Raphicerus melanotis – Cape Grysbok

Cliff & Suretha Dorse

Red List status (2016)	**Least Concern***
Red List status (2008)	Least Concern
Reasons for change	No change
Red List status (2004)	Least Concern
TOPS listing (NEMBA)	None
CITES listing	None
Endemic	Yes

*Watch-list Threat

"The skulking habits of the Cape Grysbok kept it from view and thus from comment."
– CJ Skead.

Taxonomy

Raphicerus melanotis (Thunberg 1811)

ANIMALIA - CHORDATA - MAMMALIA - CETARTIODACTYLA - BOVIDAE - *Raphicerus - melanotis*

Common names: Cape Grysbok (English); Kaapse Grysbok (Afrikaans), Ingxungxu (Xhosa)

Taxonomic status: Species

Taxonomic notes: No subspecies are recognised (Skinner & Chimimba 2005).

Assessment Rationale

The species is listed as Least Concern. Despite its restricted range, the Cape Grysbok is common, relatively adaptable, and there are no major threats that could cause range-wide declines. This species is well represented in protected areas and occurs on private farms where it can typically adapt to the predominant forms of land use provided that there is sufficient suitable structured habitat remaining. However, estimates of population sizes are scarce and it is therefore difficult to extrapolate data from individual studies or locations to discern the status of the population nationally. Some studies are also relatively dated thus highlighting the need for more robust estimates of Cape Grysbok populations from sites throughout their distribution. The population trend is assumed to be generally stable in protected areas and on private land, but decreasing in some other areas where human population densities are high. The effects of private conservation and wildlife ranching on this species should further be monitored and managed. There is also little information on the possible impacts of climate change, alien invasive vegetation and the expansion of certain agricultural industries in some areas (for example, rooibos tea plantations and vineyards). However, climate change may make marginal habitats more suitable for agricultural expansion, putting pressure on remaining habitat patches where this species occurs, and thus represents an emerging threat. This should be monitored for its impacts on Cape Grysbok.

Distribution

The Cape Grysbok is endemic to South Africa, and is largely confined to the Cape Floristic Region (Figure 1). It remains widespread and locally common within its historical range in the Western Cape and Eastern Cape provinces. It also marginally occurs in the Northern Cape. The most northern confirmed record and locality is van Rhynsdorp, Western Cape Province (Skead 2011). In the Eastern Cape, little is known about its historical distribution (Skead 2007). Boshoff and Kerley (2013) provide two records for the Drakensberg/Lesotho but caution that they may be of material transported there through trade. The range has not expanded either naturally or through the private sector. If anything it has contracted through the loss of scattered habitat fragments that have been structurally altered (become less dense), or have been totally transformed through the introduction and expansion of alien invasive vegetation (Kerley et al. 2010), increased densities of megaherbivores (Tambling et al. 2013) and the expansion of certain agricultural industries in some areas (for example, rooibos tea plantations and vineyards). This trend is likely to continue with the effects of climate change making such fragments amenable to alternative land uses.

In the Western Cape, the area of occupancy (AOO) calculated for properties for which Cape Grysbok presence is confirmed is 9,104 km^2, of which 5,451 km^2 is in provincial nature reserves, 1.8 km^2 in local authority nature reserves, 2,319 km^2 in national parks and 1,331 km^2 on private land (C. Birss unpubl. data). For more detailed discussion of the distribution range see East (1999) and Castley and Lloyd (2013).

