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# Helogale parvula – Common Dwarf Mongoose



Emmanuel Do Linh San

<b>Regional Red List status (2016)</b>	<b>Least Concern</b>
National Red List status (2004)	Least Concern
Reasons for change	No change
Global Red List status (2015)	Least Concern
TOPS listing (NEMBA) (2007)	None
CITES listing	None
Endemic	No

The Common Dwarf Mongoose is Africa's smallest mongoose species. It lives in close-knit, cooperative groups in which all members help to rear the dominant pair's pups.

## Taxonomy

*Helogale parvula* (Sundevall, 1847)

ANIMALIA - CHORDATA - MAMMALIA - CARNIVORA -  
Herpestidae - *Helogale* - *parvula*

**Common names:** Common Dwarf Mongoose, Dwarf Mongoose (English), Dwergmuishond (Afrikaans), Iduha (Ndebele), Motswitswane (Sesotho), Lefswekete, Leswêkêtê, Leswekete, Mothibitshwane (Setswana), Matswi (Venda)

**Taxonomic status:** Species

**Taxonomic notes:** Coetsee (1977) recognised three sections and a total of 13 subspecies of *Helogale parvula*, but Creel (2013) highlighted that the subspecific taxonomy is confused and in severe need of revision. According to the current state of knowledge, *H. p. parvula* is the only subspecies present in the assessment region.

## Assessment Rationale

The Common Dwarf Mongoose (hereafter Dwarf Mongoose) is listed as Least Concern as although its distribution is restricted to the northeast of the assessment region, it is common across its range, sometimes attaining

high densities (from 20–42 individuals / km<sup>2</sup> in some study sites in Limpopo), and is present in several protected areas. There are no major threats that could cause range-wide population decline. Accidental persecution through poisoning and controlled burning may lead to local declines, whilst wildlife ranching may have a positive effect by conserving more suitable habitat and connecting subpopulations. Changing rainfall patterns associated with climate change could affect insect abundance and have an adverse effect on this species, but this would require further investigation.

**Regional population effects:** Dispersal across regional borders is suspected as the range is continuous between South Africa and Swaziland, Mozambique, Zimbabwe and Botswana, respectively; and the species is not constrained by fences.

## Distribution

The Dwarf Mongoose is widely distributed from southern Somalia and Ethiopia south to northeast KwaZulu-Natal in South Africa and westwards to southeastern Democratic Republic of the Congo, southwest and central Angola, and northern Namibia (Creel 2013). It is usually found up to elevations of around 2,000 m asl.

Within the assessment region, it occurs within northern KwaZulu-Natal (southernmost range), Mpumalanga and Limpopo eastern Lowveld and Limpopo Valley into North West Province. However, it is rare in the North West, only occurring in the northern two districts (Power 2014).

## Population

It has been reported as the most abundant small carnivore in areas of open woodland or wooded savannah, with densities reaching as high as 31 individuals / km<sup>2</sup> in Serengeti grasslands (Rood 1983) though estimates of around 5 individuals / km<sup>2</sup> are more typical (Waser et al. 1995). Within the assessment region, recorded density is often much higher; for example, 20 individuals / km<sup>2</sup> at Phuzza Moya Private Game Reserve, near Hoedspruit, Limpopo Province (L. Sharpe unpubl. data), or even a record density of 42 individuals / km<sup>2</sup> at the start of the breeding season in Sorabi Rock Lodge Reserve (Hoffmann et al. 2014). Additionally, it is the most frequently seen diurnal carnivore along the length of the Soutpansberg range in Limpopo Province (C. Stuart & M. Stuart pers. obs. 1985–2013). Generation length is estimated to be 4 years (Sharpe et al. 2015).

Population size is difficult to extrapolate, but there are certainly over 1,000 mature individuals and probably over 10,000 in the assessment region. More monitoring is needed to determine population size and trends accurately, but it is likely that the overall population is stable due to lack of major threats. Local declines may be caused by accidental persecution and controlled burning, while at the same time wildlife ranching is likely to be expanding favourable habitat for this species (see **Use and Trade**).

