Kerivoula lanosa – Lesser Woolly Bat


Merlin Tuttle

Regional Red List status (2016)	**Least Concern***
National Red List status (2004)	Near Threatened
Reasons for change	Non-genuine: New Information
Global Red List status (2016)	Least Concern
TOPS listing (NEMBA) (2007)	None
CITES listing	None
Endemic	No

*Watch-list Data

The frosted pelage of this species provides camouflage when roosting and its woolly texture perhaps provides additional insulation from low temperatures when roosting in foliage (Cotterill 2013).

Taxonomy

Kerivoula lanosa (A. Smith 1847)

ANIMALIA - CHORDATA - MAMMALIA - CHIROPTERA - VESPERTILIONIDAE - *Kerivoula - lanosa*

Synonyms: *bellula, brunnea, harrisoni, lucia, muscilla*

Common names: Lesser Woolly Bat (English), Klein Wolhaarvlermuis (Afrikaans)

Taxonomic status: Species

Taxonomic notes: There are four subspecies recognised across its range (Cotterill 2013), of which two occur in the assessment region (Meester et al. 1986). *Kerivoula lanosa lanosa* (A. Smith 1847) is endemic to the Cape provinces of South Africa (Cotterill 2013); while *Kerivoula lanosa lucia* Hinton 1920 occurs from KwaZulu-Natal through southern Africa (Cotterill 2013). However, owing to the limited number of specimens available, the validity of these subspecies cannot currently be determined. Furthermore, the taxonomic relationships within the African species of *Kerivoula* have yet to be determined (Monadjem et al. 2010; Cotterill 2013). Further molecular work should be performed to resolve the possible species complex.

Assessment Rationale

Listed as Least Concern in view of its wide distribution (estimated extent of occurrence is 481,288 km^2), its occurrence in multiple protected areas across its range and because there are no identified threats that are thought to be causing widespread decline. The previous assessment in 2004 was Near Threatened due to Chiropteran experts rarely observing this species. Since then it has been discovered that it avoids mist nets and is more easily sampled using harp traps. As there is no restriction to its habitat availability in the assessment region, it is widespread across the continent, and due to this species having been recorded a number of times in harp traps since 2008, the population is considered stable. However, further field surveys are required to collect more comprehensive data on population size, trends and local threats. If research estimates a mature population size of < 10,000 and a net declining population trend, then this species will qualify as Vulnerable C2a(i) and will thus need reassessment. Additionally taxonomic resolution is required.

Regional population effects: This species occurs as one continuous subpopulation within the assessment region and into the neighbouring countries of Mozambique and Zimbabwe. However, it has low wing loading (G. Delcros, P.J. Taylor & M.C. Schoeman unpubl. data) so rescue effects are assumed to be insignificant.

Distribution

This bat is widely but sparsely recorded across sub-Saharan Africa (Cotterill 2013), from Liberia and Guinea in the west, to Ethiopia and Kenya in the east, and ranging as far south as southern South Africa. Habitat models indicate it could occur in Namibia (Monadjem et al. 2010). In the assessment region, the species ranges from Knysna in the Western Cape, northwards through eastern KwaZulu-Natal, through Swaziland and eastern Mpumalanga and Limpopo, and into Zimbabwe, northern Botswana, Zambia, southern DRC and Malawi (Monadjem et al. 2010). The type material is from Knysna (Monadjem et al. 2010). The estimated extent of occurrence is 481,288 km^2.

Population

Abundance is uncertain and poorly represented in collections possibly because their day roosts are hard to find and they seem to be able to avoid being captured in mist nets (Cotterill 2013). For example, only 37 specimens were examined in Monadjem et al. (2010). It does not form

Recommended citation: Monadjem A, Cohen L, Jacobs DS, MacEwan K, Richards LR, Schoeman C, Sethusa T, Taylor PJ. 2016. A conservation assessment of *Kerivoula lanosa*. 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.