Population

Cape Grysbok are normally solitary and cryptic in their behaviour and therefore seldom seen. They are particularly difficult to see in dense vegetation, which is exacerbated in fire-prone areas such as the fynbos of the Western Cape (Castley & Lloyd 2013). Estimates of population sizes are scarce and it is therefore difficult to

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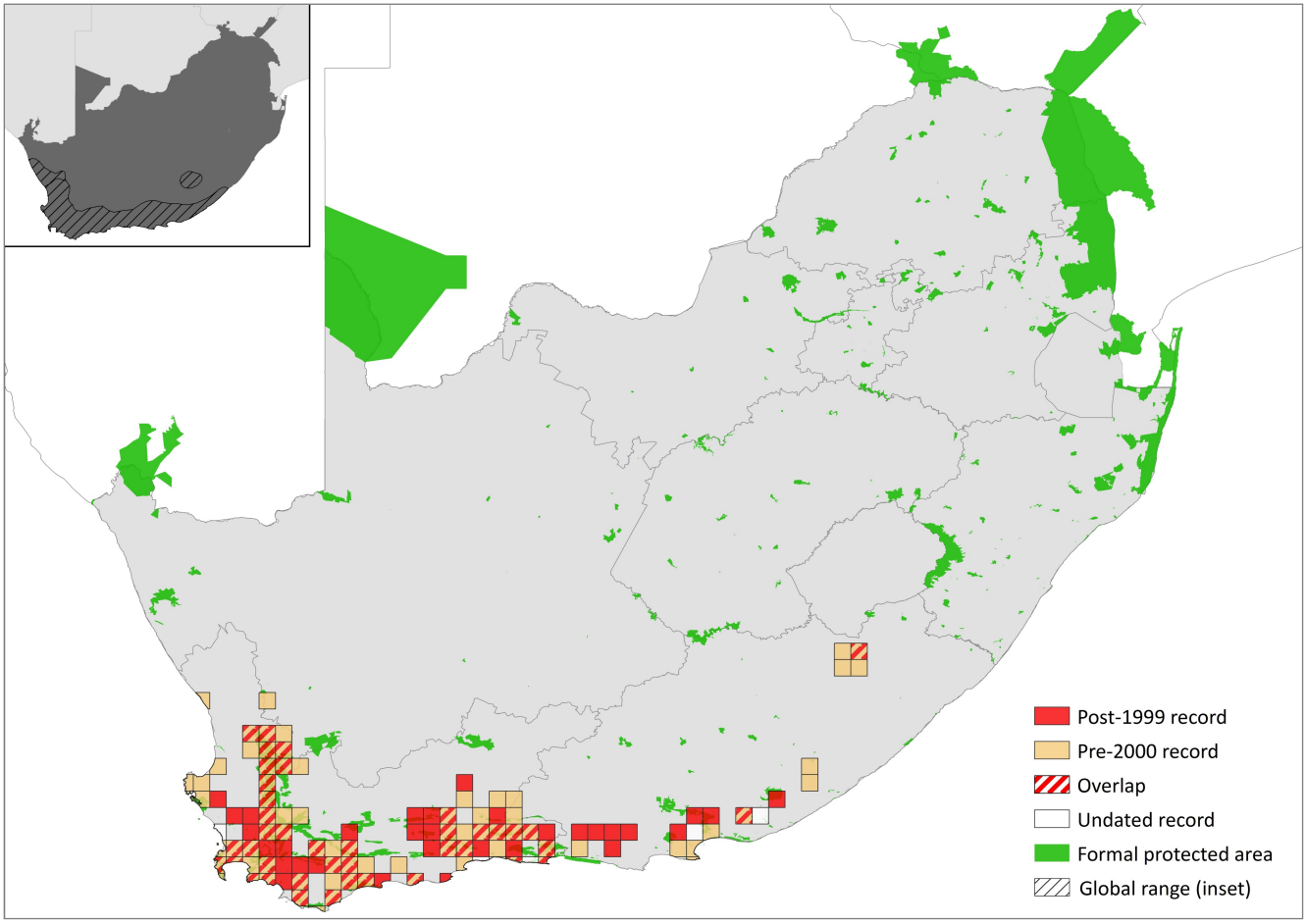

Figure 1. Distribution records for Cape Grysbok (*Raphicerus melanotis*) within the assessment region

