Gerbilliscus afra – Cape Gerbil

Cliff & Suretha Dorse

Regional Red List status (2016)	Least Concern
National Red List status (2004)	Least Concern
Reasons for change	No change
Global Red List status (2016)	Least Concern
TOPS listing (NEMBA) (2007)	None
CITES listing	None
Endemic	Yes

This species is frequently regarded as a pest within the wheat fields of the Western Cape, however, a holistic approach to biocontrol with the use of Barn Owls (*Tyto alba*) is a valuable method with which to manage the population explosions exhibited by this species.

Taxonomy

Gerbilliscus afra (Gray 1830)

ANIMALIA - CHORDATA - MAMMALIA - RODENTIA - MURIDAE - *Gerbilliscus* - *afra*

Synonyms: *Tatera afra* (Gray 1830), *africanus, caffer*, *gilli, schlegelii* (Dempster 2013)

Common names: Cape Gerbil, Cape Gerbille (English), Kaapse Nagmuis (Afrikaans)

Taxonomic status: Species

Taxonomic notes: Although previously classified as *Tatera afra* (Skinner & Chimimba 2005), this species was recently recognised by Musser and Carleton (2005) as *Gerbilliscus afra* (Gray 1830). Aside from *Gerbilliscus paeba* (readily distinguished from *G. afra* by its smaller size, relatively long tail and hairy soles on its hindfeet), this is the only *Gerbilliscus* species present within its range (Monadjem et al. 2015), and no subspecies have been recognised (Dempster 2013).

Assessment Rationale

Listed as Least Concern in view of its wide distribution within the assessment region, abundant population, and because there are no major threats that could cause population decline. Additionally, it adapts well to changing land use to the extent that it is considered an agricultural pest, which is being controlled with some success through the provision of nesting boxes and perches for Barn Owls (*Tyto alba*). This intervention should be encouraged as part of a holistic management technique.

Distribution

The Cape Gerbil is endemic to the southwestern region of South Africa, extending from Nieuwoudtville in the Northern Cape southwards to the Cape Peninsula of the Fynbos Biome of the Western Cape, eastwards to Herold's Bay (near George, Western Cape) (Skinner & Chimimba 2005; Avery et al. 2005; Monadjem et al. 2015). Its distribution is somewhat fragmented across the low lying regions of the Western Cape Province. The estimated extent of occurrence is 150,176 km^2 (all data) but only 839 km^2 using post-2000 records. However, this is due to lack of current sampling rather than genuine range contraction.

Population

This species is locally abundant and common in suitable habitats (Dempster 2013). The population is stable within a widely fluctuating range depending on season and rainfall.

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

Habitats and Ecology

The Cape Gerbil occurs within sandy soils or sandy alluvium (Skinner & Chimimba 2005), and appears to prefer the edge of scrubland regions and Karoo habitats. It is well adapted to cultivated lands (Dempster 2013), often thriving in agricultural areas during favourable environmental conditions. It is known to exhibit population explosions, and thus can become a pest in some areas, especially grain lands. It also occurs in vineyards where it does not reach particularly high densities. Its presence here may yet be found to be beneficial, possibly assisting with drainage and nutrient cycling.

This species has been documented feeding on grass, roots, seeds and bulbs (Roberts 1951; Dempster 2013). They utilise sandy soils to excavate extensive burrows,

Recommended citation: Palmer G, Cassola F. 2016. A conservation assessment of *Gerbilliscus afra*. In Child MF, Roxburgh L, Do Linh San E, Raimondo D, Davies-Mostert HT, editors. The Red List of Mammals of South Africa, Swaziland and Lesotho. South African National Biodiversity Institute and Endangered Wildlife Trust, South Africa.

