Vulpes chama – Cape Fox


Gus Mills

Regional Red List status (2016)	Least Concern*
National Red List status (2004)	Least Concern
Reasons for change	No change
Global Red List status (2014)	Least Concern
TOPS listing (NEMBA) (2007)	Protected
CITES listing	None
Endemic	No

*Watch-list Threat

This species is the only true fox occurring in sub-Saharan Africa, and it retains primitive characteristics of *Vulpes* because it diverged early in the history of the group.

Taxonomy

Vulpes chama (Smith 1833)

ANIMALIA - CHORDATA - MAMMALIA - CARNIVORA - CANIDAE - *Vulpes* - *chama*

Common names: Cape Fox, Silver Fox, Silver Jackal (English), Draaijakkals, Silwerjakkals, Silwervos (Afrikaans), Mophémé (Sesotho), Lesiê, Losiê (Tswana)

Taxonomic status: Species

Taxonomic notes: None

Assessment Rationale

The Cape Fox is listed as Least Concern because it is widespread in the assessment region and has expanded its range over recent decades. It is generally common to fairly abundant across much of its range, although problem animal control activities, especially indiscriminate poisoning and trapping, have resulted in local subpopulation reductions in some areas. Local subpopulations may also be low or even absent in areas where Black-backed Jackals (*Canis mesomelas*) are abundant, due to interspecific competition, including intraguild predation. This may represent an emerging threat if poor management or land-use change increases Black-backed Jackal numbers. Population size and trend estimates are not available for most areas, but it is thought that the population is currently stable across the entire range. Interventions include the establishment of conservancies and holistic ecosystem management of damage-causing animals.

Regional population effects: We suspect that there is dispersal across regional borders as the range is continuous across southern Africa and the species is not usually constrained by fences.

Distribution

The species is widespread in the central and western regions of southern Africa (Figure 1, Table 1). It mainly occupies arid and semi-arid areas, but in parts, such as the fynbos biome of South Africa's Western Cape Province, the species enters areas receiving higher precipitation and denser vegetation (Stuart & Stuart 2008).

In recent decades, the Cape Fox has expanded its range to the southwest of the assessment region where it reaches the Atlantic and Indian Ocean coastlines (Stuart 1981; C. Stuart & M. Stuart pers. obs. 2014). Its distribution in Swaziland and Lesotho is uncertain but it is likely that it may occur in southwestern Swaziland (Lynch 1994; Monadjem 1998) as the species is present in neighbouring regions of northwestern KwaZulu-Natal (Rowe-Rowe 1992). Expansion of the species distribution in the Eastern Cape Province is evident (Coetzee 1979). In KwaZulu-Natal, Mpumalanga, Limpopo and Gauteng provinces, Cape Foxes are limited to highland grassland. They are common throughout the Kgalagadi Transfrontier Park (Figure 1). Corroborating this, a recent survey in North West Province noted that the species is more common in the western Kalahari than the southern grasslands (Power 2014).

It is unclear whether the Cape Fox historically occurred in the Cape Peninsula (Boshoff & Kerley 2001), but it is thought that sightings by early settlers were recorded as "jackal" or "jakkals", and not as "foxes". Although only recorded from the Clanwilliam area (Shortridge 1942), it probably occurred throughout the Cape Floristic Region. The subpopulation in Table Mountain National Park is the result of introductions between 1960 and 1980, and the species still persists in the park, although only a few


