Oreotragus oreotragus – Klipspringer

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)	None
CITES listing	None
Endemic	No

The Klipspringer was recently successfully reintroduced back into the Table Mountain National Park from nearby source populations of the Western Cape, following local extinction from the Cape Peninsula during the 1930s.

Taxonomy

Oreotragus oreotragus (Zimmermann 1783)

ANIMALIA - CHORDATA - MAMMALIA - CETARTIODACTYLA - BOVIDAE - *Oreotragus* - *oreotragus*

Common names: Klipspringer (English, Afrikaans), Klipbokkie (Afrikaans), Igogo (Ndebele, Zulu), Kololo (Sepedi, Setswana), Kome (Sepedi, Sesotho), Mokabaowane, Mokabaeyane (Setswana), Ngururu (Shona), Ligoka, Inyamatane, Ligoga (Swati), Ngululu, Xemi (Tsonga)

Taxonomic status: Species

Taxonomic notes: Eleven subspecies of Klipspringer were described by Ansell (1972). In southern Africa, the nominate *O. o. oreotragus* occurs within the Northern, Western and Eastern Cape provinces, probably as far east as the Free State, while *O. o. transvaalensis*, is located in eastern South Africa, particularly the Limpopo, North West, Mpumalanga and the KwaZulu-Natal provinces of South Africa, and it may extend into southern Mozambique. *O. o. tyleri* occurs in Angola and Namibia, while *O. o. stevensoni* is found in Zimbabwe and Botswana (Ansell 1972). The precise geographical limits of these subspecies' distributions remains unclear. Further taxonomic resolution is needed.

Assessment Rationale

This is a widely distributed species with no signs of significant habitat loss, as its habitats are inaccessible and remote. There are many subpopulations in formally protected areas and private land and the overall population within the assessment region is assumed to be stable as there is no evidence for decline. However, anecdotal reports suggest local declines from illegal hunting. This threat should be quantified to assess its severity. Recent records are available across a range of protected areas throughout its range, and it can occur at densities of 0.01–0.3 individuals / km^2. It should continue to survive in substantial numbers in extensive, inaccessible areas outside of protected areas, where habitats such as koppies, cliffs and hillsides preside. Thus, this species remains Least Concern.

Regional population effects: There are numerous routes for dispersal into the assessment region. For example, along the Lebombo Mountains through Mozambique into northeastern KwaZulu-Natal, across the Limpopo in the Mapungubwe area in northern Limpopo, as well as across the Richtersveld in the Northern Cape linking the mountain chains along the Namibian escarpment. The habitat for this species is thus mostly continuous along mountain ranges. Rescue effects are assumed to be possible.

Distribution

This species has a widespread, yet patchy distribution from the southwestern limits of South Africa to northeast Africa, including southern Sudan, Eritrea, Somalia, Uganda, Rwanda, Kenya, Tanzania, Zambia, Zimbabwe, Malawi and the Ethiopian Highlands, where they occur at up to 4,380 m asl (Yalden et al. 1996; Skinner & Chimimba 2005). Additionally, their range extends along the southwest of Africa through Namibia and the southwestern regions of Angola. Isolated populations of Klipspringer are located in the Central African Republic, Nigeria and the Democratic Republic of the Congo (East 1999; Nicholas 2004; Roberts 2013). In all likelihood, the Klipspringer is now extinct in Burundi. In Mozambique, anecdotal reports suggest they occur east of the Limpopo River north of Mabalane along the main north-south road but have not recently been seen in Gorongosa National Park (M. Stalmans pers. comm. 2016).

Within the assessment region, they occur throughout most montane regions of South Africa, and are largely present within their former range. However, historical evidence suggests a range reduction in certain areas, such as in regions of the Eastern Cape Province (Lloyd & Millar 1983; Lynch 1989), Free State Province (Lynch 1983; Avenant 1997, 2000), and Lesotho, where Lynch (1994) predicted them to occur, but repeated field surveys between 1996 and 2014 have not detected them (N. Avenant unpubl. data), the closest record being Cathedral Peak on the