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	-

extrapolate data from individual studies or locations to discern the status of the population nationally. Some studies are also relatively dated and more recent data are needed. For example, Scott (1991) studied the distribution of small antelopes in De Hoop Nature Reserve between 1985 and 1987 and recorded densities of 0.21 animals / 100 km travelled for Cape Grysbok compared with 2.64 for Steenbok (*Raphicerus campestris*). Castley and Lloyd (2013) suggest that comparisons such as this may not be accurate estimates of Cape Grysbok populations given their relative lack of visibility and preference for dense habitat. Once again this highlights the need for more robust estimates of Cape Grysbok subpopulations from sites throughout their distribution. All indications are, however, that Cape Grysbok occur "freely" in the landscape – on and off protected areas, on agricultural land, on game farms, and in vineyards.

Based on available habitat, and a requirement of between 6–456 ha / animal depending on the vegetation type, Cape Grysbok numbers could be up to 231,448 in the Cape Floristic Region, down from an estimated population of 322,977 in the pre-habitat transformation model (Kerley et al. 2003). This modelled estimate is almost an order of magnitude higher than earlier estimates (East 1999). Current data from CapeNature indicate that Cape Grysbok occur on 58 provincial protected areas, with a total estimated abundance of 1,196 individuals. Using the number of land parcels (2,438) on which Cape Grysbok are either present (720 land parcels) or persist (indicating that the subpopulation is persistent and breeding; 1,718 land parcels) in the Western Cape Province, at the calculated densities of 6–456 ha / animal, it is estimated that the 77,269 ha of protected area could sustain between 1,704 to 129,544 animals. In the City of Cape Town area, Cape Grysbok occur in high densities on some relatively small (less than 100 ha) isolated properties, such as False Bay Nature Reserve, Zandvlei, University of the Western Cape and Millerton Race Course. The reduced predation from domestic dogs (*Canis familiaris*) and natural predators and the lack of competition from Common Duiker (*Sylvicapra grimmia*) are possible reasons for these elevated densities (C. Dorse pers. comm. 2015). Cape Grysbok are present in Table Mountain National Park (D. Winterton pers. comm. 2015), West Coast National Park (Avery 1990), Bontebok National Park (Novellie et al. 1994), Agulhas National Park (M. Raselabe pers. comm. 2016), Garden Route National Park (L. Moolman-van der Vyver pers. comm. 2016), Baviaanskloof and Groendal Nature Reserve (D. Peinke unpubl. data), and Addo Elephant National Park (AENP)

Table 2. Use and trade summary for the Cape Grysbok (*Raphicerus melanotis*)

Category	Applicable?	Rationale	Proportion of total harvest	Trend
Subsistence use	Yes	The species is poached for bushmeat and traditional medicine.	Unknown	Unknown, but possibly increasing through ongoing settlement expansion.
Commercial use	Yes	Limited international trophy hunting targeting the "Tiny 10"	Unknown	Unknown
Harvest from wild population	Yes	Species occur freely in the landscape.	Majority	Increasing
Harvest from ranched population	Yes	Species occur freely in the landscape. Limited breeding in captivity. Mainly hunted on private ranches.	Minority	Stable
Harvest from captive population	Yes	There have been some requests to captive breed the species for commercial purposes. However, none are known at present (Q. Hahndiek pers. comm. 2016).	Minority	Stable

but are absent from Namaqua and Tankwa Karoo National Parks. This is according to the Mammals Tool that the Cape Research Centre produced in 2011, based on putative distribution maps (Skinner & Chimimba 2005), as well as the references mentioned above.

No comprehensive subpopulation trend data are available but the population is suspected to be stable (for example, aerial counts suggest a stable subpopulation on Baviaanskloof Nature Reserve between 2008 and 2014; D. Peinke unpubl. data), although there are indications of localised declines. Anecdotal evidence suggest that numbers of Cape Grysbok and Bushpig (*Potamochoerus larvatus*) both declined in the Main Camp section of AENP as mega-herbivore numbers increased (Tambling et al. 2013; G. Castley unpubl. data) and no evidence could be found of their presence there in 2014/2015 (G. Kerley, unpubl. data).