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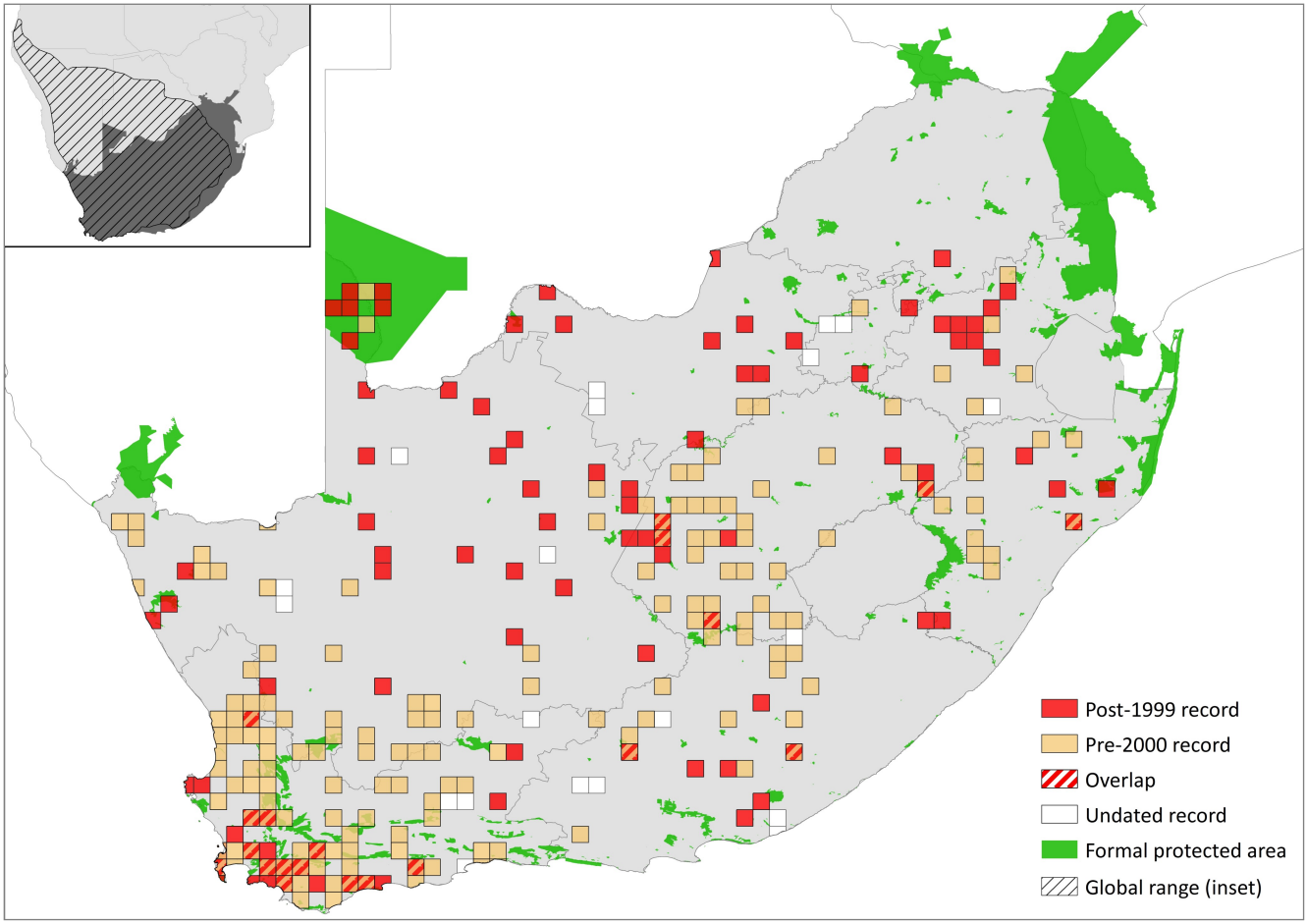

Figure 1. Distribution records for Cape Fox (*Vulpes chama*) within the assessment region

Table 1. Countries of occurrence within southern Africa

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

animals have been seen and recorded on camera traps (C. Cowell pers. obs. 2014).

Population

Estimated subpopulation sizes or numbers are not available for most areas, but it is thought that subpopulations are currently stable across their entire range (Stuart & Stuart 2008). Density estimates were 5 and 14 individuals / 100 km^2, respectively, during recent studies on two sites near Kimberley, South Africa (Kamler et al. 2012, 2013), whereas Bester (1982) estimated a density of 30 individuals / 100 km^2 in the Free State Province, with a total population of 31,000 individuals. Currently, it is unclear how many Cape Foxes are killed annually in animal control operations, and how persecution may affect their populations. In the 1970s and 1980s thousands of Cape Foxes were killed annually in control operations throughout South Africa (Stuart & Stuart 2004), but Bester (1982) thought that it resulted in no obvious decline in their overall population in the Free State. The population in the Western Cape is stable or increasing due to agricultural transformation (which can favour the species) and the reduction in medium-sized predators such as Black-backed Jackals (G. Palmer pers. obs.). However, local subpopulations may decline as jackals make a return due to more "holistic" farming methods and as part of wildlife ranching and ecotourism expansion. Of course, recovery of Leopards (*Panthera pardus*) may counter the effects of jackals, and thus benefit Cape Foxes (J. Kamler pers. obs. 2008).

Current population trend: Stable, based on wide habitat tolerance and extent of occurrence.

Continuing decline in mature individuals: Yes, due to direct or indirect persecution.

Number of mature individuals in population: Unknown

Number of mature individuals in largest subpopulation: Unknown, but likely to be Kgalagadi Transfrontier Park.

Number of subpopulations: Unknown

Severely fragmented: No. Can exist in multiple habitats, including agricultural lands.