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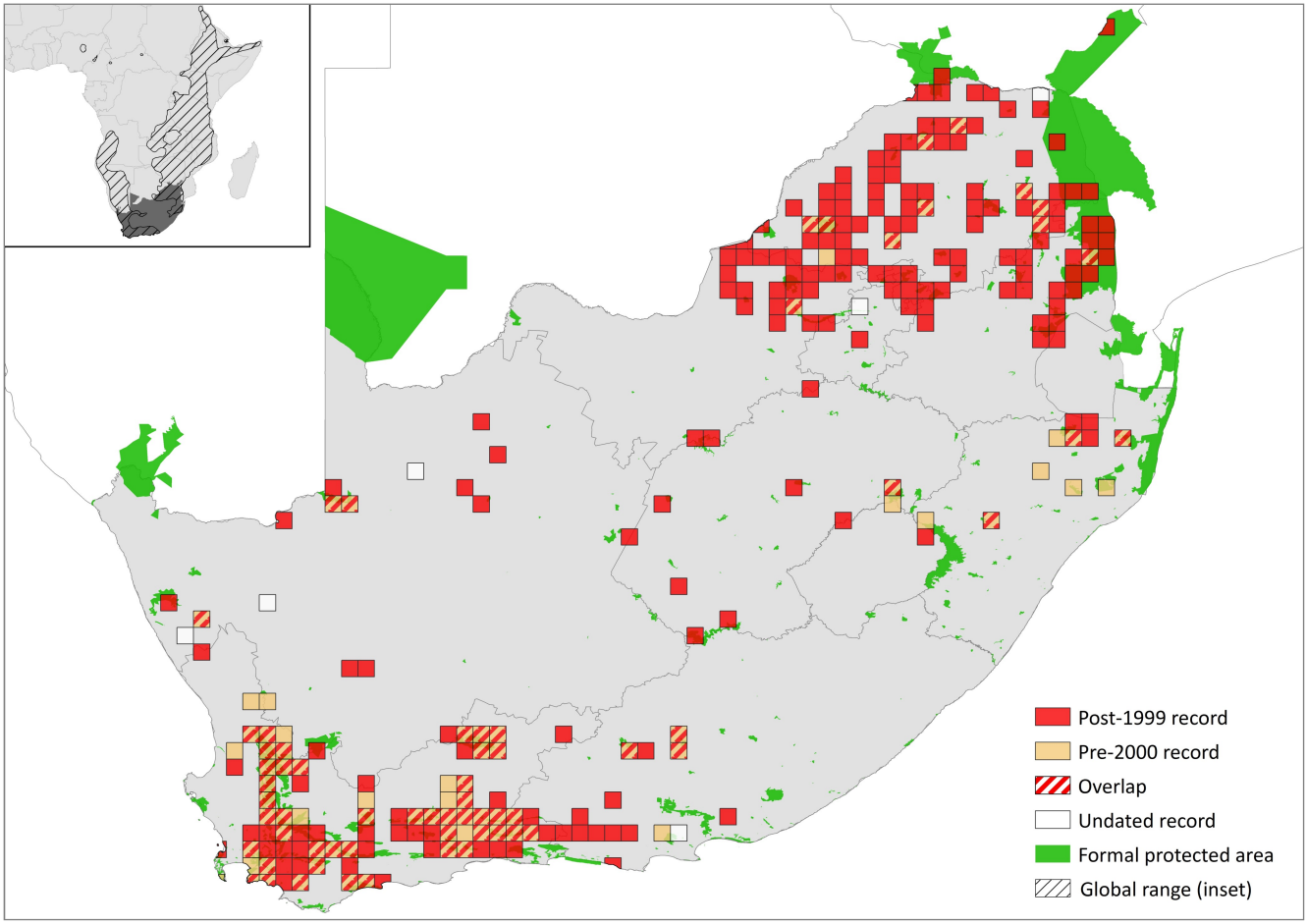

Figure 1. Distribution records for Klipspringer (*Oreotragus oreotragus*) within the assessment region

Table 1. Countries of occurrence within southern Africa

Country	Presence	Origin
Botswana	Extant	Native
Lesotho	Probably extant	Native
Mozambique	Extant	Native
Namibia	Extant	Native
South Africa	Extant	Native
Swaziland	Extant	Native
Zimbabwe	Extant	Native

KwaZulu-Natal side of the Drakensberg Mountains (Figure 1). Corroborating this, 95–100% of respondents (cattle herders in Lesotho) from questionnaire data stated that Klipspringer were no longer found in their areas (Avenant 2004).