Current population trend: Stable, but decreasing in some areas.

Continuing decline in mature individuals: Unknown

Number of mature individuals in population: Unknown, but ranges from 1,000 to > 200,000.

Number of mature individuals in largest subpopulation: Unknown

Number of subpopulations: Unknown

Severely fragmented: No. They are suspected to move between multiple land cover and land use types.

Habitats and Ecology

The natural (historical) distribution of Cape Grysbok is primarily associated with the Fynbos Biome and extends into the Forest, Succulent Thicket and Succulent Karoo Biomes and marginally into the Nama-Karoo and Grassland Biomes. They are absent from the Desert and Savanna Biomes. They are locally common in thickets, shrublands and fynbos habitats. Dense cover is an important habitat requirement. Their presence in the high-altitude grasslands of the northeastern Cape is conditional on the proximity of forest fragments and bush clumps, although they may also use long grass for cover (Castley & Lloyd 2013). They also enter developed areas such as vineyards and agricultural areas (East 1999), and have been blamed, along with the Common Duiker, for extensive damage to young shoots in tea plantations in the Cedarberg (C.T. Stuart and T. Stuart pers. comm. in Castley & Lloyd 2013). This only happens where there is suitable habitat in close proximity. Cape Grysbok are generally regarded as browsers (Stynder 2009). The inclusion of grass in the diet has also been reported (Manson 1974) but has been regarded as unimportant (Skinner and Chimimba 2005), although its importance may fluctuate with environmental changes (Faith 2011). More recently, however, some studies have shown that the Cape Grysbok is a highly selective browser (Kigozi et al. 2008; Kerley et al. 2010). Furthermore, Kerley et al. (2010) reported significant selection for grasses in their study. This is an adaptable species and can survive in human-modified landscapes provided that vegetation with the required understorey cover remains.

Ecosystem and cultural services: Flagship species of the Cape Floristic Region.

Use and Trade

This species is poached as bushmeat, as it is vulnerable to being caught in snares, but this is not expected to cause widespread population decline. There is also limited international trophy hunting from hunters targeting the "Tiny 10". Cape Grysbok parts have also been recorded from traditional herbalist shops but at relatively low frequencies (number of items for sale) and rates of occurrence (number of outlets where items are for sale) (Simelane & Kerley 1998). CapeNature aims to manage off-takes through permits and requests that land owners provide evidence of the persistence of their subpopulations and registers of hunting history. Captive breeding is discouraged by CapeNature and the Eastern Cape Parks and Tourism Agency (ECPTA), and local translocations from within the ecotypic range are preferred. Landowners are required to supply evidence of the status of their population before permits to capture and translocate are supplied. The receiving property is also evaluated for suitability of habitat.

Threats

There are no major threats to the species, although the increase in agriculture and human settlements have

Table 3. Possible net effects of wildlife ranching on the Cape Grysbok (*Raphicerus melanotis*) and subsequent management recommendations

Net effect	Negative
Data quality	Suspected
Rationale	Game farms and ranches are often overgrazed and may provide less suitable habitat than livestock ranches. Commercial game stocking objectives may increase competition for resources to the disadvantage of Cape Grysbok. Additionally, overstocking with predators as well as introduction of extra-limitals, such as impala, that alter understorey could have detrimental impacts in some areas.
Management recommendation	Employ ecological stocking rates on game farms. Monitor persistence and breeding success of Cape Grysbok subpopulations and record all off-takes and mortalities. Monitor status of habitat preferred by Cape Grysbok, specifically the structure of the understory.

reduced available habitat. Localised declines occur due to habitat transformation and loss of dense vegetation in some areas. For example, Cape Grysbok ranges have seen local declines in numbers from areas such as the AENP where escalating numbers of African Elephants (*Loxodonta africana*) have opened up or destroyed thicket habitats (Castley & Lloyd 2013; Tambling et al. 2013). Additionally, some game farms are over-stocked and under-managed, resulting in the opening up of areas of dense vegetation, thus reducing habitat for Cape Grysbok. Even where numbers are not excessive, extra-limital browsers can compete for forage and space (Spear & Chown 2009; Spear et al. 2011).

