Crocidura silacea – Lesser Grey-brown Musk Shrew

Photograph wanted

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

*Watch-list Threat

Although it can be common in suitable habitats (Delcros et al. 2014; Rautenbach et al. 2014), it has not been found in agricultural landscapes and thus depends on intact ecosystems.

Taxonomy

Crocidura silacea (Thomas 1895)

ANIMALIA - CHORDATA - MAMMALIA - EULIPOTYPHLA - SORICIDAE - *Crocidura* - *silacea*

Common names: Lesser Grey-brown Musk Shrew, Peters' Musk Shrew (English), Peters se Skeerbek (Afrikaans)

Taxonomic status: Species

Taxonomic notes: Although there has been some controversy over the validity of this species (Ellerman et al. 1953; Heim de Balsac & Meester 1977), subsequent morphometric studies have supported its status as a species (Meester et al. 1986; Taylor et al. 1994; Taylor & Contrafatto 1996).

Assessment Rationale

This species is widely distributed within the assessment region and occurs in many protected areas, including Kruger National Park, and can be locally common in some areas (for example, Maputaland, KwaZulu-Natal Province). Although it occurs in multiple habitat types across its range, it has not been recorded from agricultural or modified habitats. Thus it relies on intact ecosystems and ongoing habitat loss and degradation of grasslands, woodlands and wetlands is a threat to this species. The loss of moist grasslands through climate change is an emerging threat that should be monitored closely as it may push this species into a threatened category. Presently, we list as Least Concern as there is no evidence for net decline. Further surveys and research should focus on vetting existing museum records as many have been misidentified as *C. cyanea* and vice versa, leading to inaccuracies in the distribution map. Key interventions include protected area expansion of moist grassland habitats, as well as incentivising landowners to sustain natural vegetation around wetlands and keep livestock or wildlife at ecological carrying capacity.

Regional population effects: No significant rescue effects are possible as, although habitats are presumably connected across regions in some areas, this species is too small to disperse over long distances.

Distribution

This southern African species is present in Zimbabwe, southern Mozambique, South Africa and Swaziland, and might be present in parts of Lesotho, Botswana, southern Malawi, Zambia and Angola, but requires confirmation from new field surveys. Within the assessment region, they are widely distributed in Limpopo (Rautenbach 1982), Gauteng and Mpumalanga provinces, with a scattered, but wide, distribution in KwaZulu-Natal Province as far south as Vernon Crookes Nature Reserve (Figure 1, Skinner & Chimimba 2005). This species was once known in Swaziland from just two specimens (Monadjem 1998), but further field studies have confirmed a wider distribution there (for example, Avenant & Kuyler 2002). This species is very similar, and almost indistinguishable (Taylor & Contrafatto 1996), from *C. cyanea* but is more restricted in distribution. Existing museum records need to be exhaustively vetted as there may be errors in both species' distribution maps.

Population

This species can be common to abundant in suitable habitats; for example, in Maputaland, northern KwaZulu-Natal Province (P. Taylor unpubl. data). However, in Mkhuze Game Reserve, KwaZulu-Natal Province, it was the least abundant shrew sampled where *C. fuscomurina* and *C. hirta*, represented 73% of all captures (Delcros et al. 2014). Similarly, at Phinda Private Game Reserve, KwaZulu-Natal Province, it was only more abundant than *S. infinitesimus*, where again the most abundant species were *C. fuscomurina* and *C. hirta* (Rautenbach et al. 2014).

Current population trend: Declining, based on ongoing habitat loss.

Continuing decline in mature individuals: Unknown

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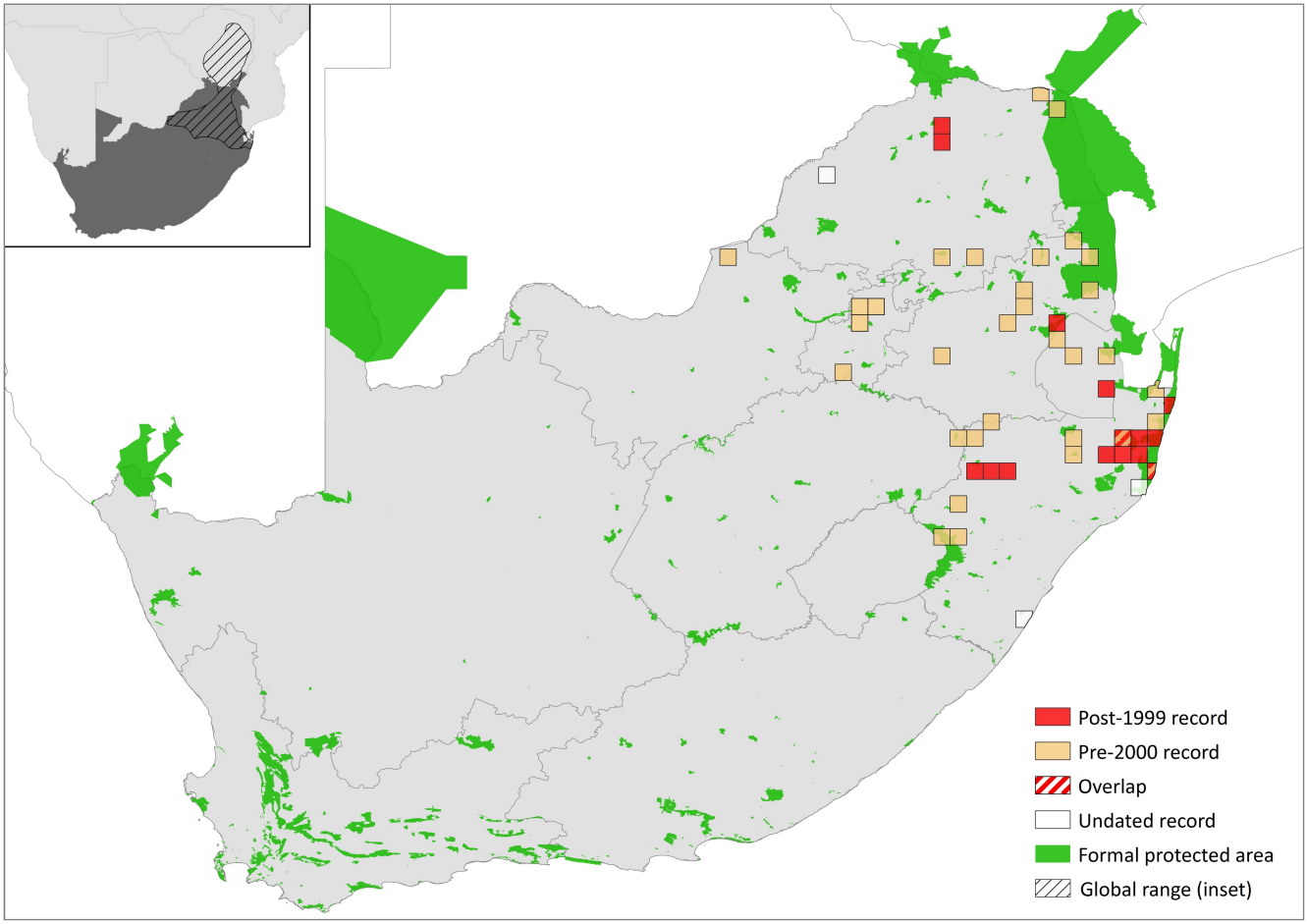