Their range is extensive across the Limpopo Province, extending into the northern and eastern regions of both the North West and northeastern Mpumalanga provinces respectively and into the Maluti Mountains (du Plessis 1969). Within KwaZulu-Natal, they occur above 2,400 m asl in the Drakensberg, along the escarpment from Giant's Castle northwards, and have a scattered, isolated distribution across small areas of the remainder of the province, including Ithala and Mkhuze Game Reserves, Weenen Nature Reserve, as well as on a number of isolated private farms. Similarly, this species has a patchy distribution in the Free State with isolated historical records at Boshoff, Bethlehem, Colesberg, Philipolis and Leribe in Lesotho (near Ficksburg, Free State Province, Figure 1) (du Plessis 1969; Skinner & Chimimba 2005; Boshoff & Kerley 2013). Their range is widespread across the mountainous regions of the Western Cape, extending to the Middelburg, Graaff-Reinet, Grahamstown and Uitenhage regions of the Eastern Cape (Skinner & Chimimba 2005; Skead 2007) and into the Northern Cape to Namibia and along the Orange River to Upington, with patchy distribution in the Carnavon and Beaufort West regions (Estes 1991; Skinner & Chimimba 2005; Skead 2011). While they naturally occur in the bushveld of the Magaliesberg and Swartruggens rocky hills of North West Province (Power 2014), records from the southern parts of the province are considered introductions (Figure 1).

Population

This species is limited to rocky habitats, which is more than often discontinuous across the environment, leading to average population densities of between 0.01–0.3 per km² in protected areas, where it is considered common, but restricted to suitable habitats. However, within continuous regions of suitable habitat, Klipspringer densities can reach fairly high population densities. For example, across a 9.6 km² area of escarpment in Ethiopia, Klipspringer densities reached 10–14 individuals / km². East (1999) described population densities of between 0.15 and 0.30 individuals / km² in Lilongwe (Malawi), the Karoo, Mountain Zebra and Royal Natal National Parks, as well as Giant's Castle Game Reserve. The density in the Welgevonden Game Reserve in the Limpopo Province is 0.12 individual / km² but this is considered an underestimate and the densities are in all probability much

higher (M. Peel unpubl. data). Densities in the Lydenburg area, Mpumalanga Province reach 0.3 individuals / km^2 (M. Peel unpubl. data). These regions are considered to contain fairly extensive areas of Klipspringer habitat. A conservative global population estimate of 42,000 individuals was projected by East (1999). Overall, the population is considered stable in protected areas and on private lands, but is likely to be decreasing in regions where small, disconnected populations are threatened by unregulated hunting and competition for resources with livestock. Provincial protected areas in the Western Cape Province do not have trend data for the species but the subpopulations in the Boland Mountain Complex are considered to be declining (C. Birss unpubl. data). However, Klipspringer are considered to persist with stable populations throughout the rest of their range in the Western Cape Province, including on private land (C. Birss pers. comm. 2016).

Within the assessment region, this species is well protected and its habitat is largely continuous. Thus, we suspect that there are over 10,000 mature individuals within the assessment region. Additionally, the conversion from livestock to wildlife ranching and game farming may be conserving and connecting the koppies that this species inhabits, so its net population trend may well be increasing, but this remains to be quantified. Finally, rocky habitats are unlikely to be transformed for expanding agriculture and settlements, though the quarrying of rocky outcrops for granite mining is a conceivable threat should this proliferate.

Current population trend: Stable

Continuing decline in mature individuals: No

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

Klipspringers are small ungulates, with adult females (13 kg) slightly larger than males (10 kg) (Skinner & Chimimba 2005). Often, males and females will form long-lasting pair bonds, and both will exhibit sedentary, territorial behaviour (Norton 1997), although small, temporary groups of up to six individuals may assemble in favourable feeding sites (Skinner & Smithers 1990), this is more the exception. When foraging, one of the adults will feed, while the other (most often the male) remains vigilant, watching for both terrestrial and aerial predators. Males spend more time in anti-predator vigilance behaviour, compared to females, which enables females to concentrate a greater proportion of their energy on reproduction (Norton 1980). When disturbed, the vigilant adult produces a warning alarm call to allow the other adult and young time to retreat a short distance to the safety of rocky, sheltered habitats, before turning to face the source of threat (Norton 1997). This behaviour allows for the conservation of energy, in the case of a false alarm, or if the predator is not hunting (Norton 1980).