Cape Grysbok are illegally hunted with domestic dogs, which may lead to local subpopulation declines. They are also both accidentally and deliberately caught with snares for bush meat. Localised unsustainable offtakes of trophy males for hunting may lead to population structure disruptions and localised declines.

Current habitat trend: Declining in area and quality. Agriculture and urbanisation has reduced habitat, but there has not been a severe decrease in habitat quality. For example, Pence (2014) calculated that between 2006 and 2011, 536 km^2 of land was converted to agriculture in the Western Cape Province (107 km^2 per year, which equates to 0.08% of the surface area of the province per year). Urban human settlements have expanded by 8.6% and 6.3% between 2000 and 2013 in the Western and Eastern Cape provinces, respectively (GeoTerraImage 2015), which we infer to mean increasing mortality from poaching, snaring and dog hunting. Even though there may not be any empirical evidence for specific impacts of

Table 4. Threats to the Cape Grysbok (*Raphicerus melanotis*) 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	*2.1.3 Agro-industry Farming*: habitat loss from agricultural expansion. Current stresses *1.2 Ecosystem Degradation* and *1.3 Indirect Ecosystem Effects*: habitat degradation and fragmentation of remaining ecosystems limits resource availability and subpopulation growth.	Pence 2014	Indirect (remote sensing)	Regional	Ongoing
2	*1.1 Housing & Urban Areas*: habitat loss through expanding human settlements. Current stresses *1.3 Indirect Ecosystem Effects* and *2.1 Species Mortality*: fragmentation of remaining habitat into small patches and increased poaching rates.	GeoTerraImage 2015	Indirect (remote sensing)	Regional	Ongoing
3	*5.1.1 Hunting & Collecting Terrestrial Animals*: poaching for bushmeat and traditional medicine markets, and sport hunting (including snaring and hunting with dogs).	Simelane & Kerley 1998	Empirical	Local	Possibly increasing with settlement expansion.
4	*8.2.2 Problematic Native Species/Diseases*: decrease in habitat quality from high elephant/ exotic game densities. Current stresses *1.1 Ecosystem Conversion*, *1.3 Indirect Ecosystem Effects* and *2.1 Species Mortality*: increased predation rates and destruction and fragmentation of thicket habitat.	Tambling et al. 2013 Spear & Chown 2009 Spear et al. 2011	Empirical Indirect Indirect	Local National National	Increasing with expansion of wildlife ranching industry.
5	*5.1.2 Hunting & Collecting Terrestrial Animals*: incidental mortality in snares.	-	Anecdotal	-	Possibly increasing with settlement expansion.
6	*11.1 Habitat Shifting & Alteration*: habitat loss from climate change enabling agricultural expansion in marginal habitats.	Hannah et al. 2013	Simulation	Global	14% increase in potential habitat loss from Cape winelands by 2050.

Table 5. Conservation interventions for the Cape Grysbok (*Raphicerus melanotis*) 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	*1.2 Resource & Habitat Protection*: establish conservancies to protect key habitats.	-	Inferred	Local	-	Cape Nature; Eastern Cape Parks & Tourism Agency (ECPTA)
2	*2.3 Habitat & Natural Process Restoration*: maintain large herbivore density at ecologically suitable levels to reduce impacts on thicket patches.	-	Anecdotal	-	-	-
3	*5.4 Compliance & Enforcement*: increased prosecution of illegal hunting.	-	Anecdotal	-	-	Cape Nature; ECPTA; Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (DEDEAT)
4	*6.2 Linked Enterprises & Livelihood Alternatives*: substitute illegal sport hunting with dogs with other forms of recreation.	-	Anecdotal	-	-	-
5	*4.3 Awareness & Communications*: educational and training programmes for land owners to de-stock properties and warn against the effects of injudicious translocations.	-	Anecdotal	-	-	-
6	*3.1.1 Harvest Management*: monitoring and regulation of hunting and translocation activities.	-	Anecdotal	-	-	Department of Environmental Affairs and provincial conservation agencies.