Habitats and Ecology

Cape Foxes mainly occur in open country with habitats including grassland, grassland with scattered thickets, and lightly wooded areas, particularly in the dry Karoo regions, the Kalahari and the fringes of the Namib Desert

(Stuart & Stuart 2008). Other habitats that the Cape Fox has been recorded in include the Kimberley Thorn Bushveld, Eastern Mixed Kama Karoo and Dry Sandy Highveld Grassland. Along the eastern areas of the Namib Desert (Namibia) they occupy rock outcroppings and inselbergs, ranging out onto bare gravel plains at night (Stuart 1975). In Botswana, the species occurs in *Acacia* scrubland, short grassland (specifically on the fringes of shallow seasonal pans), and cleared and overgrazed areas (Smithers 1968; Skinner & Chimimba 2005). In the Western Cape, they also occur in moderately dense vegetation in the lowland fynbos. Cape Foxes also occur in extensive agricultural lands, lying in surviving patches of natural vegetation during the day and foraging on arable and cultivated fields at night (Stuart 1981). In the central Karoo area of South Africa, Cape Foxes occupy the plains and the low rocky ridges and isolated rock outcroppings. Lynch (1975) recorded that in the Free State, Cape Foxes were most abundant in areas which had less than 500 mm of rainfall. However, in KwaZulu-Natal they have been recorded between 1,000 and 1,500 m asl, where rainfall is roughly 720–760 mm per year (Rowe-Rowe 1992).

They are good diggers and often dig their own dens for shelter, or use those of other species, such as Springhares (*Pedetes capensis*), especially during the pup-rearing period (Kamler & Macdonald 2014). At other times of the year they are more likely to use daytime shelter above ground in thickets, dense bushes, and hollowed termite mounds (Skinner & Chimimba 2005; Kamler & Macdonald 2014). During the night they hunt in a variety of habitats, often using habitat types in proportion to availability within their home ranges, although they generally prefer more open habitats at the landscape level (Kamler et al. 2012). Due to habitat transformation by humans, they have been found in more mountainous or rocky areas compared to their historical occurrence.

Cape Foxes have omnivorous diets, although their main prey items are small rodents, and other common food items are hares, insects, birds, reptiles, wild fruit, and carrion (Bothma 1966; Skinner & Chimimba 2005; Kamler et al. 2012; Klare et al. 2014). Although Cape Foxes have been documented to kill lambs (Bester 1982), the level of predation is uncertain as much of the consumption may be from carrion (Skinner & Chimimba 2005). They forage solitarily and primarily at night. Cape Foxes live in monogamous pairs, with occasional helpers, and have stable home ranges that vary from 3–30 km^2 depending on local food resources and numbers of Black-backed Jackals (Bester 1982; Kamler et al. 2013; Kamler & Macdonald 2014). Although humans are likely their main source of mortality, natural mortalities result from predation by larger carnivores, especially Black-backed Jackals (Kamler & Macdonald 2014).

Ecosystem and cultural services: This is a charismatic species and sometimes is used in marketing of wilderness areas (for example, Kgalagadi Transfrontier Park). Individual Cape Foxes consume nearly 4,000 rodents / year, therefore this species is likely beneficial to farmers and livestock owners in South Africa (Klare et al. 2014); for example, in vineyards in the Western Cape, where rodents are considered problematic. Similarly, in North West Province, a Cape Fox was recently observed feeding on a gerbil, which demonstrates its role in controlling such species with the potential for population explosions (Power 2014).

Cape Foxes, along with Aardvark (*Orycteropus afer*), Porcupine (*Hystrix africaeaustralis*) and Bat-eared Fox (*Otocyon megalotis*) dig holes in hard-capped soils in Karoo shrubland and inter-dune pans to create microsites where detritus and water accumulate and seed germination is significantly increased (Dean & Milton 1991), thus promoting habitat structure.

Use and Trade

The Cape Fox is persecuted as a damage-causing animal and also killed incidentally by indiscriminate trapping and poisoning (Stuart & Stuart 2004). The species is thought to be used locally as a traditional medicine, but currently no evidence supports this. The trade in Cape Fox pelts is negligible and this situation is unlikely to change (Table 2).

The effects of wildlife ranching are currently unknown and further research is required to determine the impacts of wildlife ranching on ranched species and non-ranched or associated species. However, we have observed that Cape Foxes can do well on game/wildlife farms, but fox densities are dependent on the level of jackal control (Blaum et al. 2009; Kamler et al. 2013), especially if apex predators are absent.