Norton (1980) noted that in South Africa, Klipspringers are seasonal breeders, with a peak in births between July and September, following a gestation period of approximately 210 days. For the first 2–3 months of life, young Klipspringer are hidden in dense vegetation away from predators (Norton 1980). Young are usually weaned after four or five months, then are subsequently forced away from their mothers into new territories (Norton 1980).

This species is closely associated with steep rocky and mountainous habitats, including granite outcrops, koppies and gorges with rocky embankments where it can find refuge from predators and an adequate supply of food (Estes 1991). The African Rift Valley and the southern African escarpment support vast areas of appropriate habitat, and form the core parts of its pan-African distribution. They are often found at the base of rocky outcrops (Wilson & Child 1965; Rautenbach 1982; M. Peel pers. obs. 2016) and may occasionally move away from these outcrops to browse, and have been known to traverse up to 10 km between rocky habitats (Norton 1997), which is suggestive of their dispersal capabilities. There is a subpopulation within the suburbs of Nelspruit, Mpumalanga Province (M. Peel pers. obs. 2016).

The Klipspringer is highly adapted to rocky habitats, and is able to move with efficiency and agility over loose rocky terrain, and low-structured granite boulders. This manoeuvrability is due to its body size, and the anatomy of its foot structure (posterior rotation of the proximal inter-phalangeal joint), which enables the Klipspringer to walk on the very tips of its hooves, wearing them down into a cylindrical shape, and thus providing efficient grip on rocky surfaces (Norton 1980). The Klipspringer's insulated coat enables it to withstand extreme cold and heat and it is able live at high and low elevations and in areas of high and low rainfall and therefore is considered to have a very adaptable diet (Estes 1991). Home range sizes are known to vary with rainfall (Norton 1980), with home range size contracting with increased rainfall. Dunbar (1978) noted a territory of 8 ha in a high rainfall area (1,300 mm), while Norton (1980) found territory sizes of 49 ha and 15 ha in Springbok (160 mm) and Gamkaberg Nature Reserves, near Oudtshoorn (400 mm), respectively.

It is almost exclusively a concentrate browser, Klipspringer will only feed on grass under certain conditions (Dunbar & Dunbar 1974), and are highly selective of particular plant parts (Norton 1984). For example, Norton (1984) described Klipspringer feeding on the growing shoots, fruits and flowers of a variety of shrubs and herbs, but when availability decreases, they will browse on the leaves and steams of these species (Norton 1984). Wilson and Child (1965), who assessed the 74 samples of Klipspringer stomach contents in Zambia revealed that 90% comprised of browse material, including leaves, berries, seedpods, fruit and flowers; with seasonal preferences for plants such as *Euphoria tirucalli* and *Vellozia equisetifolia.*

Rocky, mountainous habitats usually experience enhanced climatic extremes compared to lowland areas, due to altitude, aspect, wind exposure, terrestrial radiation and shelter. Thus Klipspringer have evolved a remarkably thick and coarse pelage, with quill-like hairs, which functions as an effective insulator both against the cold and radiated heat, as well as to prevent water loss. Additionally, Klipspringer are able to survive independently from water, though they will drink when it is available, often from nearby streams or waterholes, or alternatively from temporary pools held in rocky depressions.

Ecosystem and cultural services: Due to its unique adaptations for living in rocky habitats, and charismatic

Table 2. Use and trade summary for the Klipspringer (*Oreotragus oreotragus*)

Category	Applicable?	Rationale	Proportion of total harvest	Trend
Subsistence use	Yes	Venison, skins and live animal trade in game auctions.	Minority	Stable
Commercial use	Yes	Venison (including bait for Leopard hunts), trophies and live sales.	Majority	Stable
Harvest from wild population	Yes	Venison	Majority	Stable
Harvest from ranched population	Yes	Venison (including bait for leopard hunts), trophies and live sales.	Minority	Stable
Harvest from captive population	No	-	-	-

nature among the antelope species, this species is touted as a flagship species for the conservation of rocky habitats within the mountainous regions of Namaqualand and the Waterberg in Limpopo Province.