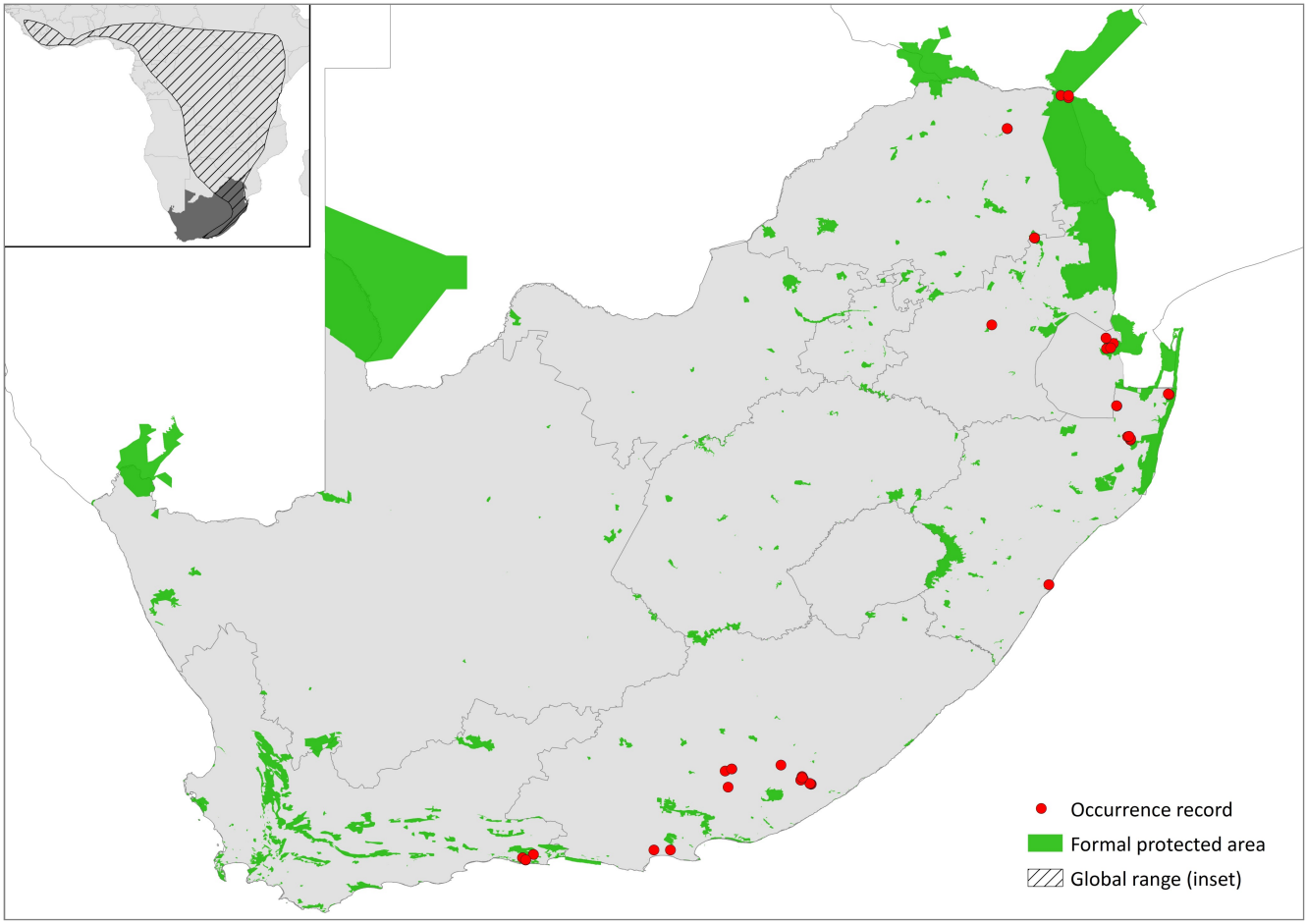

Figure 1. Distribution records for Lesser Woolly Bat (*Kerivoula lanosa*) within the assessment region

Table 1. Countries of occurrence within southern Africa

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

large colonies but rather breeds in pairs in old nests and other roosts, making quantification of the population difficult. However, it is likely that, similarly to *K. argentata*, it has been overlooked because it avoids mist nets (Monadjem et al. 2010). Surveys using harp traps are needed. Research is needed to quantify population size and trends.

