Myotis bocagii – Rufous Mouse-eared Bat


Jakob Fahr

Regional Red List status (2016)	**Least Concern**
National Red List status (2004)	Data Deficient
Reasons for change	Non-genuine
Global Red List status (2016)	Least Concern
TOPS listing (NEMBA) (2007)	None
CITES listing	None
Endemic	No

This beautiful microbat is commonly called Bocage's Hairy Bat after the zoologist Barbosa du Bocage (an eminent 19th century Portuguese zoologist), who described material from the Congo and Angola collected by his colleague (Monadjem et al. 2010).

Taxonomy

Myotis bocagii (Peters 1870)

ANIMALIA - CHORDATA - MAMMALIA - CHIROPTERA - VESPERTILIONIDAE - *Myotis* - *bocagii*

Synonyms: *cupreolus*, *dogalensis*, *hildegardeae*

Common names: Rufous Mouse-eared Bat, Bocage's Banana Bat, Bocage's Hairy Bat, Bocage's Mouse-eared Bat, Rufous Mouse-eared Myotis, Rufous Hairy Bat, Rufous Myotis (English), Rooi Langhaarvlermuis (Afrikaans)

Taxonomic status: Species

Taxonomic notes: Originally *Vespertilio bocagii*. Listed as *bocagei* by Koopman (1993), but this spelling is incorrect. Two subspecies are recognised in Africa; where the nominate subspecies occurs in southern Africa, while *M. b. cupreolus* Thomas 1904 occurs in West Africa (Monadjem et al. 2010).

Assessment Rationale

Listed as Least Concern in view of its wide distribution (estimated extent of occurrence within the assessment region is 114,402 km^2), its occurrence in multiple protected areas (including Great Limpopo Transfrontier Park), and because there are no major identified threats that could be causing widespread decline. It has been shown to occur more extensively in the assessment region (recorded from KwaZulu-Natal) than known in the previous assessment and may tolerate human disturbed habitats to a degree. Further field surveys and research are necessary to delimit distribution, population size and habitat selection more accurately.

Regional population effects: The range of this species is continuous across the borders of the assessment region into Zimbabwe through its occurrence in Great Limpopo Transfrontier Park and Greater Mapungubwe Transfrontier Conservation Area. However, it has low wing loading, so rescue effects are uncertain (Schoeman & Jacobs 2008).

Distribution

This species is widespread but patchily distributed throughout much of sub-Saharan Africa. It ranges from Sierra Leone and Senegal in West Africa, eastwards through Cameroon and Central Africa, to Ethiopia and East Africa, being recorded as far south as northeastern South Africa. It occurs in Malawi, Mozambique, Zambia, the Democratic Republic of the Congo and Angola (Monadjem et al. 2010). It is probably more widespread in Mozambique and eastern Zambia than is currently documented (Monadjem et al. 2010). Outside of Africa, it has been recorded from southern Yemen (ACR 2015). Riparian fringes along the Limpopo and Zambezi rivers explains outlying records of this species in semi-arid savannahs of southern and northern Zimbabwe (Monadjem et al. 2010). Within the assessment region, it is restricted to the eastern lowveld regions, having been recorded from Limpopo, Mpumalanga and KwaZulu-Natal provinces of South Africa. Its occurrence in KwaZulu-Natal was not documented in the previous assessment (Friedmann & Daly 2004). It has been confirmed to occur in Swaziland where two individuals were sampled at localities 75 km apart at Mlawula weir in Mlawula Nature Reserve in 2007 and at the Ngonini Citrus Estate in 2010 (Shapiro & Monadjem 2016). Its current estimated extent of occurrence within the assessment region is 114,402 km^2.

Population

This species is difficult to survey as it forages low over open water (Monadjem et al. 2010), meaning that it may be more common that current records suggest. As such, it is not well represented in museums, with only 60 records examined in Monadjem et al. (2010). It is often mentioned in southern African studies that this species occurs singly or in pairs (Happold 1987; Skinner & Chimimba 2005). However, in Central and West Africa, it lives in harem