This small antelope species forms a valuable prey component of a number of terrestrial and aerial predators, such as Leopard (*Panthera pardus*), Caracal (*Caracal caracal*), and to a lesser extent Chacma Baboons (*Papio ursinus*), Verreaux's Eagles (*Aquila verreauxii*) and Martial Eagles (*Polemaetus bellicosus*).

The fur of this species was once used by early settlers as late as the 19th century for use in the stuffing of saddles.

Use and Trade

Historically this species was hunted for its meat, and coarse pelage (which was often used as a stuffing in saddles) (Norton 1980), leading to its eradication in a number of regions across the assessment region, for example the Cape Peninsula in the 1930s.

Currently, the Klipspringer is locally used at a subsistence level for food and they have national commercial value for trophy hunting and live animal auctions. These uses, as long as they are well managed, are not expected to cause population declines as they are not utilised to a great extent. Klipspringer are advertised as a cryptic and sought after member of the "Tiny Ten" for hunting purposes, which includes other small antelope, namely the species of duiker (*Philantomba monticola, Sylvicapra grimmia, Cephalophus natalensis*), grysbok (*Raphicerus* spp.), Steenbok (*Raphicerus campestris*), Suni (*Neotragus moschatus*) and Oribi (*Ourebia ourebi*), and as a bait-species for hunting Leopard. Klipspringer are fairly easy to hunt, due to their habit of utilising high vantage points for predator surveillance.

Wildlife ranching and the private sector may have generally had a positive effect on this species as it has been widely reintroduced onto private properties within its natural distribution range, although there are also indications that they may also have been introduced to areas beyond their known range (Power 2014). Regulation of translocation is required to prevent mixing of ecotypes. Small-scale translocation is encouraged between areas that may have been connected by an area of similar habitat type, within or adjacent to the bioregion of source, through which Klipspringer would have been able to move freely prior to anthropogenic partitioning of the landscape (Norton 1980). However, translocation of individuals into discretely distributed regions is discouraged, as this may interfere with the natural variability of the species, and its specialised adaptations to local environmental conditions (Norton 1980).

Threats

No major threats have been identified for this species across its range. However, outside of protected areas, subsistence hunting occurs at a low intensity. For example, localised poaching in the Boland Mountains of the Western Cape are suspected to be responsible for significant declines in that population (C. Birss unpubl. data). Similar local declines may also be occurring in areas of high human settlement. Small, isolated subpopulations are most vulnerable to hunting, and newborn lambs are vulnerable to predation by domestic dogs. These threats seem to be especially severe in Lesotho, where hunting for bushmeat, skins and traditional medicine may have virtually eradicated the species (Avenant 2004; N. Avenant unpubl. data). Resource competition with domestic goats may affect adult Klipspringers, and thus many of subpopulations may have been eradicated from areas in or nearby to settlements.

Table 3. Possible net effects of wildlife ranching on the Klipspringer (*Oreotragus oreotragus*) and subsequent management recommendations

Net effect	Positive
Data quality	Suspected
Rationale	Private landowners may have increased the numbers of this species onto private properties within its natural historical range, and this species plays a minor economic role in South Africa's hunting and game ranch industries.
Management recommendation	Ensure that this species is only introduced to regions of suitable rocky terrain, and maintain viable genetic diversity while maintaining local environmental adaptations by small-scale translocation between regions where natural dispersal may have been possible.

Table 4. Threats to the Klipspringer (*Oreotragus oreotragus*) 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	*5.1.1 Hunting & Collecting Terrestrial Animals*: local declines due to bushmeat hunting.	Avenant 2004	Empirical	Regional	Possibly increasing with ongoing settlement expansion.
2	*1.1 Housing & Urban Areas*: habitat degradation from settlement expansion. Current stress *2.1 Species Mortality*: increased hunting and predation from domestic dogs.	-	Anecdotal	-	Possibly increasing with ongoing settlement expansion.
3	*2.3.2 Small-holder Grazing, Ranching or Farming*: habitat degradation from livestock ranching. Current stress *2.3.2 Competition*: competition with domestic goats for browse resources.	-	Anecdotal	-	Stable
4	*11.1 Habitat Shifting & Alteration*: range contraction and alteration of forage resources.	Midgley et al. 2002	Simulation	Regional	Increasing range shifts of plant species, with many species showing no overlap between current and future potential range.