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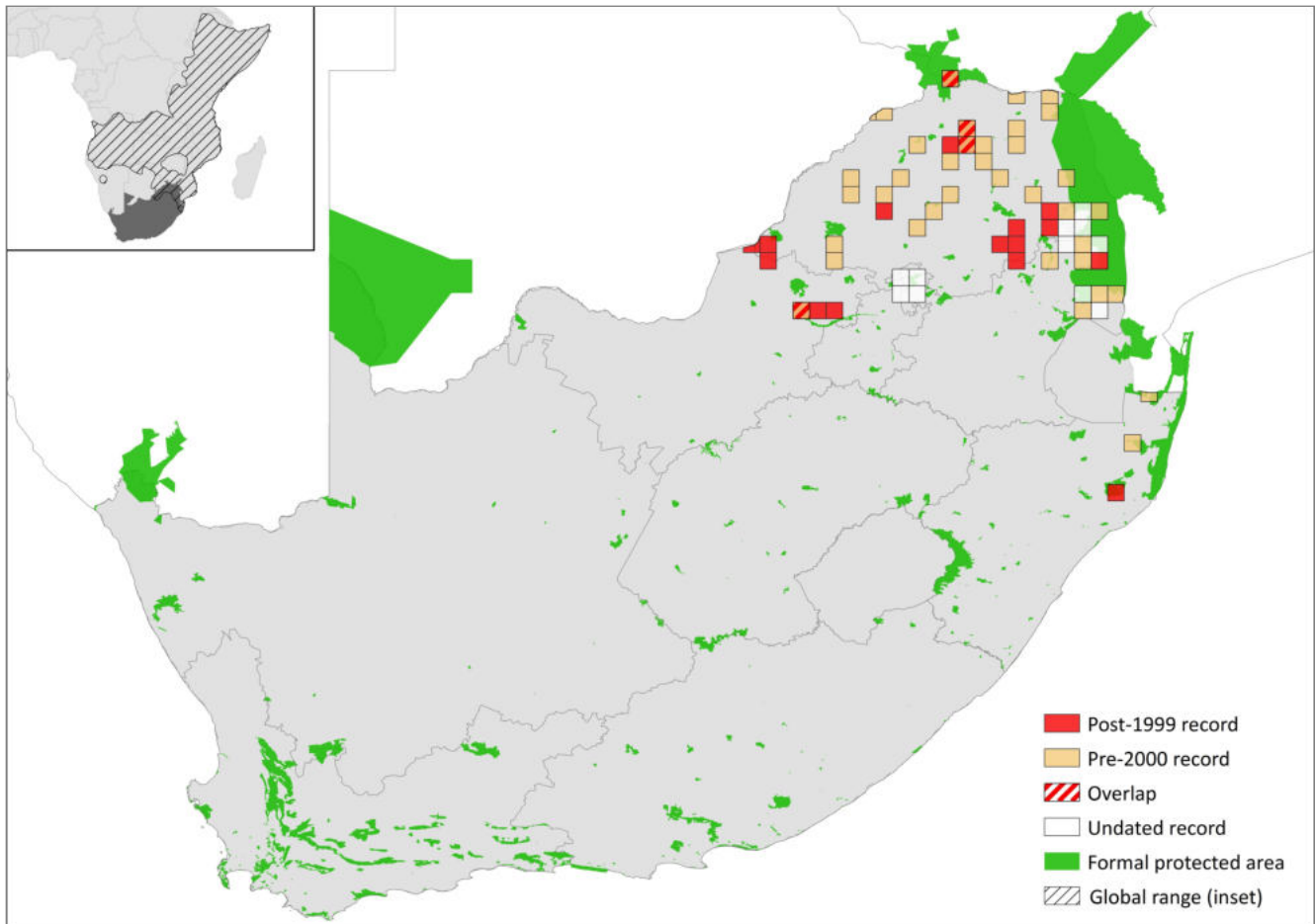


Figure 1. Distribution records for Common Dwarf Mongoose (*Helogale parvula*) within the assessment region

Table 1. Countries of occurrence within southern Africa

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

use as dens (Hiscocks & Perrin 1991; Creel 2013; Hoffmann et al. 2014). Waser et al. (1995) noted that the most important determinant of habitat preference in this species is the density of suitable dens, but this might not necessarily be the case (Hoffmann et al. 2014). It is not found in highly arid areas or in dense riparian vegetation.