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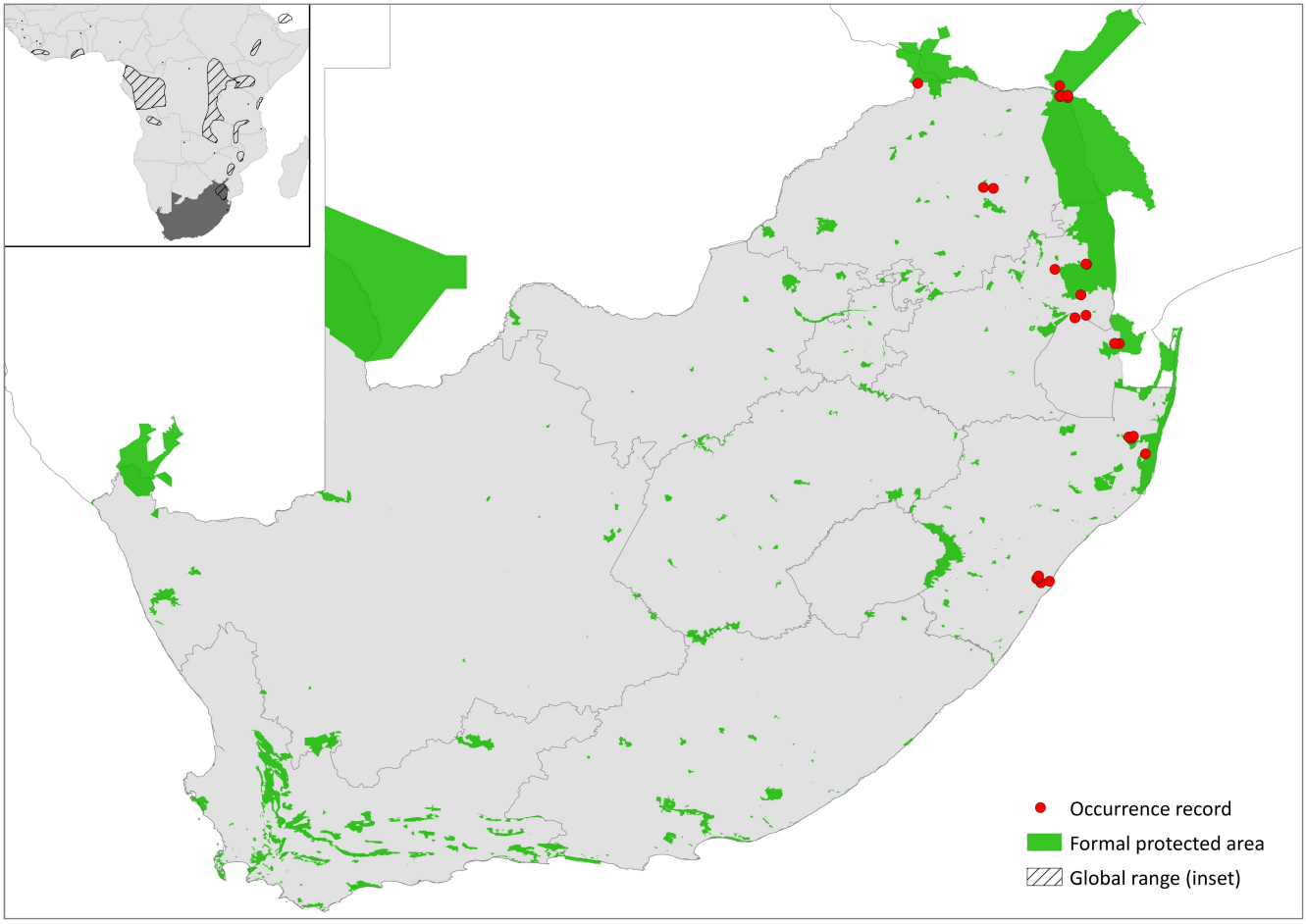

Figure 1. Distribution records for Rufous Mouse-eared Bat (*Myotis bocagii*) within the assessment region

Table 1. Countries of occurrence within southern Africa

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

groups (Brosset 1976; Monadjem & Fahr 2007) and this may be the case in southern Africa (Monadjem et al. 2010).

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

In southern Africa, it appears to be associated with low-lying riverine habitats or wetlands within a savannah or woodland vegetation matrix (Monadjem et al. 2010). This species has also been recorded from tropical moist forest (Rosevear 1965); and populations are also often found close to rivers and streams bordered by forest (Happold et al. 1987). Allen (1917) noted that the species tended to avoid human settlements. However, it appears to tolerate disturbed habitats to a degree. For example, an individual from Ngonini Citrus Estate in Swaziland was sampled along a small perennial stream with disturbed riparian forest (Shapiro & Monadjem 2016). Similarly, six individuals were sampled along the polluted Umbilo River in the Durban region in 2008 (Naidoo et al. 2011). However, this may have been influenced by the presence of nearby Paradise Valley Nature Reserve, which possibly provided roosting sites such as tree cavities and wild banana (*Strelitzia nicolai*) (Naidoo et al. 2011).

