Kerivoula argentata – Damara Woolly Bat

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Regional Red List status (2016)	Near Threatened C2a(i)*
National Red List status (2004)	Endangered B1ab(iii)+B2ab(iii)
Reasons for change	Non-genuine: New information
Global Red List status (2016)	Least Concern
TOPS listing (NEMBA)	None
CITES listing	None
Endemic	No

*Watch-list Data

> While few records exist for this species, it is difficult to sample and is probably more widespread than previously thought (Cotterill 2013).

Taxonomy

Kerivoula argentata Tomes 1861

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

Synonyms: *nidicola, zuluensis*

Common names: Damara Woolly Bat, Silver Woolly Bat, Silvered Woolly Bat, Silvery Woolly Bat (English), Damara-wolhaarvlermuis, Damaralandse Wolhaarvlermuis (Afrikaans)

Taxonomic status: Species

Taxonomic notes: Meester et al. (1986) listed three subspecies: 1) *Kerivoula argentata argentata* from Northern Namibia, Angola, Zambia, Malawi, the Democratic Republic of the Congo (DRC), Tanzania and Kenya; 2) *K. a. nidicola* from central Mozambique to the Zambezi Valley; and 3) *K. a. zuluensis* from Zimbabwe, southern Mozambique and KwaZulu-Natal Province of

South Africa (Cotterill 2013). However, owing to the limited number of specimens available, the validity of these subspecies cannot currently be determined (Monadjem et al. 2010).

Assessment Rationale

This species is generally associated with moist savannah habitats and has not been recorded from agricultural landscapes but has recently been recorded from a human-modified river landscape in the Durban region (KwaZulu-Natal Province). While known from fewer than 10 locations in the assessment region, it has a wide extent of occurrence (92,854 km^2). This species seems rare but is also difficult to catch, so it may have been under-sampled. Deforestation is a major threat because of its reliance on forest and woodland habitats. There is thus an inferred population decline due to ongoing loss of forest habitat, especially in KwaZulu-Natal Province where an average of 1.2% per year of natural habitat has been lost between 1994 and 2011. Not enough is known about its population size and it is possible that there are fewer than 10, 000 mature individuals. It has low wing loading and suitable habitat is fragmented, hence subpopulations may be isolated. This species may thus qualify for Vulnerable C2a(i) under a precautionary purview. However, it exists primarily in protected areas and thus it is uncertain whether inferred decline outside protected areas is causing a net population decline. Thus, we list as Near Threatened C2a (i). Further monitoring and field surveys are required to estimate population sizes and trends more accurately. This species should be reassessed once such data are available.

Regional population effects: The Damara Woolly Bat is a tiny species with short and broad wings with low wing loading (Norberg & Rayner 1987), it is therefore not suspected that there is immigration into the assessment region from extra-regional populations and we assume no significant rescue effects. However, habitat is connected between regions through transfrontier reserves.

Distribution

This species is distributed in East Africa and southern Africa, with some records in southern parts of the DRC and possibly northern Angola (records are uncertain from this country) in Central Africa. In East Africa, it has been recorded in Kenya, Tanzania, Zambia, and Malawi. In southern Africa, it appears to be widespread in Zimbabwe, with additional scattered records from northeastern Namibia, Mozambique and South Africa. Gaps in the distribution, especially from Zambezian Woodland biotic zone, probably reflect insufficient sampling rather than genuine absence (Cotterill 2013). Habitat models suggest that extensive tracts of land in southern and central Mozambique have conditions suitable for this species (Monadjem et al. 2010). In the assessment region, it is found in South Africa along the east coast of KwaZulu-Natal Province and in northern Limpopo (Pafuri) through to Zimbabwe and Mozambique (Monadjem et al. 2010). It
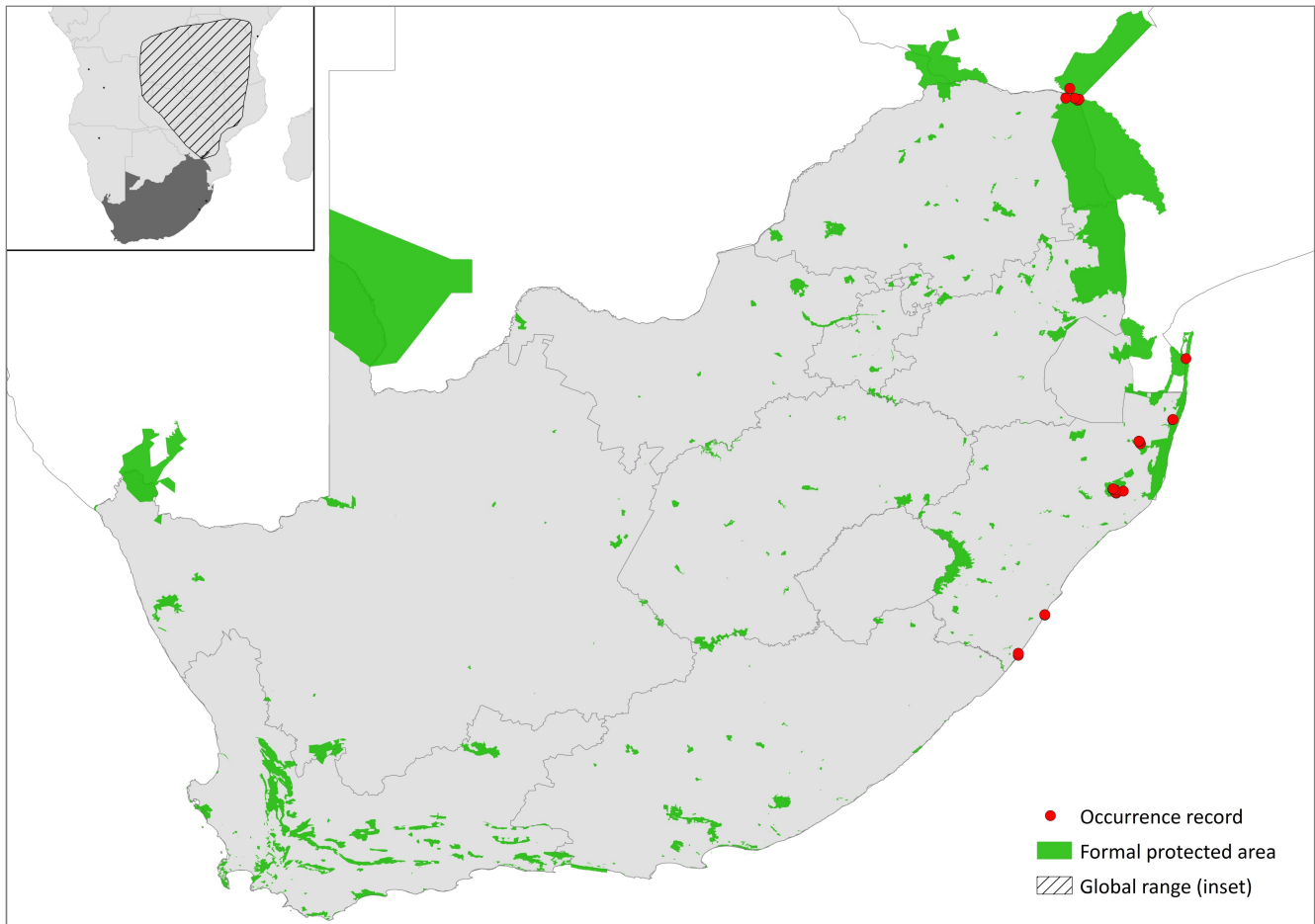
Figure 1. Distribution records for Damara Woolly Bat (*Kerivoula argentata*) within the assessment region