*Helogale parvula* is almost entirely insectivorous, feeding primarily on beetles, beetle larvae and termites, although it will occasionally prey on small vertebrates (Creel 2013). In Phuza Moya Private Game Reserve, this small carnivore very rarely consumed termites (despite living in termite mounds), whereas grasshoppers, spiders, crickets and

**Current population trend:** Probably stable

**Continuing decline in mature individuals:** Unknown, but probably not

**Number of mature individuals in population:** Unknown

**Number of mature individuals in largest subpopulation:** Unknown

**Number of subpopulations:** It is not currently possible to determine the extent or number of subpopulations.

**Severely fragmented:** No. Favourable habitat is relatively well connected across this species' range.

## Habitats and Ecology

Dwarf Mongooses inhabit open woodlands, thickets and wooded savannahs, particularly where there are termitaria, rock outcroppings or crevices, or hollow logs and trees for



Photo 1. Common Dwarf Mongoose (*Helogale parvula*) pups remain at a refuge, guarded by babysitters, until 4 weeks old (Lynda Sharpe).

**Table 2. Possible net effects of wildlife ranching on the Common Dwarf Mongoose (*Helogale parvula*) and subsequent management recommendations**

Net effect	Positive
Data quality	Inferred
Rationale	Conservation of habitat and restricted use of burning as a management tool may help to sustain denser subpopulations. However, they are sometimes caught as bycatch as part of damage-causing animal (DCA) control.
Management recommendation	Do not burn too frequently and conserve termite mounds where possible. Use holistic control methods for DCAs.

scorpions were common prey items (L. Sharpe pers. obs. 2006–2016).

Dwarf Mongooses are diurnal, obligate cooperative breeders that live in stable social groups of 3–30 individuals (Sharpe et al. 2016). Within their well-defended yet overlapping territories, group members forage together over distances of 0.5–3.5 km (J. Kern unpubl. data) and may utilise up to 30 different sleeping refuges (Rood 1983; Hoffman et al. 2014). Since individuals predominantly dig for invertebrate prey they are particularly vulnerable to predation while foraging and a sentinel is often posted. Territory size is similar in the Serengeti (0.25–0.35 km<sup>2</sup>; Rood 1978) and in Limpopo (0.3–0.4 km<sup>2</sup>; Sharpe et al. 2012), but is twice to thrice as large in the Taru Desert, Kenya (0.65–0.96 km<sup>2</sup>; Rasa 1987). Social groups normally consist of an alpha pair, their adult offspring and 1–3 immigrant males (Rood 1986). The dominant pair is responsible for 80% of pups (Keane et al. 1994) and their subordinate helpers of both sexes have a positive influence on reproductive success (Creel & Waser 1994). All adults take part in cooperative activities such as territory defence, sentinel behaviour, allo-grooming and pup care (Rood 1983). In South Africa, groups rear 2–3 consecutive litters during the summer wet season (October–April; Photo 1). Gestation is c. 50 days, inter-birth interval averages 60 days and mean litter size (at pup emergence) is 4.1 (N = 53 litters; L. Sharpe unpubl. data). Individuals reach sexual maturity by one year (Creel et al. 1992), but males usually delay dispersal until 2–3 years of age (Rood 1990). Females tend to remain in their natal group for life (queuing for the alpha position), and their reproduction is suppressed by the alpha female via endocrine mechanisms and infanticide (Creel et al. 1992). Dispersing females, unlike males, are unable to join established groups (Rood 1986) and so must found their own groups. Because group size is positively correlated with survival of pups, adults and groups (Rasa 1987; Rood 1990; Creel & Waser 1994),

small, newly established groups are rarely successful (Rasa 1986; Rood 1986) and vacant territories often remain unoccupied for years (Rood 1986). The maximum lifespan of wild Dwarf Mongooses is 13 years (Rood 1990; L. Sharpe pers. obs. 2016).

**Ecosystem and cultural services:** Dwarf Mongooses share a co-dependent relationship with a number of bird species, for example hornbills of the genus *Tockus* (Rasa 1983) or Fork-tailed Drongos (*Dicrurus adsimilis*; Sharpe et al. 2010). Forming mixed-species foraging parties, they provide the birds with additional foraging opportunities (i.e. flushed prey) while utilising the birds' anti-predator vigilance and warning calls.

## Use and Trade

This species is not used in the bushmeat trade in South Africa, nor traditional medicine as far as we are aware. Its pelt has no commercial value. Pups are sometimes taken from the wild for pets, but they usually die of stress-related illness within about 12 months (G.J. Scheepers pers. comm. 2009).

