Suncus varilla – Lesser Dwarf Shrew

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Regional Red List status (2016)	**Least Concern**
National Red List status (2004)	Data Deficient
Reasons for change	Non-genuine change: Change in risk tolerance
Global Red List status (2008)	Least Concern
TOPS listing (NEMBA)	None
CITES listing	None
Endemic	No

They are monogamous and have an extended breeding season of 8–9 months (Lynch 1991).

Taxonomy

Suncus varilla (Thomas 1895)

ANIMALIA - CHORDATA - MAMMALIA - EULIPOTYPHLA - SORICIDAE - *Suncus* - *varilla*

Common names: Lesser Dwarf Shrew (English), Kleiner Dwergskeerbek (Afrikaans)

Taxonomic status: Species

Taxonomic notes: Meester et al. (1986) list four subspecies: *S. v. varilla* from East London; *S. v. orangiae* from southern KwaZulu-Natal, Free State, North West and Gauteng provinces, as well as Lesotho, Zimbabwe and Mozambique; *S. v. warreni* from northern Western Cape Province to Port Nolloth in the Northern Cape Province; and *S. v. tulbaghensis* from Eendekuil, Western Cape Province. As such, further studies may be needed to clarify the taxonomic status of populations currently across its range within the assessment region.

Assessment Rationale

The Lesser Dwarf Shrew is widespread within the assessment region, occurring across many habitat types, including gardens, and can be locally common. It presumably occurs in many protected areas and there is no evidence of net population decline, although ongoing habitat loss and degradation (particularly the loss of termitaria) may cause local declines or extinctions. Thus, we list this species as Least Concern. However, further field studies are needed to confirm its presence in protected areas and to more accurately delimit its distribution. Additionally, taxonomic studies may be necessary to determine whether this species represents a species complex. Key interventions include protected area expansion of moist grassland and riverine woodland habitats, as well as providing incentives for landowners to sustain natural vegetation around wetlands and keep livestock or wildlife at ecological carrying capacity.

Regional population effects: Although its habitat is connected and intact through the Greater Limpopo Transfrontier Park, and thus dispersal is technically possible between South Africa, Mozambique and Zimbabwe, the poor dispersal abilities of this species means there is unlikely to be a significant rescue effect.

Distribution

Distributional records are scattered for the Lesser Dwarf Shrew (Figure 1) and further field studies are needed to more accurately delimit its distribution within the assessment region and across southern Africa (Skinner & Chimimba 2005). The core distribution is South Africa, Lesotho and Zimbabwe, but it has also been recorded from Mozambique, Zambia, Tanzania, eastern Democratic Republic of the Congo, Malawi, and Nigeria. Within the assessment region, they occur or have been recorded from all provinces, most widely in KwaZulu-Natal and Free State provinces. Although a recent survey did not find this species in North West Province (Power 2014), they are difficult to trap and this may not necessarily reflect population decline in the area. They have not been recorded from Swaziland (Monadjem 1998), but the Highveld grassland areas of the country may provide suitable habitat.

Population

This species is difficult to sample because of its small size, and more effort should be concentrated towards sampling disused termitaria. For example, Lynch (1986) found 56% of disused termitaria in his study were utilised by Lesser Dwarf Shrews. Barn Owl (*Tyto alba*) pellet analysis indicates they are common in the lake areas (for example, Sedgefield) of Western Cape Province and constitute the major prey item in some areas (Avery et al. 2005).

