleted as a result of loss of native vegetation or the use of pesticides. Wind farms pose an emerging threat as *Miniopterus* species are prone to collisions with turbine blades, particularly as wind farm sites overlap with primary habitat for these species.

Current habitat trend: Declining in both area and quality, particularly from agricultural expansion (Driver et al. 2012; Jewitt et al. 2015).

Conservation

Known from many protected areas in the assessment region, including large parks such as Kruger National Park, iSimangaliso Wetland Park and Serala Wilderness Area. No direct conservation interventions are necessary at present. However, to mitigate mortalities from turbine collisions on wind farms, interventions such as using ultrasound to deter bats and curtailing turbines at low wind speeds could be employed (Baerwald et al. 2009; Berthinussen et al. 2010; Arnett et al. 2011).

Recommendations for land managers and practitioners:

- Data sharing by wind farm managers into a national database, to be able to calculate cumulative impacts and thereafter implement collaborative mitigation and management efforts, is needed.

Research priorities:

- Monitoring mortalities linked with wind farm operations and assessing impact on populations.
- Systematic monitoring to identify key roost sites and delimit geographical distribution more accurately.
- Molecular analysis and vetting of museum records to delimit distribution more accurately and to resolve taxonomic status.

Encouraged citizen actions:

- Limit disturbance to roost sites.
- Deposit any dead specimens to the Durban Natural Science Museum or KwaZulu-Natal Bat Interest Group.

Table 3. Conservation interventions for the Lesser Long-fingered Bat (*Miniopterus fraterculus*) 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	2.1 <i>Site/Area Management</i> : protection of key roost sites required.	-	Anecdotal	-	-	Identifying sites for protection, KwaZulu-Natal Bat Interest Group
2	2.1 <i>Site/Area Management</i> : manage wind turbines to reduce bat mortality.	Baerwald et al. 2009 Berthinussen et al. 2010 Arnett et al. 2011	Empirical Empirical Empirical	International Review International	Bat mortalities lowered using ultrasonic deterrents and turbine curtailment during low wind speed.	-

Data Sources and Quality

Table 4. Information and interpretation qualifiers for the Lesser Long-fingered Bat (*Miniopterus fraterculus*) assessment

Data sources	Field study (unpublished), indirect information (expert knowledge)
Data quality (max)	Inferred
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*.