Connochaetes gnou – Black Wildebeest

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Regional Red List status (2016)	**Least Concern*†**
National Red List status (2004)	Least Concern
Reasons for change	No change
Global Red List status (2008)	Least Concern
TOPS listing (NEMBA) (2007)	Protected
CITES listing	None
Endemic	Yes

*Watch-list Threat †Conservation Dependent

The Black Wildebeest can be distinguished from the Blue Wildebeest by its white rather than black tail. The alternative name of these two species, "gnu", comes from the male's characteristic nasal call, described as "*ge-nu*".

Taxonomy

Connochaetes gnou (Zimmermann 1780)

ANIMALIA - CHORDATA - MAMMALIA - CETARTIODACTYLA - BOVIDAE - *Connochaetes - gnou*

Common names: Black Wildebeest, White-tailed Gnu (English), Swartwildebees (Afrikaans), Gnu (Khoikhoi), Imbudumo (Ndebele), Podumö (Sepedi), Mmamononwane (Sesotho), Ingongoni (Swati), Mbutuma (Tsonga), Khongoni (Venda), Inqu (Xhosa), Inkonkoni (Zulu)

Taxonomic status: Species

Taxonomic notes: The two lineages leading from a Blue Wildebeest-like ancestor to the two modern Wildebeest species diverged approximately one million years ago. The two species share the same chromosome number of 2n=58 and interspecific hybrids are fertile. First generation (F1) hybrids can be distinguished from pure animals based on external phenotypic characters, but hybrids are not distinguishable from pure animals following unidirectional backcrosses with pure Black Wildebeest over two or more generations. Levels of genetic diversity in *C. gnou* are lower compared to the Blue Wildebeest (*C. taurinus*) (Grobler et al. 2005 and ongoing work at the University of the Free State and the National Zoological Gardens), which is most likely due to the historic bottlenecks experienced by *C. gnou* in the late 1800s. The evolution of a distinct southern endemic Black Wildebeest in the Pleistocene was associated with, and possibly driven by, a shift towards a more specialised kind of territorial breeding behaviour, which can only function in open habitat. Thus, the evolution of the Black Wildebeest was directly associated with the emergence of Highveld-type open grasslands in the central interior of South Africa (Ackermann et al. 2010).

Assessment Rationale

This is an endemic species occurring in open grasslands in the central interior of the assessment region. There are at least an estimated 16,260 individuals (counts conducted between 2012 and 2015) on protected areas across the Free State, Gauteng, North West, Northern Cape, Eastern Cape, Mpumalanga and KwaZulu-Natal (KZN) provinces (mostly within the natural distribution range). This yields a total mature population size of 9,765–11,382 (using a 60–70% mature population structure). This is an underestimate as there are many more subpopulations on wildlife ranches for which comprehensive data are unavailable. Most subpopulations in protected areas are stable or increasing. For example, there has been 7–9% annual increase in the Eastern Cape provincial protected areas over the past decade, and an average annual growth rate of 29% in the Free State provincial protected areas. Nationally, there has been an estimated population increase of 213% (2,567 to 8,063 individuals) over three generations (1992–2015) using a sample of 16 formally protected areas for which long-term data are available.

While grassland habitat loss remains a threat to this species, it continues to be well represented in protected areas and the expansion of wildlife ranching may be conserving additional habitat. The only major identified threat is the risk of hybridisation with Blue Wildebeest, a threat enhanced by the fenced and fragmented nature of existing subpopulations. Although it is likely that Black and Blue Wildebeest hybridised occasionally, they are naturally spatially separated through ecological specialisation. Historical habitat reduction, however, has restricted the two species to pockets of reserves and may have artificially induced hybridisation. There is worrying evidence that some formally protected subpopulations may contain hybrid individuals and further research is in progress to assess the extent of hybridisation in the population. This species will need reassessment once comprehensive data on the extent of hybridisation is produced. Currently, the hybridisation threat is being managed through implementing management practices such as separating Black and Blue Wildebeest in protected areas and through enforcing strict translocation policies. Only counting the five subpopulations that are generally accepted to be genetically pure, based on management history, the total population size may be lower than 1,000 mature individuals (currently estimated