Its roosting habits are not known in southern Africa. However, in West Africa it has been captured singly or in groups of up to eight in furled banana leaves (Monadjem & Fahr 2007), or other plants with broad leaves and hollow trees (Rosevear 1965; Happold et al. 1987). In northern Mozambique, it has been netted in a banana plantation (A. Monadjem unpubl. data). Very little is known regarding the reproductive behaviour of the species within southern Africa (Monadjem et al. 2010). It is a clutter-edge and clutter forager; feeding mainly on Lepidoptera, Coleoptera, Hemiptera, and Diptera (Monadjem et al. 2010; Naidoo et al. 2011). Along the Umbilo River, this species fed opportunistically on Diptera during winter (Naidoo et al. 2011).

Ecosystem and cultural services: As this species is insectivorous, it may contribute to controlling insect

Table 2. Threats to the Rufous Mouse-eared Bat (*Myotis bocagii*) 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. Current stress *1.3 Indirect Ecosystem Effects*: loss of prey base.	Jewitt et al. 2015	Indirect (remote sensing)	Regional	Ongoing
2	*9.3.3 Agricultural & Forestry Effluents*: indirect poisoning. Current stress *1.3 Indirect Ecosystem Effects*: loss of prey base.	Jewitt et al. 2015	Indirect (remote sensing)	Regional	Ongoing
3	*5.3.3 Logging & Wood Harvesting*: habitat degradation from fuelwood harvesting.	-	Anecdotal	-	Ongoing
4	*3.2 Mining & Quarrying*: re-mining old adits reduced roost sites.	Jewitt et al. 2015	Indirect (remote sensing)	Regional	Ongoing

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.

Use and Trade

There is no evidence to suggest that this species is traded or utilised.

Threats

There appear to be no major threats to this species as a whole (ACR 2015). It appears to be able to utilise semi-disturbed vegetation or landscapes for roosting and foraging. However, there is ongoing habitat loss from agricultural transformation, especially in KwaZulu-Natal (Jewitt et al. 2015). Selective logging of trees for fuelwood and charcoal production may also cause local declines. Pesticide use in agricultural landscapes may reduce the insect prey base.

Current habitat trend: Stable. Savannah habitats are generally well protected within the assessment region (Driver et al. 2012). KwaZulu-Natal forests and moist woodlands are under pressure in some areas. An average of 1.2% natural habitat has been transformed per annum since 1994 in KwaZulu-Natal, primarily due to agriculture, timber plantations, human settlements, industry and mines (Jewitt et al. 2015).

Conservation

There are no direct conservation measures currently needed for this species as a whole. In the assessment region, the species is recorded from the Great Limpopo Transfrontier Park, Greater Mapungubwe Transfrontier Conservation Area, Tzaneen Dam and iSimangaliso Wetland Park. No direct interventions can be put in place until more data on subpopulation size and trends, as well as local threat severity, is produced. However, the 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). Additionally, this species would benefit from holistic land management that reduces pesticide use and conserves buffer strips of natural vegetation to sustain insect biomass. Identification and protection of key roost sites is also necessary.

Recommendations for land managers and practitioners:

- Reduce pesticide use in agricultural landscapes and maintain buffer strips of natural vegetation.

Research priorities:

- More research is needed on the distribution and population sizes of the species. Monitoring of known subpopulations should be performed to establish population size and trend.

Table 3. Conservation interventions for the Rufous Mouse-eared Bat (*Myotis bocagii*) 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	-	-	-
2	*2.1 Site/Area Management*: protection of key roost sites.	-	Anecdotal	-	-	-
3	*2.3 Habitat & Natural Process Restoration*: reduction of pesticide use in agricultural landscapes and conservation of buffer strips of natural vegetation.	-	Anecdotal	-	-	-

- Studies into the reproductive behaviour and general ecology of the species are also needed.
- Quantification of severity of local threats.

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.

Data Sources and Quality

Table 4. Information and interpretation qualifiers for the Rufous Mouse-eared Bat (*Myotis bocagii*) 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

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