Tragelaphus sylvaticus – Southern Bushbuck

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

A small, adaptable generalist form of a bushbuck-like antelope may be ancestral to all tragelaphines (Moodley et al. 2009).

Taxonomy

Tragelaphus sylvaticus (Sparrman 1780)

ANIMALIA - CHORDATA - MAMMALIA - CETARTIODACTYLA - BOVIDAE - *Tragelaphus* - *sylvaticus*

Common names: Southern Bushbuck (English), Bosbok (Afrikaans), Serôlô, Pabala, T'shô'sô (Sepedi), Pabala, Tshoso (Sesotho), Serôlôbotlhoko, Thamma (Setswana), Imbabala (Swati, Xhosa, Zulu), Mbavhala, Xoxwe, Hodzolume (Tsonga), Tshishosho, Luvhengammbwe (Venda), Ungece, Unkonka (Xhosa), Unkonka, Omdaka (Zulu)

Taxonomic status: Species

Taxonomic notes: Over 40 subspecies have been described but systematic studies indicate that only between 24 (Lydekker 1913; Allen 1939) and six (Grubb 1985) distinct forms may exist. Additionally, as all molecular variation is partitioned into two divergent lineages (Moodley & Bruford 2007), *T. scriptus* and *T. sylvaticus*, we thus treat these as distinct species following Moodley et al. (2009). However, this specific distinction needs to be confirmed with both morphological and nuclear data (Hassanin et al. 2012).

Assessment Rationale

This species remains Least Concern within the assessment region, as it is widespread (and has been widely reintroduced) and well-represented in protected areas across its range with no evidence for net population decline. However, localised declines may be occurring due to poaching, habitat loss and degradation, and competition with introduced Nyala (*Tragelaphus angasii*) on small properties. Such threats should be quantified to assess their severity on the overall population. While no specific interventions are necessary at present, translocations that mix ecotypes or the northern species (*T. scriptus*) should be avoided and land managers should conserve thicket habitats on which this species depends. Further research on ecotypes may split the population into management units for conservation.

Regional population effects: This species occurs in many habitat types and its range is connected with neighbouring countries; for example, along the northern border of South Africa between Botswana, Zimbabwe and Mozambique through the Mapungubwe and Great Limpopo transfrontier areas and northeast KwaZulu-Natal (KZN). There is evidence that males can disperse long distances (Apio et al. 2010), and thus we assume that rescue effects are possible.

Distribution

Bushbuck are one of the most widely distributed antelope species on the African continent (Skinner & Chimimba 2005), occurring on *c*. 72% of Africa's landmass in 40 countries (East 1999; Moodley et al. 2009). The only sub-Saharan country from which they have not recently been recorded, and where they may formerly have occurred, is Lesotho (Lynch 1994). The Rift Valley broadly separates *T. scriptus*, occurring in North and West Arica, from *T. sylvaticus*, occurring in East and southern Africa (Moodley & Bruford 2007). They occur widely in Zimbabwe, Mozambique, Swaziland and the eastern parts of South Africa, as well as northern Botswana (Skinner & Chimimba 2005). They naturally occur throughout much of South Africa and are widely distributed in the highly fragmented forest and thicket biomes. Their current distribution within the assessment region is mostly the same as their historical distribution, occurring in Limpopo, North West, Mpumalanga, Gauteng and KZN provinces, and along the coast in both the Eastern and Western Cape provinces, about as far west as Bredasdorp (Skinner & Chimimba 2005). However, they have also been widely introduced into unsuitable areas. For example, while Southern Bushbuck naturally occur in the northern bushveld areas of North West Province (Power 2014), they are locally exotic in the southern parts of the province (Rautenbach 1982). Additionally, there seems to have been a natural range expansion into the riparian habitats of the Maretsaane area in northwestern North West Province (Power 2014).