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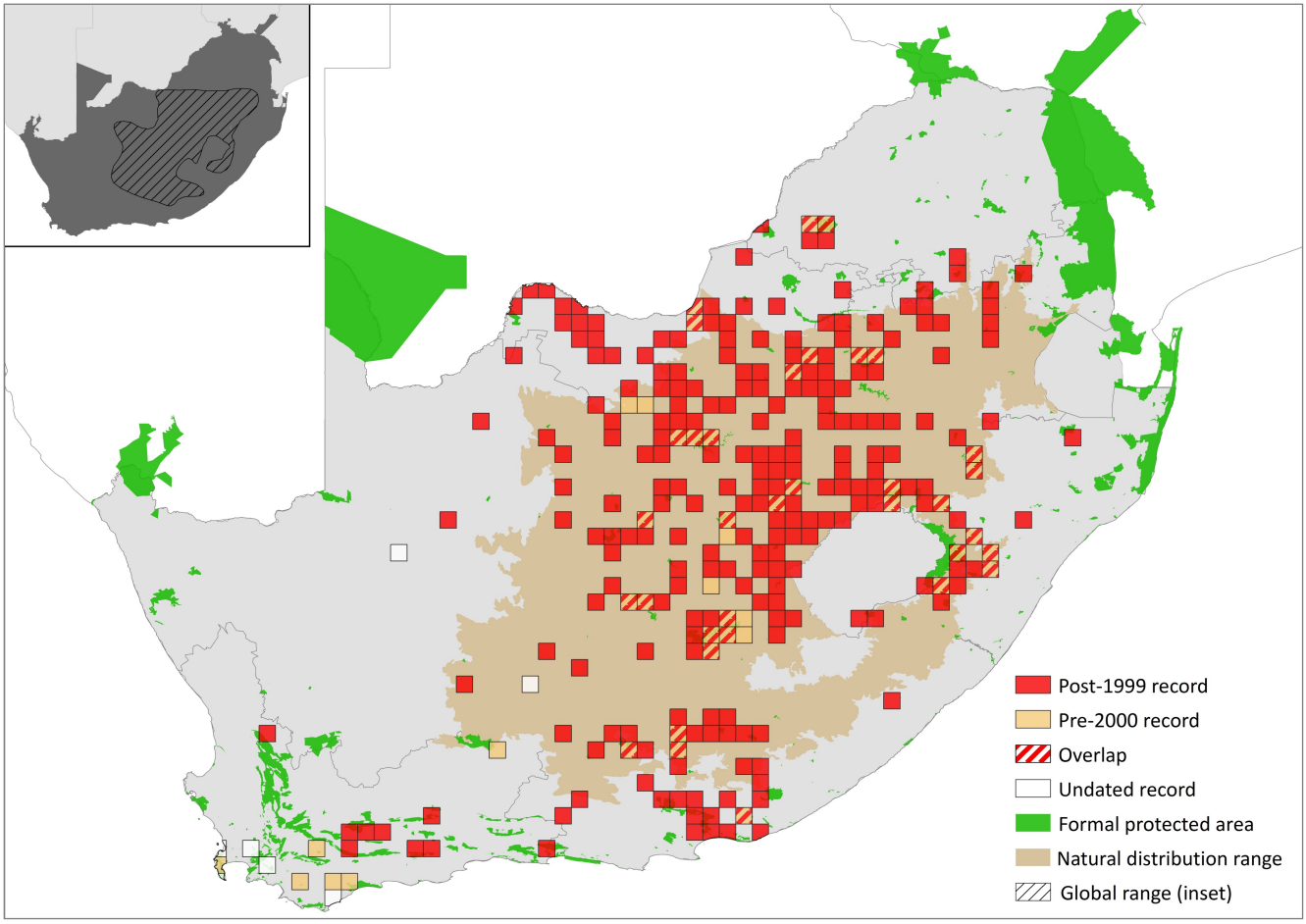