extra-limital species on Cape Grysbok, several publications have highlighted the detrimental impacts of introducing extra-limital and/or exotic species that compete for resources with an endemic species (Castley et al. 2001; Spear & Chown 2009; Spear et al. 2011). Observational data from AENP further indicate that the increase in numbers of larger herbivores is associated with declines in the more cryptic species, for example, Cape Grysbok and Bushpig (*Potamochoerus larvatus*). Finally, we suspect that habitat loss from agricultural expansion may become likely as climate change makes marginal habitats more suitable for cultivation. For example, climate change is projected to increase the suitability of upslope habitats for viticulture, increasing the footprint of winelands by 14% by 2050 (Hannah et al. 2013).

Conservation

Cape Grysbok are conserved in protected areas throughout their natural distribution range in the Western and Eastern Cape provinces. In the Western Cape, the protected areas in which Cape Grysbok occurs, comprise ~ 9,104 km^2, of which 5,451 km^2 is provincial nature reserves, 1.8 km^2 is local authority nature reserves, and 2,319 km^2 is national parks (C. Birss unpubl. data). Regulated harvesting through conservation legislation aims to ensure that off-takes are sustainable. In addition, it occurs widely in local authority and forestry reserves and on private land (East 1999). Research is being initiated by CapeNature and the Cape Leopard Trust to investigate the impacts of bush meat poaching in natural areas where Cape Grysbok occurs in close proximity to highly populated urban areas.

While no direct conservation interventions are necessary at present, several interventions will benefit this and other species in the region:

1. Continue with biodiversity stewardship schemes to protect patches of remaining habitat, thus enabling better connectivity across the landscape for this species and enabling range shifts in adaptation to climate change.
2. Allow habitats to recover and interspecific competition to decrease by reducing stocking rate, especially of exotic species. Awareness and training programmes should be provided to landowners in key habitat areas. Provincial conservation authorities should also systematically monitor trophy hunting and translocation activities to gauge the sustainability of the practice and gather information for a Biodiversity Management Plan for Cape Grysbok.
3. Increased enforcement of laws protecting wildlife should be used to discourage illegal poaching. Linked to this is the substitution of sport hunting with dogs with alternative recreational opportunities.

Recommendations for land managers and practitioners:

- Regulate translocation to avoid genetic contamination of eco-typical variation within Cape Grysbok and hybridisation with Sharpe's Grysbok (*Raphicerus sharpei*).
- Protected area managers and private landowners should ensure their properties are stocked at an ecological level and composition that will sustain the habitat structure preferred by Cape Grysbok.

- Regulate and monitor the impact of trophy hunting
- Monitor the population status and habitat quality and identify causes of negative trends.

Research priorities:

- Impact of bush meat poaching in areas adjacent to highly-populated urban areas.
- Genetic variation (eco-typical variation) across bioregional gradients related to connectivity and gene-flow to ensure resilient sub-populations (climate change).
- A population census needs to be initiated to identify population status and trends as well as identifying causes of any negative trends observed.

Encouraged citizen actions:

- Report sightings on virtual museum platforms (for example, iSpot and MammalMAP), especially outside protected areas.
- Create conservancies to increase/secure habitat for the species.
- Install permeable fences to allow connectivity across landscapes.

Data Sources and Quality

Table 6. Information and interpretation qualifiers for the Cape Grysbok (*Raphicerus melanotis*) assessment

Data sources	Field study (literature, unpublished), indirect information (literature, expert knowledge)
Data quality (max)	Estimated
Data quality (min)	Inferred
Uncertainty resolution	Maximum/minimum values
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.*

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