Climate change leading to the loss of forage resources may become an increasing threat to this species, especially in the western areas of the assessment region, due to an increase in the frequency and severity of drought (Erasmus et al. 2002), as well as range contraction and alteration of forage resources (Midgley et al. 2002). However, the mountainous regions in which this species inhabits may be refuges from climate change. Further research is needed to assess the net effect.

Current habitat trend: Stable. Much of their habitat is rocky and inaccessible, thus is under no threat of extensive transformation. However, habitat fragmentation and transformation between suitable habitat may limit the dispersal of young Klipspringer into new territories. Hills and koppies are flagged as important areas in provincially-mandated Conservation Assessments (for example, Biodiversity Conservation Assessments).

Conservation

This species occurs commonly within a number of formally protected areas within the assessment region. It occurs in lesser numbers in a large number of unprotected areas throughout its range which contain smaller, isolated areas of suitable habitat. Very large numbers are thought to survive on private farmland in Namibia, with strong potential for dispersal into South Africa – given that the Orange River can be forded. Klipspringer offer comparatively little competition to domestic livestock, and are thus commonly reintroduced onto private farmland. Although no direct conservation interventions are necessary at present, reintroductions into areas of its former natural range will help to restore a functioning population.

For example, during the 1930s, Klipspringer were substantially overexploited in the Western Cape, leading to their local extinction in the Cape Peninsula. In 1999, Table Mountain National Park (TMNP), Cape Nature and SANParks managed the successful reintroduction of 19 Klipspringer into the Cape of Good Hope section of TMNP, and later reintroductions were conducted in 2003 and 2005 where nine and ten additional animals were translocated directly onto Table Mountain, respectively. The individuals were sourced from three subpopulations at separate localities in the Western Cape. Routine Klipspringer counts take place across TMNP and populations are currently stable (Ferreira et al. 2010).

However, translocations should be considered carefully. Reintroduction of Klipspringer depends significantly on habitat suitability, as Klipspringer depend on the presence of rocky substrate, which provides them security from predators (Norton 1980). Norton (1980) recommends that equal numbers of male and female are translocated, due to their monogamous behaviour. Considering that this species has adapted so specifically to rocky terrain it is unlikely that they would be able to acclimate to non-rocky areas, even if they are not threatened by predators. The

Table 5. Conservation interventions for the Klipspringer (*Oreotragus oreotragus*) 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	*3.3.1 Species Reintroduction*: reintroduction into areas of its natural range where local extinctions have occurred.	SANParks, CapeNature unpubl. data	Empirical	Local	Stable subpopulation in Table Mountain National Park.	SANParks, CapeNature
2	*5.3 Private Sector Standards & Codes*: translocation regulation to prevent ecotype hybridisation.	-	Anecdotal	-	-	-

availability of suitable vegetation coverage and edible shrubs within the rocky habitat are also essential for successful Klipspringer populations. Under stressful conditions this species may utilise trees and grasses, but these do not make up their dietary preferences. Furthermore, this species has an extensive distribution, which exhibits clinal variation throughout its range and, as stated in the taxonomy notes, two subspecies are recognised in South Africa. In species exhibiting eco-typical variation across their range, ecotypes may be endemic and the maintenance of genetic diversity could be threatened by injudicious mixing of ecotypes (Birss & Palmer 2012). In the Western Cape Province, translocations of these species are managed and regulated through permits with specific consideration of the potential impact on the maintenance of genetic diversity. As such, facilitated movement of this species should be limited to within or adjacent to their bioregional boundaries.

Recommendations for land managers and practitioners:

- Develop translocation regulations, which ensures the maintenance of both genetic viability and local adaptations.
- Provide incentives for landowners to create conservancies where the benefits of this species are shared.

Research priorities:

- Current population trend estimates and distribution.
- Research into the management sustainability of this species on protected areas and wildlife ranches, and its species-specific value in the wildlife economy.

Encouraged citizen actions:

- Report sightings on virtual museum platforms (for example, iSpot and MammalMAP), especially outside protected areas.
- Landowners should ensure that disturbance of this species and its young is kept to a minimum, particularly with regards to domestic dogs.

Data Sources and Quality

Table 6. Information and interpretation qualifiers for the Klipspringer (*Oreotragus oreotragus*) assessment

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