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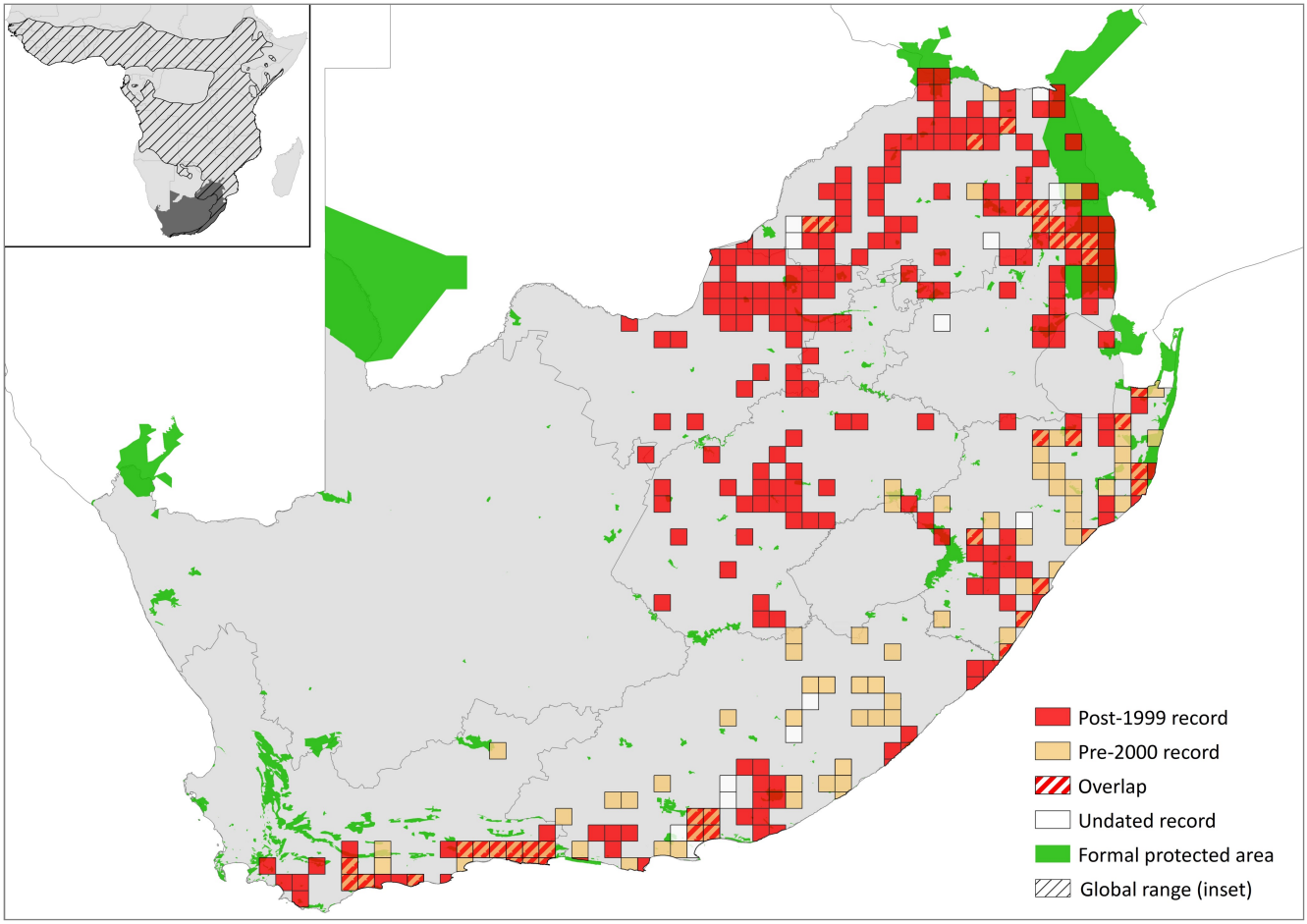

Figure 1. Distribution records for Southern Bushbuck (*Tragelaphus sylvaticus*) within the assessment region

Table 1. Countries of occurrence within southern Africa

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

Population

The Southern Bushbuck reaches high densities in localised areas of favourable habitat. Aerial and ground surveys undoubtedly underestimate population density; estimating Southern Bushbuck density with accuracy and precision is difficult as they are usually nocturnal, solitary, secretive and inhabit thick bush (Jacobsen 1974; von Gadow 1978; Schmidt 1983; Allen-Rowlandson 1986; Seydack et al. 1998). For example, in Shongweni Dam and Game Reserve, KZN, a variety of count methods (conducted between 2002 and 2003) revealed density estimates ranging from 2.9 ± 0.2 to 21.2 ± 1.3 animals / ha (Coates & Downs 2007), where mark–recapture underestimated density and the high costs involved in capturing and marking animals rendered this method inadequate. Therefore, drive counts and mark–recapture were not considered to be appropriate for monitoring the subpopulation, whereas distance sampling is more promising if the assumptions are met (Coates & Downs 2007). Similarly, sampling has generally been conducted during winter when using sighting efforts, as visibility at this time of the year is best (Schmidt 1983; Allen-Rowlandson 1986; Marchant 1991). However, Southern Bushbuck may be more likely to be uniformly dispersed during spring, and thus this may be a more appropriate season for sampling (*sensu* Lannoy et al. 2003).