Wildlife ranching and the private sector are suspected to be having a positive effect on this species by conserving more suitable habitat and possibly helping to connect subpopulations. However, more research needs to be done to confirm this.

## Threats

Dwarf Mongooses do not currently face major threats. They are not persecuted directly by wildlife ranchers, but some individuals may be killed as bycatch in control programmes of damage-causing animals (DCAs), especially where poison baits are in use. The impact is however believed to be minimal.

**Table 3. Threats to the Common Dwarf Mongoose (*Helogale parvula*) 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	7.1.2 <i>Suppression in Fire Frequency/ Intensity</i> : incorrect burning regime.	-	Anecdotal	Local	Increasing (based on unpubl. data on lack of fire management).
2	5.1.2 <i>Hunting &amp; Collecting Terrestrial Animals</i> : accidental persecution (i.e. as bycatch) through poisoning to control damage-causing animals.	-	Anecdotal	Local	Probably minimal and stable.
3	11.1 <i>Other Impacts</i> : climate change affecting rainfall patterns and consequently insect abundance.	L. Sharpe unpubl. data	Empirical (long-term population monitoring)	National	Probably increasing (based on other studies on climate change).

**Table 4. Conservation interventions for the Common Dwarf Mongoose (*Helogale parvula*) 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	2.3 <i>Habitat &amp; Natural Process Restoration</i> : employ appropriate fire management for savannah and grassland habitats used by the species.	-	Anecdotal	-	-	-
2	2.1 <i>Site/Area Management</i> : avoid use of poison and promote use of the “holistic” approach to the management of damage-causing animals instead.	-	Anecdotal	-	-	-

Dwarf Mongoose population levels are possibly locally reduced by controlled burning operations, either directly or indirectly through changes to habitat structure potentially lowering food availability and increasing predation risk. Numerous private wildlife ranches do not use burning, which may support higher populations. However the impact of fire on this species has not yet been quantified.

Based on 11 years of observation (L. Sharpe unpubl. data), population levels fluctuate considerably depending on insect abundance, which in turn is dependent on rainfall. Thus, changing rainfall patterns associated with climate change could have an adverse impact on this species. This would require further investigation.

**Current habitat trend:** Stable or possibly increasing due to an increase in the wildlife ranching industry.

## Conservation

Dwarf Mongooses are present in most protected areas across the assessment region, including Kruger and Mapungubwe national parks, Waterberg complex and Soutpansberg Biosphere Reserve. Since they attain high densities and have small territories, even small protected areas and wildlife ranches or game farms can harbour large populations (Creel 2013).

### Recommendations for land managers and practitioners:

- Minimise use of non-selective control methods (e.g. poison) for DCAs.
- Private landowners should ensure that they do not burn the land too frequently and that termite mounds are conserved.
- Create conservancies to protect and connect favourable habitat.

## Data Sources and Quality

**Table 5. Information and interpretation qualifiers for the Common Dwarf Mongoose (*Helogale parvula*) assessment**

Data sources	Field study (literature, unpublished), indirect information (literature, expert knowledge, unpublished)
Data quality (max)	Inferred
Data quality (min)	Suspected
Uncertainty resolution	Author consensus
Risk tolerance	Evidentiary

**Research priorities:** This is one of the best-studied African small carnivores (see review in Creel 2013) but the following research topics will assist in gathering conservation-relevant information:

- Long-term monitoring of (some) subpopulations.
- Evaluation of relative impact of wildlife ranching on habitat and populations.
- Documenting the degree to which controlled burning impacts on population levels.

There is an ongoing research project on this species located at Sorabi Rock Lodge near Hoedspruit in Limpopo Province. The project, which focuses on the species’ behavioural ecology, was established in 2011 and is run by Bristol University.

### Encouraged citizen actions:

- Report sightings on virtual museum platforms (for example, iSpot and MammalMAP), especially outside protected areas. This will help in improving this species’ distribution map.