Table 1. Countries of occurrence within southern Africa

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

is absent from Swaziland and Lesotho. Current extent of occurrence is estimated to be 92,854 km^2.

Population

This bat is rarely encountered and is difficult to trap in mist nets, thus it may be more abundant than records indicate (Cotterill 2013). The population size in the assessment region is unknown, but appears to be stable as further records (for example, Naidoo et al. 2011) have been collected since the previous assessment (Friedmann & Daly 2004). However, the species is very difficult to sample, thus it is extremely difficult to determine the population size or trend. Groups of up to five have been recorded (Cotterill 2013).

Current population trend: Stable

Continuing decline in mature individuals: No

Number of mature individuals in population: Unknown

Number of mature individuals in largest subpopulation: Unknown

Number of subpopulations: < 10 currently known

Severely fragmented: No

Habitats and Ecology

While little information is available on the preferred habitat of the species (Monadjem et al. 2010), it occurs in evergreen forests, riverine forests and both mesic and dry woodland savannahs (including bushveld and miombo), mostly occurring in riverine associations (Cotterill 2013), such as riparian corridors. For example, it has been recorded from riverine forest in Pafuri (Kruger National Park) and coastal forests from Mozambique (Monadjem et al. 2010). Within the assessment region, it is generally associated with moist savannah habitats (Taylor 2000). In 2008, it was recorded from the polluted Umbilo River in the Durban area, which may have been facilitated by the availability of roosting sites in nearby Paradise Valley Nature Reserve (Naidoo et al. 2011). Roosting sites include deserted weaver bird nests (Oschadleus 2008), among clusters of leaves, on the bark of trees, and under the eaves of houses (rondavels) (Roberts 1951; Skinner & Chimimba 2005). Typical of all woolly bats, its pelage aids camouflage when the bats roost in foliage (F.P.D. Cotterill, unpubl. data); and groups (2–4 individuals) resemble the nests of mud wasps, with the group clinging together in a tight cluster (Monadjem et al. 2010). Additionally, the long, dense fur may also be a physiological adaptation to

Table 2. Threats to the Damara Woolly Bat (*Kerivoula argentata*) 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 Damara Woolly Bat (*Kerivoula argentata*) 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 known roost sites.	-	Anecdotal	-	-	-

extreme temperatures, experienced when these small bats roost in foliage or birds' nests (Monadjem et al. 2010). Although only weighing 7 grams, the Damara Woolly Bat is the heavier of the two African *Kerivoula* species (Monadjem et al. 2010). Limited information is available for the diet of this clutter-forager species (Monadjem et al. 2010), but it is known that they are insectivorous (Skinner & Chimimba 2005).

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.

Use and Trade

Not known to be traded or utilised in any form.

Threats

Across its range, deforestation is a major threat. Within the assessment region, they occur predominantly in protected areas (but see Naidoo et al. 2011) and thus the severity of deforestation is unknown. 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 in KwaZulu-Natal, 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 and settlements, mines and dams (Jewitt et al. 2015).

Conservation

This species occurs in numerous protected areas within the assessment region, such as Great Limpopo Transfrontier Park, Hluhluwe-iMfolozi Park and iSimangaliso Wetland Park. 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).

Recommendations for land managers and practitioners:

- Identification and protection of key roost sites.
- Use harp traps (instead of mist nets) for field surveys.

Research priorities:

- Surveys are needed to identify further subpopulations, quantify the size of the population and determine population trend in the assessment region.
- Primary research on habitat selection, key roosting sites, diet 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.

Data Sources and Quality

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

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