Current population trend: Stable

Continuing decline in mature individuals: None

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

While very little information is available on the preferred habitat of this species (Monadjem et al. 2010), it has been recorded from a variety of habitats (Cotterill 2013). In southern Africa, it has been recorded from evergreen forest, riparian forest and both wet and dry savannah woodlands (Cotterill 1996; Monadjem et al. 2010). They are associated with riverine habitats in drier regions. They have often been encountered roosting in abandoned bird nests (Roberts 1951; Taylor 1998; Cotterill 2013), such as weaver and sunbird nests (Oschadleus 2008). Considering the abundance of these nests, it is not likely that their distribution is restricted by roost availability (Monadjem et al. 2010). The distribution of this species across southern and eastern Zimbabwe and extending south to the Soutpansberg and Mpumalanga could reflect an association with patchy afromontane habitat along the 'Limpopo Escarpment Extension' (Cotterill 1996). Limited information is available on the diet of this species, but it is a clutter-edge forager (Monadjem et al. 2010). Its frosted pelage provides camouflage when roosting and its woolly texture perhaps provides additional insulation from low temperatures when roosting in foliage (Cotterill 2013).

Ecosystem and cultural services: As this species is insectivorous, it may contribute to controlling insect populations that damage crops (Boyles et al. 2011; Kunz et al. 2011). Ensuring a healthy population of insectivorous bats can thus decrease the need for pesticides.

Table 2. Threats to the Lesser Woolly Bat (*Kerivoula lanosa*) 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 Annual & Perennial Non-Timber Crops*: habitat loss from agro-industry expansion.	Jewitt et al. 2015	Indirect (remote sensing)	Regional	Ongoing
2	*2.1.2 Annual & Perennial Non-Timber Crops*: habitat loss from small-scale farming.	Jewitt et al. 2015	Indirect (remote sensing)	Regional	Ongoing
3	*2.2.2 Wood & Pulp Plantations*: habitat loss from agro-industry plantations.	Jewitt et al. 2015	Indirect (remote sensing)	Regional	Ongoing
4	*5.3.3 Logging & Wood Harvesting*: habitat degradation from fuelwood harvesting.	-	Anecdotal	-	Ongoing

Table 3. Conservation interventions for the Lesser Woolly Bat (*Kerivoula lanosa*) 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 incorporate additional roosts sites and subpopulations.	-	Anecdotal	-	-	-

Use and Trade

There is no evidence to suggest that the species is traded.

Threats

There appear to be no major threats to this species (ACR 2015). However, within the assessment region, deforestation may cause local declines but the severity of deforestation on the population overall is unknown. For example, habitat loss resulting from crop cultivation and afforestation is occurring in KwaZulu-Natal (Jewitt et al. 2015). Logging of indigenous trees may lead to localised loss of roosting sites.

Current habitat trend: Stable overall because savannah habitats are well protected in the assessment region (Driver et al. 2012). However, there are local declines. Overall, there was a 20.4% loss of natural habitat from 1994 to 2011, with an average loss of 1.2% per annum (Jewitt et al. 2015). Worryingly, in just six years (2005–2011), 7.6% (7,217 km^2) of natural habitat was lost (1.3% per annum), due primarily to agriculture (5.2% increase; 4,962 km^2), but also plantations, built environments, settlements, mines and dams (Jewitt et al. 2015).

Conservation

This species is recorded from numerous protected areas within the assessment region, such as Great Limpopo Transfrontier Park and Motlatse Canyon Provincial Park in Limpopo; iSimangaliso Wetland Park in KwaZulu-Natal and Garden Route National Park in the Western Cape. While no specific interventions are possible until further research has assessed the severity of local threats and identified important subpopulations outside protected areas, this species would benefit from further protected area expansion, such as that being planned to link Maputaland to the Lubombo Transfrontier Conservation Area (Smith et al. 2008).

