Suricata suricatta – Suricate

Emmanuel Do Linh San

Regional Red List status (2016)	Least Concern
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

Suricates are also known as Meerkats. The name "Meerkat" is thought to be of French origin borrowed from the Dutch, who may, in turn, have adopted it from one of the many indigenous languages of South Africa (Skinner & Chimimba 2005).

Taxonomy

Suricata suricatta (Von Schreber 1776)

ANIMALIA - CHORDATA - MAMMALIA - CARNIVORA - HERPESTIDAE - *Suricata* - *suricatta*

Common names: Suricate, Meerkat, Slender-tailed Meerkat (English), Stokstertmeerkat, Graatjie-meerkat (Afrikaans), Xarab, !Naixarab (Damara, Nama), Todi, Letoto (Sesotho), Kôtôkwê, Kôtôkô, Lekôtôkô (Tswana)

Taxonomic status: Species

Taxonomic notes: Meester et al. (1986) recognised two subspecies: *S. s. suricatta* and *S. s. marjoriae* Bradfield 1936. The nominate subspecies occupies the whole distributional range, excluding the Namib Desert and pro-Namib north of Swakopmund, where *S. s. marjoriae* occurs; the latter might be replaced by *S. s. iona* Cabral 1971 in Angola (Skinner & Chimimba 2005).

Assessment Rationale

The Suricate is listed as Least Concern as it is relatively widespread in the assessment region, is present in several protected areas (notably in the Kgalagadi Transfrontier Park), and there are currently no major threats to the species. It occurs in habitats and regions that are largely intact and unlikely to be extensively transformed. Climate change may adversely affect this species if rainfall in semi-arid areas becomes more unpredictable and the annual average is reduced. The predicted extension of the current semi-arid region of southern Africa in an easterly direction may result in an easterly shift of its current distribution.

Regional population effects: The species' range is assumed to be continuous within southern Africa and hence it is likely that there is dispersal across regions. However, there is a lack of research on the actual range and whether there are breaks in the distribution that may result from unsuitable edaphic factors, mountains or large perennial rivers (e.g. the Orange River) and/or the absence of other species that may be important for creating suitable microhabitats – for example Cape Ground Squirrels (*Xerus inauris*), whose burrows Suricates use as sleeping and denning sites.

Distribution

This species is widespread in the western parts of southern Africa, including western and southern Namibia, southwestern Botswana, and north and west South Africa, with a very marginal intrusion into extreme southwestern Angola (Macdonald 2013). Lynch (1994) suggested that this species may occur in the lowlands of Lesotho, but there have been no records so far (N.L. Avenant pers. comm. 2013).

Within the assessment region, the species occurs in the arid western and southern areas, highland grasslands, and Eastern Cape (Figure 1). Suricates are restricted to the southern parts of the North West Province, Gauteng and Mpumalanga (Skinner & Chimimba 2005). However, they do not extend eastwards as far as the Swaziland border. Suricates are widespread in both the Free State and Northern Cape provinces. As the species favours arid, open country, it occurs widely through the Nama-Karoo and Succulent Karoo biomes. Within the Western Cape, it occurs in the Fynbos Biome and extends eastwards into the Savanna Biome in areas where annual rainfall exceeds 600 mm (Skinner & Chimimba 2005). While Suricates occur in the Western and Eastern Cape provinces, they are absent along the coastline, from Cape Town to Port Elizabeth; this absence does extend for some distance inland (Figure 1).

Population

Suricate densities can fluctuate greatly across the range, and are influenced by rainfall and predation (Doolan & Madonald 1997; Clutton-Brock et al. 1999b). In the South African section of the Kgalagadi Transfrontier Park, densities declined from 1 individual / km^2 in April 1994 to 0.32 individual / km^2 in May 1995 following a reduction in rainfall (Clutton-Brock et al. 1999b). Generation length is estimated to be six years (Jordan & Do Linh San 2015).