## References

- Coetzee CG. 1977. Part 8: Order Carnivora. Pages 1–42 in Meester J, Setzer HW, editors. *The Mammals of Africa. An Identification Manual*. Smithsonian Institution Press, Washington, DC, USA.
- Creel S. 2013. *Helogale parvula* Dwarf Mongoose. Pages 368–373 in Kingdon J, Hoffmann M, editors. *The Mammals of Africa. Volume V: Carnivores, Pangolins, Equids and Rhinoceroses*. Bloomsbury Publishing, London, UK.
- Creel SR, Creel N, Wild DE, Montfort DL. 1992. Behavioural and endocrine mechanisms of reproductive suppression in Serengeti dwarf mongooses. *Animal Behaviour* **43**:231–245.
- Creel SR, Waser PM. 1994. Inclusive fitness and reproductive strategies in dwarf mongooses. *Behavioral Ecology* **5**:339–348.
- Hiscocks K, Perrin MR. 1991. Den selection and use by dwarf mongooses and banded mongooses in South Africa. *South African Journal of Wildlife Research* **21**:119–122.
- Hoffmann M, Roberts RL, Kern J. 2014. Tree climbing and denning by Common Dwarf Mongoose *Helogale parvula*. *Small Carnivore Conservation* **49**:66–67.
- Keane B, Waser PM, Creel SR, Creel NM, Elliott LF, Minchella DJ. 1994. Subordinate reproduction in dwarf mongooses. *Animal Behaviour* **47**:65–75.
- Power RJ. 2014. *The Distribution and Status of Mammals in the North West Province*. Department of Economic Development, Environment, Conservation & Tourism, North West Provincial Government, Mahikeng, South Africa.

Rasa OAE. 1983. Dwarf mongoose and hornbill mutualism in the Taru Desert, Kenya. *Behavioral Ecology and Sociobiology* **12**: 181–190.

Rasa OAE. 1986. Ecological factors and their relationship to group size, mortality and behaviour in the dwarf mongoose. *Cimbebasia* **8**:15–21.

Rasa OAE. 1987. The dwarf mongoose: a study of behavior and social structure in relation to ecology in a small social carnivore. *Advances in the Study of Behavior* **17**:121–163.

Rood JP. 1983. The social system of the dwarf mongoose. Pages 454–488 in Eisenberg JF, Kleiman DG, editors. *Advances in the Study of Mammalian Behavior*. American Society of Mammalogists (Special Publication 7) and Allen Press, Lawrence, USA.

Rood JP. 1978. Dwarf mongoose helpers at the den. *Zeitschrift für Tierpsychologie* **48**:277–287.

Rood JP. 1986. Ecology and social evolution in mongooses. Pages 131–152 in Rubenstein I, Wrangham RW, editors. *Ecological Aspects of Social Evolution*. Princeton University Press, Princeton, USA.

Rood JP. 1990. Groups size, reproduction, and routes to breeding in dwarf mongooses. *Animal Behaviour* **39**:566–572.

Sharpe LL, Jooste MM, Cherry MI. 2012. Handstand scent marking in the dwarf mongoose (*Helogale parvula*). *Ethology* **118**:575–583.

Sharpe L, Kern J, Do Linh San E. 2015. *Helogale parvula*. The IUCN Red List of Threatened Species 2015: e.T41609A45206516.

Sharpe LL, Joustra AS, Cherry MI. 2010. The presence of an avian co-forager reduces vigilance in a cooperative mammal. *Biology Letters* **6**:475–477.

Sharpe LL, Rubow J, Cherry MI. 2016. Robbing rivals: interference foraging competition reflects female reproductive competition in a cooperative mammal. *Animal Behaviour* **112**: 229–236.

Waser PM, Elliott LF, Creel NM, Creel SR. 1995. Habitat variation and mongoose demography. Pages 421–447 in Sinclair ARE, Arcese P, editors. *Serengeti II: Dynamics, Management, and Conservation of an Ecosystem*. University of Chicago Press, Chicago, USA.

## Assessors and Reviewers

Lynda Sharpe<sup>1</sup>, Julie Kern<sup>2</sup>, Chris Stuart<sup>2†</sup>, Mathilde Stuart<sup>2†</sup>, Emmanuel Do Linh San<sup>4\*</sup>

<sup>1</sup>University of Stellenbosch, <sup>2</sup>University of Bristol, <sup>3</sup>African–Arabian Wildlife Research Centre, <sup>4</sup>University of Fort Hare

<sup>†</sup>IUCN SSC Afrotheria Specialist Group

<sup>‡</sup>IUCN SCC Small Carnivore Specialist Group

## Contributors

Zimkitha J.K. Madikiza<sup>1</sup>

<sup>1</sup>University of the Witwatersrand

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