Data Sources and Quality

Table 4. Information and interpretation qualifiers for the Lesser Woolly Bat (*Kerivoula lanosa*) assessment

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

Recommendations for land managers and practitioners:

- Use harp traps (instead of mist nets) for field surveys (Monadjem et al. 2010).
- Reduce pesticide use in agricultural landscapes.
- Identify new colonies and roost sites.

Research priorities:

- Surveys are needed to identify further subpopulations, quantify the size of the population and determine population trend in the assessment region.
- Further studies are needed to better understand its taxonomic status (ACR 2015).
- Further studies are also required on the species' feeding ecology and reproductive behaviour.

Encouraged citizen actions:

- Citizens can assist the conservation of the species by reporting sightings on virtual museum platforms (for example, iSpot and MammalMAP), and therefore contribute to an understanding of the species distribution.

References

ACR. 2015. African Chiroptera Report 2015. Page i-xix + 7001 pp. AfricanBats, African Chiroptera Project, Pretoria, South Africa.

Boyles JG, Cryan PM, McCracken GF, Kunz TH. 2011. Economic importance of bats in agriculture. Science **332**:41–42.

Cotterill FPD. 1996. New distribution records of insectivorous bats of the families Nycteridae, Rhinolophidae and Vespertilionidae (Microchiroptera: Mammalia) in Zimbabwe. Arnoldia Zimbabwe **10**:71–89.

Cotterill FPD. 2013. *Kerivoula lanosa* Lesser Woolly Bat. Pages 730–731 in Happold M, Happold DCD, editors. Mammals of Africa. Volume IV: Hedgehogs, Shrews and Bats. Bloomsbury Publishing, London, UK.

Driver A, Sink KJ, Nel JN, Holness S, van Niekerk L, Daniels F, Jonas Z, Majiedt PA, Harris L, Maze K. 2012. National Biodiversity Assessment 2011: An Assessment of South Africa's Biodiversity and Ecosystems. Synthesis Report. South African National Biodiversity Institute and Department of Environmental Affairs, Pretoria, South Africa.

Jewitt D, Goodman PS, Erasmus BFN, O'Connor TG, Witkowski ETF. 2015. Systematic land-cover change in KwaZulu-Natal, South Africa: implications for biodiversity. South African Journal of Science **111**:1–9.

Kunz TH, Braun de Torrez E, Bauer D, Lobova T, Fleming TH. 2011. Ecosystem services provided by bats. Annals of the New York Academy of Sciences **1223**:1–38.

Meester JA, Rautenbach IL, Dippenaar NJ, Baker CM. 1986. Classification of southern African mammals. Transvaal Museum Monographs **5**:1–359.

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

Oschadleus HD. 2008. Bird nests as roost sites for *Kerivoula* bats in southern Africa. African Journal of Ecology **46**:693–696.

Roberts A. 1951. The Mammals of South Africa. Central New Agency, Cape Town. South Africa.

Smith RJ et al. 2008. Designing a transfrontier conservation landscape for the Maputaland centre of endemism using biodiversity, economic and threat data. Biological Conservation **141**:2127–2138.

Taylor P. 1998. The Smaller Mammals of KwaZulu-Natal. University of Natal Press, Pietermaritzburg, South Africa.

Assessors and Reviewers

Ara Monadjem[1], Lientjie Cohen[2], David S. Jacobs[3], Kate MacEwan[4], Leigh R. Richards[5], Corrie Schoeman[6], Theresa Sethusa[7], Peter J. Taylor[8]

[1]University of Swaziland, [2]Mpumalanga Tourism and Parks Agency, [3]University of Cape Town, [4]Inkululeko Wildlife Services, [5]Durban Natural Science Museum, [6]University of KwaZulu Natal, [7]South African National Biodiversity Institute, [8]University of Venda

Contributors

Matthew F. Child[1], Domitilla Raimondo[2], Samantha Page-Nicholson[1]

[1]Endangered Wildlife Trust, [2]South African National Biodiversity Institute

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