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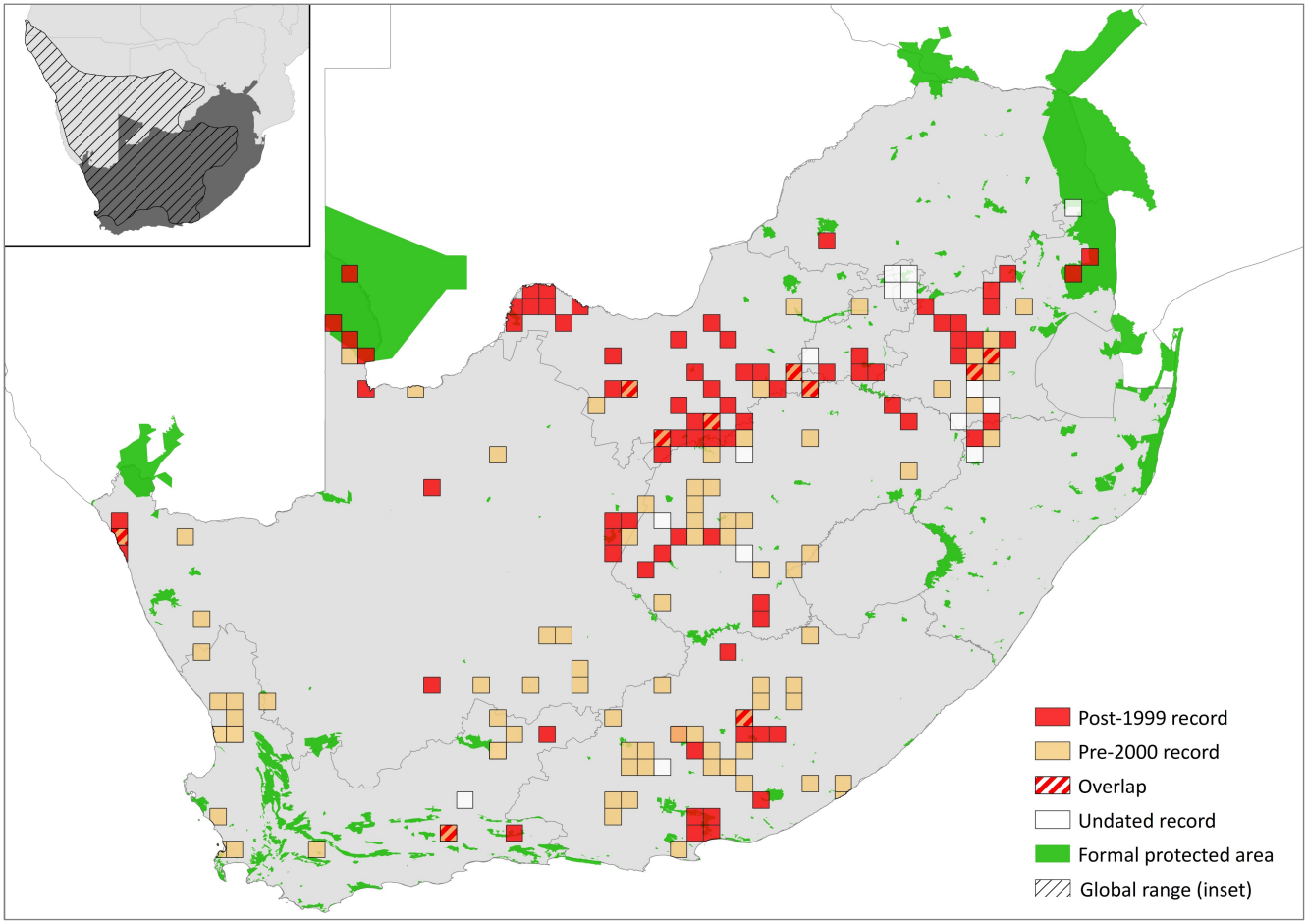

Figure 1. Distribution records for Suricate (*Suricata suricatta*) within the assessment region

Table 1. Countries of occurrence within southern Africa

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

However, Suricates are generally considered to be relatively common across their known range and may have been favoured by the elimination of many of their natural predators (e.g. raptors and mesopredators) by small livestock farmers. Although the population is currently considered to be stable, climate change may cause population decline in the future because Suricates' reproduction is significantly affected by rainfall (Clutton-Brock et al. 1999a; Russell et al. 2002).

Current population trend: Unknown, but probably stable based on wide extent of occurrence and lack of major threats.

Continuing decline in mature individuals: Unknown, but unlikely

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. Suricates have a relatively broad habitat tolerance and can exist in agricultural and rural landscapes; in addition, their favoured habitats are largely connected across their range.