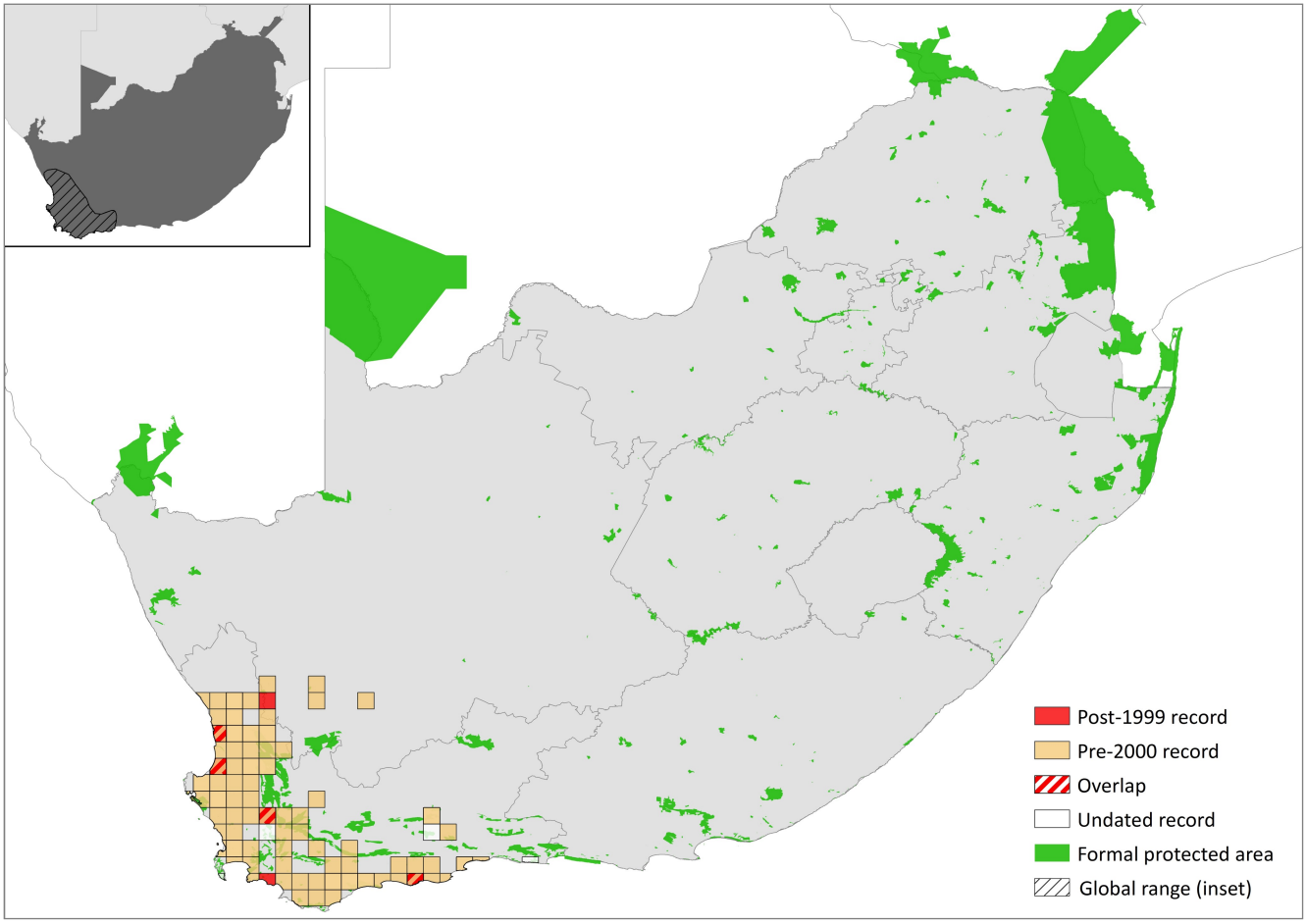

Figure 1. Distribution records for Cape Gerbil (*Gerbilliscus afra*) within the assessment region

Table 1. Countries of occurrence within southern Africa

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

comprising resting and breeding chambers (Skinner & Chimimba 2005). Breeding usually commences after the winter rainfall in the Western Cape (Measroch 1954), when they produce between three and five young (Dempster et al. 1992).

Ecosystem and cultural services: It may yet be found that their presence in vineyards is in fact beneficial from an agricultural point of view. They are also a tremendous food source for numerous predators from Barn Owls to snakes and Weasels (*Poecilogale albinucha*).