East (1999) estimated the total African population of bushbuck at 1,340,000, which is likely an underestimate. Their numbers are considered stable over considerable parts of the range, but are decreasing in densely settled regions. Within the assessment region, there are at least 5,422 Southern Bushbuck occurring on 257 protected areas and wildlife ranches across the country (2013–2014 counts; Endangered Wildlife Trust unpubl. data). However, this is likely to be an undercount for the reasons listed above. The largest subpopulation exists in Kruger National Park (KNP), inferred to be *c.* 500 individuals (2009 count) from ranger experience (Ferreira et al. 2013). There were inferred to be 15 and 10 (2010 count) in Marakele and Mapungubwe National Parks, respectively (Ferreira et al. 2013). In Garden Route National Park, Western Cape Province, density was estimated (from pellet counts) to be 1.6 ± 1.1 animals / km^2 (2011 count), but no individuals were recorded in Agulhas or Bontebok National Parks in 2013 (Ferreira et al. 2013). There is a subpopulation of *c.* 30 in Addo Elephant National Park, Eastern Cape Province (Ferreira et al. 2013). They occur at low frequencies in several protected areas in North West Province (Nel 2015). Southern Bushbuck occur extensively outside protected areas too. For example, Power (2014) estimated that at least 2,447 animals existed on private lands in North West

Province in 2010. Overall, we assume the population is stable as there is no evidence for decline and its extensive reintroduction onto game farms will presumably be increasing the overall population. However, further field surveys and monitoring should attempt to quantify subpopulation trends over three generations, which is calculated to be 15.7 years (Pacifici et al. 2013), from across its range.

Current population trend: Stable

Continuing decline in mature individuals: Locally, due to snaring.

Number of mature individuals in population: Unknown

Number of mature individuals in largest subpopulation: Unknown

Number of subpopulations: Unknown

Severely fragmented: Yes. Most subpopulations occur in fenced reserves.

Habitats and Ecology

Bushbuck occur widely in sub-Saharan Africa wherever there is adequate cover, being naturally absent from arid and semi-arid regions and from extensive areas of closed-canopy forest. They can also exist in agricultural areas where they eat crops. Their strong dependence on thick vegetation for shelter largely influences their habitat preference and thus range (Rowe-Rowe 1994). For example, in Shongweni Dam and Game Reserve, KZN, Southern Bushbuck preferred short thicket habitats (Coates & Downs 2006), especially *Protorhus longifolia*/*Panicum maximum* and *Ehretia rigida*/*spirostachys Africana* thickets, which provided favourable canopy and understory cover and favoured forage plant species, such as *Capparis tomentosa*, *Ziziphus mucronata*, *Grewia occidentalis*, *Combretum* spp., *Rhoicissus* spp. and *Euclea* spp. (Patrick 1998). They avoided low, closed grasslands but were found to feed on dicotyledonous material on the fringes between thick vegetation and grasslands (Coates & Downs 2006), and sometimes venture into these open grasslands at night to feed on forbs (Jacobsen 1974; Smits 1986; MacLeod et al. 1996; Patrick 1998). While they are predominantly browsers and selective feeders, they are able to adapt their feeding habitats in adverse environments (Skinner & Chimimba 2005).

Southern Bushbuck home ranges in valley bushveld habitat have been estimated to be 32–34 ha for males and 12–14 ha for females (Coates & Downs 2005a). Similarly, Allen-Rowlandson (1986) gave mean home ranges for males as 120 ha and for females as 60 ha. In the Knysna Forest, density was estimated at < 5 animals / km^2 and home range size ranged from 14.6 to 174.3 ha (Odendaal & Bigalke 1979). Other studies state home ranges ranging from 2.5 to 35 ha (Skinner & Chimimba 2005), and a negative correlation may exist between size of home range and population density (Odendaal & Bigalke 1979). They are generally considered to be solitary, but also occur in small groups of two to three. Their movements are very restricted during the dry season, but they move more widely in the warm, wet months (Skinner & Chimimba 2005).

Ecosystem and cultural services: The browsing habits of Southern Bushbuck can potentially contribute to control of bush encroachment, especially on private properties where they have been introduced (Power 2014).