Habitats and Ecology

The Suricate is an inhabitant of arid, open country, characterised by short grasses and sparse woody growth. It is absent from true desert and forested areas, and also from mountainous terrain (Macdonald 2013). It is carnivorous, feeding mostly on invertebrates. The diet of the species consists predominantly of insects (mainly Coleoptera adults and larvae), supplemented with arachnids, myriapods (e.g. centipedes, *Scolopendra morsitans*, and millipedes), reptiles (e.g. lizards), birds and some plant material (Skinner & Chimimba 2005). Small mammals may also be consumed locally and seasonally, especially in winter when arthropod abundance and consumption drops.

Suricates are diurnal obligate cooperative breeders that live in social groups of 2–50 individuals (Clutton-Brock et al. 2008; Photo 1). Each group usually has a dominant male and a dominant female, who produce the vast majority (75%) of the group's surviving young (Clutton-Brock et al. 2001; Manser 2001; Russell et al. 2002). Subordinates assist in raising the offspring of dominants by babysitting (Clutton-Brock et al. 2000) and provisioning pups (Manser & Avey 2000) including by allonursing (MacLeod et al. 2013). Helpers do not seem to specialise

Photo 1. A band of Suricates (*Suricata suricatta*) sunbathing after emerging from their nocturnal burrow in the Little Karoo (Emmanuel Do Linh San)

in the kind of help they provide (Clutton-Brock et al. 2003). Infanticide occurs, with dominant females killing the young of subordinate females (O'Riain et al. 2000; Clutton-Brock et al. 1998; Young & Clutton-Brock 2006; Young et al. 2008). However, reproductive control tends to be concentrated during the dominant's pregnancy, when subordinate females are forcibly evicted from their social group (O'Riain et al. 2000; Clutton-Brock et al. 1998). Litters of three to five pups emerge on average, and are born throughout the year except July, with a peak between March and September (Clutton-Brock et al. 1999a) after a 60 day gestation (Clutton-Brock et al. 1999a). Breeding frequency is related to rainfall (Clutton-Brock et al. 1999a). Although there is no sexual dimorphism, individuals adjust their growth to the size of their closest same-sex competitor (Huchard et al. 2016), and this competitive growth appears to drive adaptive size-modification in dominant females (Russell et al. 2004).

Suricates tend to move around within their range, which is approximately 2 km^2 (Jordan et al. 2007). Territorial residence may be communicated through a series of latrines that are distributed non-randomly throughout the range (Jordan et al. 2007). While the Suricate group may utilise as many as 10 burrow systems, only two or three burrows are generally used to sleep and raise young in (Skinner & Chimimba 2005). Suricates also maintain over 1,000 bolt holes throughout their territory, appearing to remember the locations of these sites and using the closest one to escape approaching predators (Manser & Bell 2004).

Ecosystem and cultural services: The Suricate is a flagship species for the Kalahari in South Africa. In addition, Suricates consume many invertebrates which may be considered as pest species. Lastly, at least two tourism operations have opened, offering "walking with wild Suricates" experiences for commercial and educational returns.

Use and Trade

Suricates are used as research subjects for understanding the costs and benefits of social behaviour in mammals and they are charismatic animals for ecotourism businesses. Suricates are also sold as live animals for the entertainment industry or as pets. They can be habituated and are often used in wildlife documentaries. Trade in live

Table 2. Use and trade summary for the Suricate (*Suricata suricatta*)

Category	Applicable?	Rationale	Proportion of total harvest	Trend
Subsistence use	No	-	-	-
Commercial use	Yes	Selling of individuals as pets or for the entertainment industry.	All	Stable or possibly increasing.
Harvest from wild population	Yes	Removal of wild animals to sell directly or use as breeding stock in captivity.	Unknown, but probably minority.	Unknown, but probably stable.
Harvest from ranched population	No	-	-	-
Harvest from captive population	Yes	Production of offspring to be sold as pets (or breeding stock).	Unknown, but possibly majority.	Stable or possibly increasing, notably in the UK and Japan.

