Suncus lixus – Greater Dwarf Shrew

Photograph wanted

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

*Watch-list Data

As the colloquial name indicates, although this is a very small shrew, it is the largest of the *Suncus* species within the assessment region (Skinner & Chimimba 2005).

Taxonomy

Suncus lixus (Thomas 1898)

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

Common names: Greater Dwarf Shrew (English), Groter Dwergskeerbek (Afrikaans)

Taxonomic status: Species complex

Taxonomic notes: *Suncus lixus* possibly represents a complex of at least two similar species within the assessment region. Additionally, Meester and Lambrechts (1971) and Meester et al. (1986) recognised two subspecies: *S. l. lixus* from Zimbabwe and Botswana and *S. l. gratulus* from within the assessment region. Further studies are needed to clarify the taxonomic status of populations currently allocated to this species.

Assessment Rationale

The Greater Dwarf Shrew is widespread in the assessment region, occurring in a variety of habitats, including suburban gardens, and thus can tolerate slightly transformed landscapes. It occurs in a number of protected areas and can be locally common in suitable habitat, such as riverine woodland, sandveld and moist grasslands. There is no evidence to suggest a net population decline. However, we caution that molecular data, coupled with further field surveys to delimit distribution more accurately, are needed to determine whether the highveld grassland and subtropical grasslands subpopulations comprise separate species. If so, both species will need to be reassessed as high rates of grassland habitat loss in both regions may qualify one or both species for a threatened status.

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: There is a disjunct distribution between populations in the assessment region and the rest of its range. This species is also a poor disperser. Thus there is not suspected to be a significant rescue effect.

Distribution

Throughout the global range of the Greater Dwarf Shrew there are only a few scattered records (Skinner & Chimimba 2005). However, it is a widespread species that ranges through East Africa, Central Africa and southern Africa. Within the assessment region, it occurs in Mpumalanga, Limpopo, North-West and KwaZulu-Natal provinces. It also occurs in Malolotja and Mlawula Nature Reserves in Swaziland (Monadjem 1998). The known range of the species has been extended westwards into the Zeerust area of North West Province through recent field surveys (Power 2014).

Population

It can be locally common in suitable habitat and is regularly caught during field surveys. For example, it was regularly sampled recently at both Mkhuze Game Reserve and Phinda Private Game Reserve in KwaZulu-Natal Province in a variety of habitat types (Rautenbach et al. 2014; Delcros et al. 2015). Considering it is rare in museum collections (P. Taylor pers. comm.), these are important findings.