Use and Trade

This species is not known to be traded or utilised in any form.

Threats

No major threats have been identified for this species. However, it is persecuted as an agricultural pest – millions can be found on wheat fields in the West Coast area of the Western Cape (Potter 2004). Farmers often use poison to control the population, which has knock-on effects for the ecosystem (Makundi & Massawe 2011).

Current habitat trend: Stable

Conservation

This species is present in many protected areas within the assessment region, for example De Hoop and Riverlands Nature Reserves and Agulhas and West Coast National

Table 2. Threats to the Cape Gerbil (*Gerbilliscus afra*) 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	*5.2.3 Persecution/Control*: Persecution by farmers, as it can become an agricultural pest. Current stress *2.1 Species Mortality*.	Makundi & Massawe 2011	Indirect	Review	Stable

Table 3. Conservation interventions for the Cape Gerbil (*Gerbilliscus afra*) 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	*3.1.3 Limiting Population Growth*: Encouraging Barn Owls through nest boxes and hunting perches, to limit population explosions, rather than using poison.	Potter 2004 Makundi & Massawe 2011	Indirect Indirect	Regional Review	The use of owls to control rodents in wheat fields was twice as effective as using poison.	-

Parks. There are no specific interventions necessary, but biocontrol of population explosions through the provisioning of nest boxes and hunting perches for Barn Owls is an effective part of a holistic ecosystem management strategy. Barn Owls respond to prey explosions by increasing reproduction (Potter 2004; Makundi & Massawe 2011). This management intervention also saves farmers the cost of buying poison and the mortality of non-target species including domestic stock. For example, in the grain-growing areas of the Western Cape Province, Cape Gerbil numbers increase exponentially in good rain years, and this nocturnal pest can cause considerable damage to farmland and crops in the area.

A quantitative study of owls as bio-control agents was recently conducted on a West Coast wheat farm with a network of over 80 Barn Owl nest boxes (Potter 2004). The size of the owl population resident on this property varied from year to year, from about 15–40 pairs. Cape Gerbils made up about 90% of the diet of breeding owls and, collectively, the owls 'harvested' about 35,000 gerbils per year (Potter 2004). Overall, using owls to control gerbil damage was twice as effective as using poison, and much less expensive in the long-term. An optimal array of owl nest boxes in this area requires about one nest box per 25 ha of cropland, with each box spaced at least 500 m from its nearest neighbour. While the capital outlay required to set up such an array of boxes can be more or less the same as the cost of poison needed to control gerbils on an average farm in an average year, should scrap material be used, as in the case on the West Coast, it can be considerably less. Maintenance costs for an existing nest box scheme are probably less than 5% of the cost of another application of poison (in addition to the hidden financial costs of environmental damage caused by repeatedly dosing the farm with toxins). An added advantage of not using poison is that numerous other predators, such as snakes, mongooses, genets and weasels, are also maintained. As most are resident, they keep the pressure on throughout the year, making the chances of the rodent numbers getting beyond the capabilities of the Barn Owls less likely.

Recommendations for land managers and practitioners:

- Barn Owls are being used successfully to control this species through the provision of nesting boxes and hunting perches. This should be encouraged as a holistic management intervention.

Research priorities:

- Taxonomic resolution of the *Gerbilliscus* genus.
- Population size, distribution and trend estimates.
- Diet, reproduction and general biology.

Encouraged citizen actions:

- Report sightings on virtual museum platforms (for example, iSpot and MammalMAP), especially outside protected areas.
- Encourage the biocontrol of this species by installing Barn Owl nest boxes and hunting perches in areas affected by population explosions causing agricultural damage.

Data Sources and Quality

Table 4. Information and interpretation qualifiers for the Cape Gerbil (*Gerbilliscus afra*) assessment

Data sources	Museum records, field study (unpublished), indirect information (literature, expert knowledge)
Data quality (max)	Inferred
Data quality (min)	Inferred
Uncertainty resolution	Best estimate
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.*