Table 3. Threats to the Suricate (*Suricata suricatta*) 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	*5.1 Hunting & Collecting Terrestrial Animals*: collecting wild Suricates for trade.	-	Anecdotal	Local	Unknown, probably stable.
2	*7.3 Other Ecosystem Modifications*: transformation of land for agriculture, especially where irrigation takes place. Current stress *1.1 Ecosystem Conversion*: loss of Suricate prey base and displacement of ecosystem engineer species that may benefit Suricates.	-	Anecdotal	National	Increasing
3	*11. Climate Change & Severe Weather*: increasing aridity. Current stress *2.2 Species Disturbance*: reduction in rainfall may adversely affect Suricate's reproduction and recruitment.	-	Anecdotal	National	Increasing

animals is not expected to negatively impact on the population, but there are welfare issues with keeping the species as a pet. It is also important to mention that Suricates do not adapt well to traditional pet care standards of average people. In addition, they generally tend to urinate (scent-mark) in multiple locations in the house, may chew wires, carpets and even furniture, and can be aggressive towards visitors (O.A.E. Rasa pers. comm. 2016) and new pets.

Wildlife ranching may increase the habitat available for the species, but no study has demonstrated this yet.

Threats

Suricates are not currently facing any major threats. There is no evidence so far that infection with tuberculosis (probably *Mycobacterium bovis*), which may be common in this species (Drewe 2010), has led to any direct persecution in farming areas, or that a present small trade in Suricates as pets has affected wild populations.

Climate change and habitat transformation may pose long-term threats to Suricate populations across their distribution. Increasing aridity may adversely affect reproduction (see Clutton-Brock et al. 1999a) and recruitment and may therefore cause local extinctions in already arid areas. No information is currently available to suitably evaluate the possible impacts of land transformation for agriculture on Suricates. Changing the habitat and hence the food resources that are reliant on natural habitat could prove negative for this species. On the other hand, since there are fewer or no large predators on most farmlands (both due to persecution and lack of large, natural prey resulting from habitat change), Suricates can potentially thrive. If mesopredator release occurs, however, this could lead to increased predation by the medium-sized carnivores and/or increased competition for food with other small carnivore species. The conversion of land for crops through irrigation projects in arid areas is likely to have the most direct short-term effects as these activities may eliminate many of the Suricates natural prey in addition to displacing important ecosystem engineer species such as Cape Porcupine (*Hystrix africaeaustralis*), Common Warthog (*Phacochoerus africanus*), Aardvark (*Orycteropus afer*) and especially Cape Ground Squirrels that may benefit Suricates through the provision of burrow systems and bolt holes, respectively.

Current habitat trend: Stable

Conservation

Suricates are present in several large and well-managed protected areas, including the Kgalagadi Transfrontier Park, Tswalu Game Reserve, Mokala National Park, and Addo Elephant National Park which are respectively located at the northern extreme, centre and southern border of their current distribution within the assessment region. There are no specific conservation interventions geared towards their conservation nationally, but local organisations that engage in both ecotourism (e.g. Klein Karoo) and research (e.g. Kuruman River Reserve) are important for educating the public on the ecological role and biological significance of this species. Awareness and education campaigns might help reducing the pet trade, but paradoxically could also – along with media attention – exacerbate this threat.

Recommendations for land managers and practitioners:

- Monitor and regulate their use in the pet trade.
- Educate the public on the pitfalls of keeping Suricates as pets and encourage people to report the trade of meerkats for the pet industry.
- Monitor sites for potential population declines from climate change.

Research priorities: This is a well-studied African small carnivore (see review in Macdonald 2013) and no particular knowledge is urgently needed in view of managing or conserving the species. However, the

Table 4. Conservation interventions for the Suricate (*Suricata suricatta*) 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	*4.3 Awareness & Communications*: educate the public on the pitfalls of keeping Suricates as pets.	-	Anecdotal	-	-	-

majority of behavioural ecology research is derived from studies carried out in the Kalahari Desert. The following research topics will therefore assist in improving our knowledge on this species and gathering information that may be relevant for conservation in the future:

- Study Suricate ecology and behaviour in other biomes (e.g. Karoo, Highveld Grassland or Fynbos).
- Survey this species distribution and status in the Great Karoo and the central and northern parts of the Eastern Cape.
- Assess the potential impacts that climate change will have on the population.
- Assess the drivers and extent of the pet trade.

Encouraged citizen actions:

- Report sightings on virtual museum platforms (for example, iSpot and MammalMAP), especially outside protected areas. As confusion with Banded Mongoose (*Mungos mungo*) and other mongoose species is possible, a photograph is required for confirmation of identification, especially when sightings are made in areas where the distribution ranges of these two mongoose species overlap.

Data Sources and Quality

Table 5. Information and interpretation qualifiers for the Suricate (*Suricata suricatta*) assessment

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