Table 3. Possible net effects of wildlife ranching on the Cape Fox (*Vulpes chama*) and subsequent management recommendations

Net effect	Positive
Data quality	Estimated
Rationale	Field studies on mixed livestock and wildlife ranches and informal sightings on game farms/ wildlife ranches suggest that the species can thrive on these land-uses, especially if Black-backed Jackals are kept at low densities.
Management recommendation	Focus on game farms and conservancies with low Black-backed Jackal density as candidate sites for Cape Fox stewardship.

Table 2. Use and trade summary for the Cape Fox (*Vulpes chama*)

Category	Applicable?	Rationale	Proportion of total harvest	Trend
Subsistence use	No	-	-	-
Commercial use	Yes	Skins are traded locally.	Unknown	Unknown, probably stable.
Harvest from wild population	Yes	Limited trade has a negligible impact on the population.	Unknown	Unknown, probably stable.
Harvest from ranched population	No	-	-	-
Harvest from captive population	No	-	-	-

Threats

Habitat loss/changes are not a major factor influencing the conservation status of the Cape Fox (Stuart & Stuart 2008). Conversely, in the Western Cape and elsewhere, changing agricultural practices have resulted in range extensions for this species (Stuart 1981). In the Western Cape, Cape Foxes have adapted well to agricultural transformation, especially in the vineyards. As a result of desertification, the semi-arid karroid vegetation has expanded eastwards (Kraaij & Milton 2006), resulting in an extension of the Cape Fox range.

Cape Foxes are hunted and poisoned, directly and as bycatch, throughout most of their range in South Africa (Stuart & Stuart 2008), primarily due to their perceived predation on lambs, although there is little evidence for this (Klare et al. 2014). Although Cape Foxes can survive on transformed lands, and are often seen on the farms around Namaqua National Park, they are also severely affected by pesticides used to poison their prey (rodents and insects) on farmlands. The illegal but widespread and indiscriminate use of agricultural poisons on commercial farms poses perhaps the greatest threat (C. Stuart & M. Stuart pers. obs. 1973–2014).

However, heavy direct and indirect problem animal control measures do not seem to have had a major impact on the Cape Fox, even though they have resulted in local declines. For example, annual offtake resulting from problem animal control programmes averaged roughly 16% of the total population in the Free State up until 1985, with no obvious declines in overall numbers (Bester 1982). Furthermore, Black-backed Jackal control operations may positively influence Cape Fox populations (Blaum et al. 2009). Nevertheless, range-wide declines in numbers of Cape Foxes were reported in the late 1980s, possibly associated with range-wide increases in numbers of Black-backed Jackals (Ginsberg & Macdonald 1990). In general, numbers of Cape Foxes and Black-backed Jackals are often negatively related (Blaum et al. 2009; Kamler et al. 2013), primarily due to the predation and spatial displacement of Cape Foxes by Black-backed Jackals (Kamler et al. 2012, 2013).

The extent of road mortality (Photo 1) on Cape Fox populations is unknown, although individuals of this species have been recorded in the Endangered Wildlife Trust's road collision database (W. Collinson unpubl. data).

Current habitat trend: Cape Foxes occupy a wide range of open arid and semi-arid habitats, and therefore are not restricted by habitats throughout most of their distribution in South Africa. They can survive on agriculturally transformed lands and wildlife ranches.

Photo 1: Cape Fox (*Vulpes chama*) killed on the R360 road between Upington and Askham (Emmanuel Do Linh San)

Conservation

The Cape Fox has been recorded in many provincial and private nature reserves, as well as on game ranches in all South African provinces, although the species has a much more restricted range in Limpopo and KwaZulu-Natal (Lynch 1975; Stuart 1981; Rautenbach 1982; Rowe-Rowe 1992). In Swaziland, the species may occur in Nhlangano Nature Reserve in the southwest and pups have been successfully reared in Milwane Wildlife Sanctuary (Monadjem 1998).

The Cape Fox is a Protected species on the national Threatened or Protected Species (TOPS) list (Government Gazette, No. 29657 of 2007), although it is still persecuted as a problem animal across much of its range in South Africa. Permits are required from authorities to kill Cape Foxes in problem animal control operations but no protection measures are currently enforced, and at the present time, they do not appear to be necessary. However, the "holistic" approach to the management of damage-causing animals needs to be spread more widely to reduce bycatch (non-target species). This concept relates to the current understanding that not all individuals of a species are "problem animals". A range of deterrents have been developed, such as Anatolian Sheep Dogs and loudspeakers broadcasting predator calls, as well as techniques to identify and remove only those animals that are responsible for "damage". Evidence is beginning to mount that livestock guarding dogs both lower predation rates and reduce farm running costs in the long run (McManus et al. 2014).