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: Unknown

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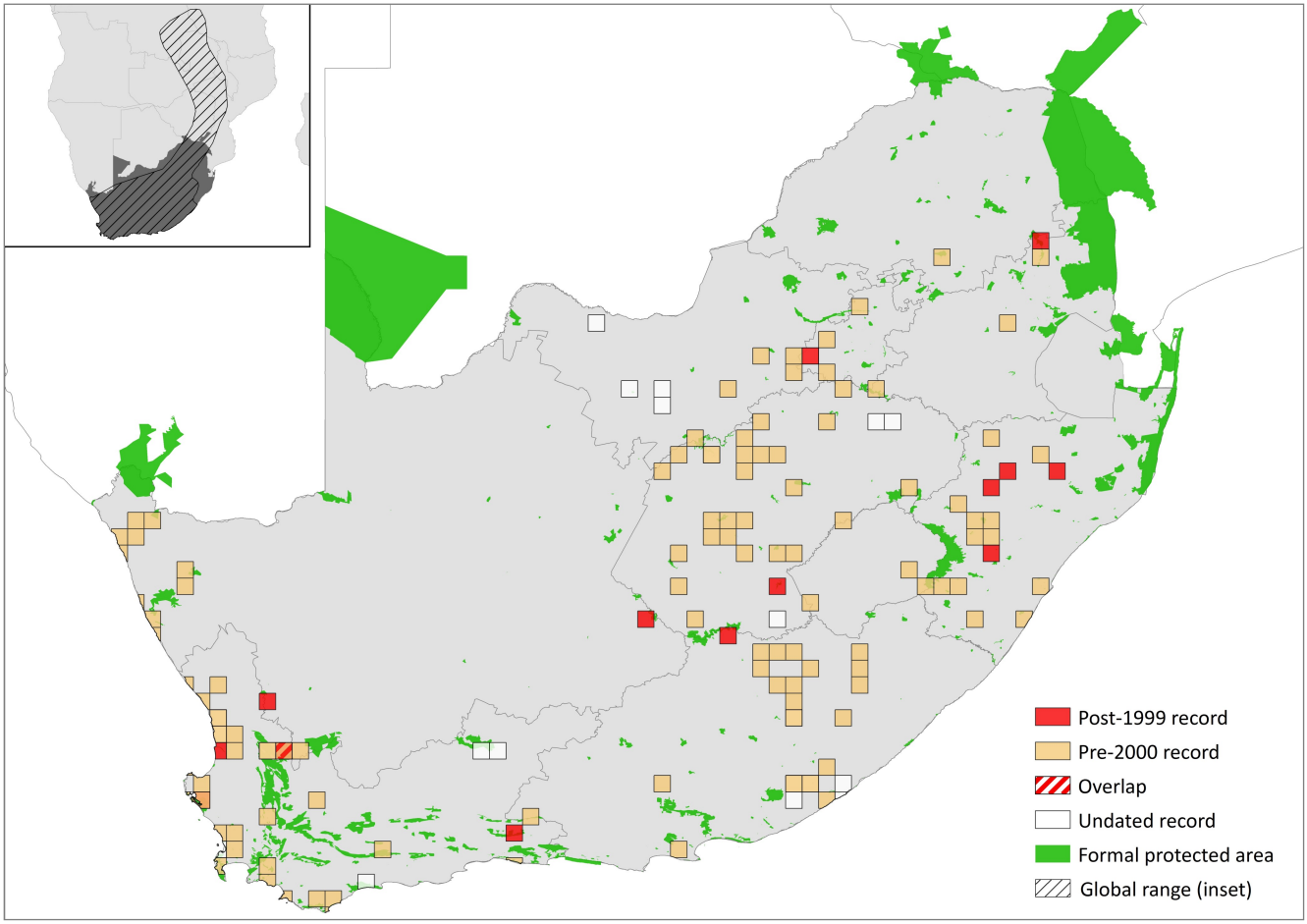

Figure 1. Distribution records for Lesser Dwarf Shrew (*Suncus varilla*) within the assessment region

Table 1. Countries of occurrence within southern Africa

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

Severely fragmented: No. Can utilise modified habitats, but poor dispersal ability may negate its broad habitat suitability.

Habitats and Ecology

It is commonly associated with disused termite mounds from the species *Trinervitermes trinervoides* (Lynch 1983, 1986), which it uses as a microhabitat for thermoregulation. The use of termitaria enables the species to survive under arid conditions. Thus, association with termite mounds may be particularly prevalent in open grassland habitats where there is no alternative cover. In KwaZulu-Natal Province, it is not restricted to termitaria in grasslands and can be found in suburban gardens, coastal forest, savannah and forest margins (Taylor 1998). They are insectivorous and have been recorded in Barn Owl pellets (Skinner & Chimimba 2005).

Ecosystem and cultural services: An important prey species.

Use and Trade

There is no known subsistence or commercial use of this species.

Threats

The main threat to shrews is the loss or degradation of moist, productive areas such as wetlands and rank grasslands within suitable habitat. The two main drivers behind this are abstraction of surface water and draining of wetlands through industrial and residential expansion, and overgrazing of moist grasslands, which leads to the loss of ground cover and decreases small mammal diversity and abundance (Bowland & Perrin 1989, 1993). Suppression of natural ecosystem processes, such as fire, can also lead to habitat degradation through bush encroachment or loss of plant diversity through alien invasives, and is suspected to be increasing with human settlement expansion. There are also clear overlaps and synergistic effects between these threats. Across South Africa, 65% of wetland ecosystem types are threatened (48% of all wetland types Critically Endangered, 12% Endangered and 5% Vulnerable; Driver et al. 2012).

Climate change is considered to be the principal emerging threat to this species (Ogony 2014), both due to loss of habitat and habitat degradation from drying out of wetlands and because shrews cannot tolerate extremes of temperature for long and thus their foraging time will be reduced. Because of their high metabolism, low dispersal