Figure 1. Distribution records for Lesser Grey-brown Musk Shrew (*Crocidura silacea*) within the assessment region

Table 1. Countries of occurrence within southern Africa

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

Number of mature individuals in population: Unknown

Number of mature individuals in largest subpopulation: Unknown

Number of subpopulations: Unknown

Severely fragmented: Yes. Does not occur in transformed landscapes and has poor dispersal ability.

Habitats and Ecology

This species occurs in montane evergreen forest, savannah woodland, bushveld, grassland and coastal forest, and has been collected from under trees, in old timber and under stones (Skinner & Chimimba 2005). In Maputaland, it prefers Sand forest. In Mkhuze, Kube Yini and Phinda Game Reserves, it was found in Lebombo wooded grassland, *Spirostachys africana* woodland, *Acacia* woodland, *Terminalia sericea* woodland, *Combretum molle* woodland on red sand and sand forest (Delcros et al. 2014). In Swaziland, they have been collected from savannah woodland (Monadjem 1998), and in tall grassland, rocky thicket, short rocky forest, and low open rocky woodland in the Maguga Dam area (Avenant & Kuyler 2002). It thus exists in a wide range of habitats. However, they have not been captured on agricultural or transformed landscapes and so rely on intact environments.

Ecosystem and cultural services: An important prey species (for example, Avery et al. 2002).

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 (de-structures habitat) 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

Table 2. Threats to the Lesser Grey-brown Musk Shrew (*Crocidura silacea*) 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	*2.3.2 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.
2	*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	Increasing with settlement expansion and 65% of wetland ecosystem types threatened already.
3	*7.1.2 Suppression in Fire Frequency/Intensity*: human expansion around forests 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	*1.1 Housing & Urban Areas*: forest habitat lost to residential and commercial development. Current stress *1.3 Indirect Ecosystem Effects*: fragmentation and isolation of remaining forest patches with limited dispersal between.	GeoTerraImage 2015	Indirect (land cover change from remote sensing)	Regional	Continuing. Area of urban expansion has increased by 5.6% in KwaZulu-Natal between 2000 and 2013.
5	*11.1 Habitat Shifting & Alteration*: moist microhabitats lost in westerly reaches of range.	Taylor et al. 2016	Projected	National	Contraction of grassland and fynbos habitats by 2050.

also clear overlaps and synergistic effects between these threats. We infer a continuing population decline based on loss of natural habitat.

Current habitat trend: Although widespread, remaining habitat patches are in decline. For example, there was a 19.7% loss of natural habitat in KwaZulu-Natal Province from 1994 to 2008, with an average loss of 1.2% per annum (Jewitt et al. 2015). Similarly, 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). If this rate of loss continues into the future, there will be an estimated 12% loss of habitat over 10 years. Additionally, it may be part of a suite of species that will display a general decline with grassland and fynbos contraction due to climate change (Taylor et al. 2016). Because of their high metabolism, low dispersal capacity and short life spans, climate change will reduce the amount of suitable habitat available.

Conservation

This species is found in several protected areas across its range, including Kruger National Park. The main interventions for this species are protecting and restoring suitable habitat, such as moist grassland and fynbos patches. Biodiversity stewardship schemes should be promoted to conserve such patches. Protecting these habitats may create dispersal corridors between 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.
- Enforce regulations on developments that potentially impact on the habitat integrity of grasslands and wetlands.

Research priorities:

- Additional field surveys are needed to clarify and confirm the distribution of this species.
- The effects of climate change on its distribution and abundance should be specifically modelled.
- Museum records must be vetted to refine the distribution map.

Table 3. Conservation interventions for the Lesser Grey-brown Musk Shrew (*Crocidura silacea*) 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 on the importance of wetlands and grasslands.	-	Anecdotal	-	-	-

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 Grey-brown Musk Shrew (*Crocidura silacea*) assessment

Data sources	Field study (literature), indirect information (unpublished, 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.*