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

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

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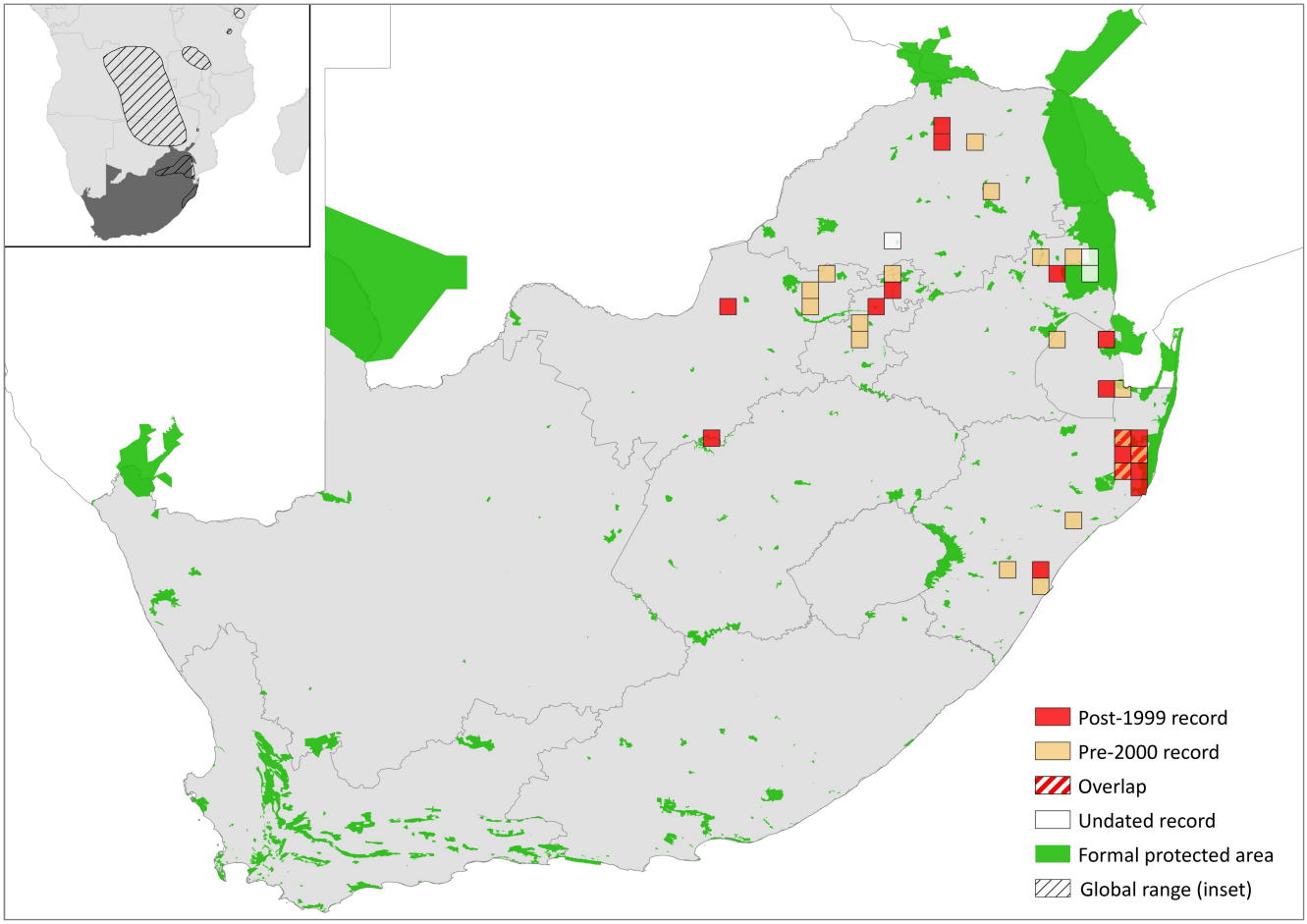

Figure 1. Distribution records for Greater Dwarf Shrew (*Suncus lixus*) within the assessment region

Table 1. Countries of occurrence within southern Africa

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

Habitats and Ecology

This species has generally been recorded from dry savannah and dry woodland habitats. It has also been encountered in riverine forest, open dry scrub, open grassland, coastal lowland forest, Acacia woodland and suburban gardens (Rautenbach 1982; Wirminghaus & Nanni 1989; Baker & Meester 1991; Taylor 1998). It has been recorded from bushveld in the Rustenberg area of North West Province (Power 2014). In Mkhuze Game Reserve and Phinda Private Game Reserve in KwaZulu-Natal Province, they were recently found to be most common in riverine woodland and floodplain grassland respectively (Rautenbach et al. 2014; Delcros et al. 2015). They have been collected from highveld sour grassland in Swaziland (Monadjem 1998).

Ecosystem and cultural services: An important prey species. They are insectivorous and have been recorded in Barn Owl pellets (Skinner & Chimimba 2005).

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 are Critically Endangered, 12% Endangered and 5% Vulnerable; Driver et al. 2012).

Climate change is considered to be the principal emerging threat to this species, 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 capacity and short life spans, climate change may reduce the amount of suitable habitat available.

Table 2. Threats to the Greater Dwarf Shrew (*Suncus lixus*) 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.

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.

Conservation

Greater Dwarf Shrew is present in several protected areas (including Kruger National Park) across its range within the assessment region. The main intervention for this species is the protection and restoration of wetlands and grasslands. 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.

Research priorities:

- Further molecular research is needed to ascertain the validity of the putative species complex.
- Additional field surveys are needed to clarify and confirm the distribution of this species.

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).

Table 3. Conservation interventions for the Greater Dwarf Shrew (*Suncus lixus*) 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 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	-	-	-

Data Sources and Quality

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

Data sources	Field study (published), Indirect information (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.*

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