Table 4. Threats to the Cape Fox (*Vulpes chama*) 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	*5.1.3 Hunting & Collecting Terrestrial Animals*: persecution (hunting, trapping, and poisoning), either directly or as bycatch.	Blaum et al. 2009	Indirect	Local	Unknown, but probably stable.
		Kamler et al. 2013	Indirect	Local	
2	*8.2.2 Problematic Native Species/Diseases*: moderate to high Black-backed Jackal numbers.	Kamler et al. 2012	Empirical	Local	Unknown, but possibly increasing due to recent increases in jackal numbers.
		Kamler et al. 2013	Empirical	Local	
3	*4.1 Roads & Railroads*: road collisions.	W. Collinson unpubl. data	Empirical	National	Increasing with new road construction.

Table 5. Conservation interventions for the Cape Fox (*Vulpes chama*) 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	*2.1 Site/Area Management*: the promotion of the "holistic" approach to the management of DCAs, such as livestock guarding dogs.	McManus et al. 2015	Empirical	Regional	Predation rates decreased by 69%.	Endangered Wildlife Trust, Carnivore Conservation Programme
2	*2.2 Problematic Species Control*: reduction in unnaturally high jackal numbers, either through reintroduction/ protection of apex carnivores (preferable) or human control.	Blaum et al. 2009 Kamler et al. 2012, 2013	Empirical Empirical	Local Local	Cape Fox densities higher on farms with low Black-backed Jackal densities.	-
3	*3.3 Species Reintroduction*: translocation to improve gene flow among disconnected protected areas.	-	Anecdotal	-	-	-

Increases in Black-backed Jackal numbers may reduce local Cape Fox subpopulations. That said, because larger apex predators kill Black-backed Jackals (Kamler et al. 2007), the reintroduction of apex predators to more reserves may have a positive effect on local Cape Fox populations, via a reduction in jackal numbers, but more research is needed on this subject.

For isolated subpopulations, translocation should be used to improve gene flow. For example, SANParks managers need to supplement the Table Mountain National Park subpopulation by bringing in animals from other areas. However, there is no evidence that Cape Foxes occurred on the peninsula historically (Boshoff & Kerley 2001), although it is considered to occur throughout the Cape Floristic Region today. There is a strong indication that they were introduced in the 1960s and 1970s. Furthermore, there are potential negative impacts of a novel predator on local "naive" populations of prey species, for example Krebs's Fat Mouse (*Steatomys krebsii*) (H. Langley pers. comm. 2014). Management of Cape Fox on Table Mountain National Park thus needs to be researched and considered carefully.

Recommendations for land managers and practitioners: Currently, there are no conservation plans for Cape Foxes and they do not require a management plan at this stage. Cape Foxes have persisted in farming areas despite direct and indirect persecution during control operations. Therefore, no management actions are required. If Cape Foxes become a conservation concern, then managers need to consider Black-backed Jackal numbers, in addition to food, habitat, and stocking rate, to increase Cape Fox numbers (Blaum et al. 2009; Kamler et al. 2012).

Research priorities: The Cape Fox has been extensively studied in South Africa's Free State Province (Lynch 1975; Bester 1982; Kok 1996), as well as near the Kimberley area, along the Free State–Northern Cape border (Kamler et al. 2012, 2013; Kamler & Macdonald 2014; Klare et al. 2014). In contrast, there is little information for elsewhere within its range. Aspects such as diet and reproduction are well known, and recent studies have increased our knowledge about their socio-spatial ecology and behaviour in the wild (Kamler et al. 2012, 2013; Kamler & Macdonald 2014). However, research is needed on:

- The impacts and extent of persecution, both direct and as bycatch from snares, and use in traditional medicine.
- The role, if any, that this species plays in disease transmission.
- More broadly, the numbers and population trends of Cape Foxes throughout their range need to be determined.
- More research is needed on the effects of Black-backed Jackals and apex carnivores on Cape Fox subpopulations.

Encouraged citizen actions:

- Report sightings on virtual museum platforms (for example, iSpot and MammalMAP), especially outside protected areas.
- Create conservancies and install permeable fences between properties.
- Encourage apex predator conservation.

Data Sources and Quality

Table 6. Information and interpretation qualifiers for the Cape Fox (*Vulpes chama*) assessment

Data sources	Field study (literature), indirect information (literature and expert knowledge)
Data quality (max)	Inferred
Data quality (min)	Suspected
Uncertainty resolution	Author 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.*