Table 2. Threats to the Lesser Dwarf Shrew (*Suncus varilla*) 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	*7.2 Dams & Water Management/Use*: wetland loss through drainage/water abstraction during agricultural, industrial and urban expansion.	Driver et al. 2012	Indirect (land cover change from remote sensing)	National	65% of wetland ecosystem types threatened.
2	*2.3.2 Small-holder Grazing, Ranching or Farming*: wetland and grassland degradation through overgrazing (removal of ground cover).	Bowland & Perrin 1989	Empirical	Local	Possibly increasing with human settlement expansion and intensification of wildlife farming.
		Driver et al. 2012	Indirect	National	45% of remaining wetland area exists in a heavily modified condition.
3	*7.1.2 Suppression in Fire Frequency/Intensity*: human expansion around grasslands has decreased natural fire frequency. Current stress *1.2 Ecosystem Degradation*: altered fire regime leading to bush encroachment (including alien vegetation invasion) and thus loss of moist grasslands.	-	Anecdotal	-	-
4	*11.1 Habitat Shifting & Alteration*: moist microhabitats lost from Afromontane forest cover reduction and aridification.	-	Anecdotal	-	-
5	*1.1 Housing & Urban Areas*: habitat lost to residential and commercial expansion. Current stress *1.3 Indirect Ecosystem Effects*: fragmentation and isolation of suitable habitat patches with limited dispersal between.	GeoTerraImage 2015	Indirect (land cover change from remote sensing)	Regional	Continuing. Area of urban and rural expansion has increased by 5.6% and 1.1% for KwaZulu-Natal Province between 2000 and 2013 alone.

capacity and short life spans, climate change may reduce the amount of suitable habitat available.

Current habitat trend: In KwaZulu-Natal Province alone, there was a 19.7% loss of natural habitat from 1994 to 2008, with an average loss of 1.2% per annum (Jewitt et al. 2015). If this rate of loss continues into the future, there will be an estimated 12% loss of habitat over 10 years. Additionally, between 2000 and 2013, there has been a 5.6% and 1.1% rate of urban and rural expansion in KwaZulu-Natal Province respectively (GeoTerraImage 2015). However, as long as natural vegetation is maintained around wetlands, rivers and artificial waterbodies, habitat for this species is suspected to remain stable. Additionally, the expansion of wildlife ranching may have a positive effect on this species as more termitaria are likely to be conserved on old fields or fallow lands.

Conservation

The Lesser Dwarf Shrew has been recorded from several protected areas across its range within the assessment region; for example, De Hoop Nature Reserve, Western Cape Province (Avery et al. 2005). Although no specific intervention is required at present, the protection and restoration of wetlands and grasslands would be beneficial to all shrew species. Biodiversity stewardship schemes should be promoted if landowners possess wetlands or grasslands close to core protected areas or remaining habitat patches, and the effects on small mammal subpopulations should be monitored. Protecting such habitats may create dispersal corridors between habitat patches that will enable adaptation to climate change. At the local scale, landowners and managers should be educated, encouraged and incentivised to conserve the habitats on which shrews and small mammals depend. Retaining ground cover is the most important management tool to increase small mammal diversity and abundance. This can be achieved through lowering grazing pressure (Bowland & Perrin 1989), or by maintaining a buffer strip of natural vegetation around wetlands (Driver et al. 2012). Small mammal diversity and abundance is also higher in more complex or heterogeneous landscapes, where periodic burning is an important tool to achieve this (Bowland & Perrin 1993). Removing alien vegetation from watersheds, watercourses and wetlands is also an important intervention to improve flow and water quality, and thus habitat quality, for shrews. Education and awareness campaigns should be employed to teach landowners and local communities about the importance of conserving wetlands and moist grasslands.

Recommendations for land managers and practitioners:

- Landowners and communities should be incentivised to stock livestock or wildlife at ecological carrying capacity and to maintain a buffer of natural vegetation around wetlands.
- Protect disused termitaria to provide microhabitats for this species.

Research priorities:

- Additional field surveys are needed to clarify and confirm the distribution of this species.

Table 3. Conservation interventions for the Lesser Dwarf Shrew (*Suncus varilla*) 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	*1.2 Resource & Habitat Protection*: stewardship agreements with private landowners to conserve wetlands and grasslands.	-	Anecdotal	-	-	Multiple organisations
2	*2.2 Invasive/Problematic Species Control*: maintain stocking rates of livestock and wildlife at ecological carrying capacity.	Bowland & Perrin 1989	Empirical	Local	Small mammal diversity and abundance significantly higher after decrease in grazing pressure.	-
3	*2.1 Site/Area Management*: maintain/ restore natural vegetation around wetlands.	-	Anecdotal	-	-	-
4	*2.2 Invasive/Problematic Species Control*: clear alien vegetation from watersheds and wetlands to restore habitat quality.	-	Anecdotal	-	-	Working for Water, Department of Environmental Affairs
5	*4.3 Awareness & Communications*: educating landowners in the importance of wetlands and grasslands.	-	Anecdotal	-	-	-

- Further molecular research may be needed to disentangle a possible species complex.

Encouraged citizen actions:

- Citizens are requested to submit any shrews killed by cats or drowned in pools to a museum or a provincial conservation authority for identification, thereby enhancing our knowledge of shrew distribution (carcasses can be placed in a ziplock bag and frozen with the locality recorded).

Data Sources and Quality

Table 4. Information and interpretation qualifiers for the Lesser Dwarf Shrew (*Suncus varilla*) assessment

Data sources	Indirect information (literature, expert knowledge), museum records
Data quality (max)	Suspected
Data quality (min)	Suspected
Uncertainty resolution	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.*