Use and Trade

The Southern Bushbuck is hunted for food and for sport within the assessment region. They are also sold at live game auctions. Use and trade is not suspected to negatively impact the population as it is well regulated, but this should be quantified. Southern Bushbuck are considered a valuable resident on many game reserves and private farms in KZN (Rowe-Rowe 1994), as they provide both ecological and economic benefits (Coates & Downs 2006). The latter includes game hunting and biltong production in smaller reserves that cannot depend on ecotourism (Humavindu & Barnes 2003; Reilly et al. 2003).

While wildlife ranching may generally be conserving land that would otherwise be overgrazed by livestock and thus expanding the area of occupancy of this species, the introduction and co-occurrence of Nyala is suspected to have negative consequences on small properties. In KZN, it has been shown that Southern Bushbuck are negatively impacted by sympatric Nyala subpopulations (Coates & Downs 2005b), probably via competition, where the Nyala, being a generalist browser-mixed feeder, outcompetes the more specialised browsing-only Southern Bushbuck. This is corroborated by Power (2014), where higher Southern Bushbuck densities are attained on game farms where

Table 2. Use and trade summary for the Southern Bushbuck (*Tragelaphus sylvaticus*)

Category	Applicable?	Rationale	Proportion of total harvest	Trend
Subsistence use	Yes	Often caught in bushmeat snares.	Minority	Possibly increasing with human settlement expansion.
Commercial use	Yes	Used for biltong hunting, trophy hunting and live animal sales.	Majority	Possibly increasing with wildlife ranching expansion.
Harvest from wild population	Yes	All subpopulations are considered wild as they are not intensively managed.	All	Possibly increasing with wildlife ranching expansion.
Harvest from ranched population	No	However, some are kept in small, fenced eco-estates.	-	-
Harvest from captive population	No	-	-	-

Table 3. Possible net effects of wildlife ranching on the Southern Bushbuck (*Tragelaphus sylvaticus*) and subsequent management recommendations

Net effect	Unknown
Data quality	Inferred
Rationale	While wildlife ranches are increasing available habitat, co-occurrence of Nyala could negatively impact Southern Bushbuck populations.
Management recommendation	Keep Nyala densities low or set aside Nyala-free land to sustain Southern Bushbuck numbers.

Nyala are absent in the North West Province, and there is co-existence at low densities. It is suggested that farmers wanting to stock Nyala make allowance for protecting Southern Bushbuck by, for example, setting aside Nyala-free habitat (Power 2014). Additionally, some of the eco-estates in KZN have increasing numbers and so need to move animals out as the fencing prevents natural dispersal.

Threats

Globally, the bushbuck has disappeared from some areas in the drier parts of its former range because of habitat destruction and increasing aridity. While there do not seem to be any major threats to its long-term conservation, numbers may be gradually decreasing locally as hunting pressures increase in parts of its range (East 1999). Within the assessment region, deforestation and fragmentation is the major threat to this species, while cultural sport hunting with dogs, snaring and high Nyala densities are localised threats. Although no specific evidence documents declines from bushmeat hunting and incidental snaring, bushmeat hutting is an intensifying threat in southern Africa (Lindsey et al. 2013), and presumably Southern Bushbuck are impacted, especially on the edges of protected areas (Wittemyer et al. 2008). For example, they have been poached in Borakalalo Nature Reserve, North West Province (Nel 2015). Cultural sport hunting with dogs is also inferred to be a major contributor to local declines, especially in KZN (*sensu* Grey-Ross et al. 2010).

The Nyala is a mixed feeder showing preference for browse (Anderson 1978; Seymour 2002). It is suggested to out-compete other species by having access to forage at a higher feeding level, potentially creating browse lines, thereby excluding the smaller species (Rowe-Rowe 1994; Haschick & Kerley 1996). Based on landowner surveys in KZN, Southern Bushbuck subpopulations are declining where Nyala subpopulations are increasing (Coates & Downs 2005b). As the Nyala is a highly prized trophy animal, it has been introduced into many areas beyond its historical range (Rowe-Rowe 1994; Spear & Chown 2009), thereby potentially causing local declines in many Southern Bushbuck subpopulations. However, accurate baseline measurements of density and abundance are necessary to assess impacts of these introductions (Coates & Downs 2007; Power 2014).

Table 4. Threats to the Southern Bushbuck (*Tragelaphus sylvaticus*) 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 stress *1.3 Indirect Ecosystem Effects*: fragmentation of remaining habitat.	Jewitt et al. 2015	Indirect (remote sensing)	Regional	Ongoing
2	*2.3.2 Small-holder Grazing, Ranching, or Farming*: habitat loss from livestock ranching. Current stresses *1.3 Indirect Ecosystem Effects* and *2.3.1 Hybridisation*: fragmentation of remaining habitat and possible hybridisation between ecotypes.	Jewitt et al. 2015	Indirect (remote sensing)	Regional	Ongoing
3	*1.1 Housing & Urban Areas*: habitat loss from human settlement expansion. Current stresses *1.2 Ecosystem Degradation*, *1.3 Indirect Ecosystem Effects* and *2.1 Species Mortality*: habitat fragmentation and degradation (from fuelwood harvesting) and increased hunting rates.	Jewitt et al. 2015	Indirect (remote sensing)	Regional	Ongoing
4	*5.1.1 Hunting & Collecting Terrestrial Animals*: poaching for bushmeat trade and illegal sport hunting with dogs.	Grey-Ross et al. 2010 Nel 2015	Attitudinal Empirical	Regional Local	Increasing with human settlement expansion.
5	*5.1.2 Hunting & Collecting Terrestrial Animals*: incidental mortality in snares.	-	Anecdotal	-	Increasing with human settlement expansion.
	8.1.2 Invasive Non-native/Alien Species/Diseases: increasing introduced Nyala subpopulations outcompeting local Bushbuck subpopulations.	Coates & Downs 2005b Power 2014	Attitudinal Empirical	Regional Regional	Possibly increasing with the expansion of the wildlife ranching industry.

Table 5. Conservation interventions for the Southern Bushbuck (*Tragelaphus sylvaticus*) 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	*1.1 Site/Area Protection*: form conservancies to produce economic and ecological benefits from this species.	-	Anecdotal	-	-	-
2	*5.1.3 Legislation*: regulation of translocation to prevent hybridisation between ecotypes and reduce competition with Nyala.	-	Anecdotal	-	-	-

Uncontrolled reintroductions and translocations are a concern for the genetic integrity of local subpopulations as mixing ecotypes could lead to outbreeding depression. Moodley and Bruford (2007) found 23 phylogenetically distinct groups (ecotypes), the distribution of which was found to correlate strongly with ecology, suggesting that ecological heterogeneity on the African mainland acted as a driving force for local adaptation within both the *T. scriptus* and the *T. sylvaticus* lineages.

Current habitat trend: Declining in area and quality. Human settlement and agricultural land use have decreased habitat for this species. General disturbance of forest structure (particularly understorey) from harvesting for fuel-woods also causes habitat disturbance and decrease in habitat quality. This is likely to continue given increasing human populations. For example, in KZN, there was an average loss of natural habitat of 1.2% per annum from 1994 to 2011, due primarily to agriculture but also plantations, built environments and settlements, mines and dams (Jewitt et al. 2015). Management plans for this species have almost exclusively been based on habitat management (Allen-Rowlandson 1986; Marchant 1991; Rowe-Rowe 1994).

Conservation

The Southern Bushbuck is present in numerous protected areas across the assessment region. Its ability to survive widely in settled areas and successfully utilise habitats modified by human activities should ensure that it survives in substantial numbers outside protected areas for the foreseeable future (East 1999). However, landowners should be encouraged to form conservancies to provide greater habitat for this species and decrease competition with Nyala. As Southern Bushbuck are a favoured game farm species, their area of occupancy should continue to expand. However, care should be taken to discourage introduction into unsuitable areas and to prevent mixing Southern Bushbuck ecotypes to prevent outbreeding depression. As such, regulation of translocation, for both Southern Bushbuck and Nyala, is required.

Recommendations for land managers and practitioners:

- Reduce Nyala density or set aside habitat for Southern Bushbuck.
- Develop this species as a keystone within the sustainable, wildlife-based rural economy.
- Landowners should document and report subpopulation declines to their provincial conservation agency or the University of KwaZulu-Natal.

Research priorities:

- Determine national population size and regional subpopulation trends.
- Delimit ecotypes as management units for conservation, as a baseline for a Biodiversity Management Plan and translocation policy.
- Quantify the severity of threats facing local subpopulations.

Encouraged citizen actions:

- Landowners should create conservancies for this species and engage local stakeholders to create sustainable, wildlife-based rural economies.
- Report sightings on virtual museum platforms (for example, iSpot and MammalMAP), especially outside protected areas.

Data Sources and Quality

Table 6. Information and interpretation qualifiers for the Southern Bushbuck (*Tragelaphus sylvaticus*) assessment

Data sources	Field study (unpublished), Indirect information (literature, 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.*

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