Figure 1. Distribution records for Black Wildebeest (*Connochaetes gnou*) within the assessment region

Table 1. Countries of occurrence within southern Africa

Country	Presence	Origin
Botswana	Extant	Introduced
Lesotho	Extant	Reintroduced
Mozambique	Absent	-
Namibia	Extant	Introduced
South Africa	Extant	Native, Reintroduced and Introduced
Swaziland	Extant	Reintroduced
Zimbabwe	Absent	-

as 800–950), which would justify a Vulnerable or Near Threatened D1 listing under a precautionary purview until further analysis reveals other pure subpopulations and increases this number. However, until further data suggest otherwise, we retain the Least Concern listing as the total protected population is well above 1,000 mature individuals and is increasing. Conservation efforts should be concentrated on sustaining pure populations of Black Wildebeest in protected areas and on establishing additional pure subpopulations through a coordinated translocation program and metapopulation plan. The role of incidental and deliberate back-crossing in reducing the frequency of introgressed alleles in putative hybrid population should also be investigated. As such, this species should remain conservation dependent and retain its status as a Least Concern endemic and flagship species for our grasslands

Distribution

The Black Wildebeest occurs in South Africa, Swaziland, and Lesotho. Essentially, the species was found in the Grassveld and Karoo regions of the central and Northern Cape, the whole of the Free State and the southern highveld regions of the former Transvaal (von Richter 1971a, 1974a). It was also recorded in western Lesotho (where they had become locally extinct through overhunting) and the Grassveld areas of western Swaziland (Lynch 1994; Monadjem 1998) and have subsequently been reintroduced to both countries (Skinner & Chimimba 2005). In KZN, there are reports of Black Wildebeest having occurred in the open Grassveld areas below the Drakensberg range. This species attracted much attention from most early explorers in South Africa. Vivid descriptions of vast herds with animals performing curious prancing movements can be read in the diaries of these travellers. This peculiar behaviour resulted in Black Wildebeest often being called the "clowns of the veld". The strange appearance of the animal was apparently a cause of embarrassment for early naturalists who were confused with the classification of an animal which has "the mane and tail of the horse; the form of the head and the horns resemble the ox; and in the legs and delicate make of the body it appears of the antelope species" (Lichtenstein 1930).

By the end of the 19th century, excessive hunting had reduced the formerly vast population to a few individuals surviving on two farms in the Free State Province of South Africa (Skinner & Chimimba 2005). Trade in game skins had become a flourishing business and it was reported that a single farm in Kroonstad exported 157,000 Black

Wildebeest and Blesbok (*Damaliscus pygargus phillipsi*) skins in 1866 alone (Garson-Steyn & Garson-Steyn 1964). Since then, protection by farmers and conservation agencies has allowed the species to recover (East 1999; Vrahimis 2013). This achievement is a rare conservation success in Africa and can be attributed to a few conservation-minded farmers. It has now been reintroduced to parts of its former range (western Swaziland and western Lesotho) and introduced into farmland areas outside of its natural range, including Namibia (East 1999). Recently, Black Wildebeest have also been introduced to private farms in Botswana (Grobler et al. 2011). Within the assessment region, they have been introduced far outside of the natural range into both Limpopo (however, management agencies on protected areas are removing such extra-limital subpopulations) and Western Cape provinces. One of the subpopulations in the latter province, located on Grootte Schuur Estate, is generally considered to be a "pure" subpopulation.

In the past, the Blue and Black Wildebeest ranges barely overlapped (Estes & East 2009), although this may have been different in the Pleistocene (Brink et al. 1999). One of the known wildebeest range overlap areas was in the vicinity of the confluence of the Vaal and Orange rivers where thornveld and Karoo veld types converged. There are, however, indications that Blue and Black Wildebeest herds never utilised the same area in this region at the same time. Arguably the best example of a separation between the two wildebeest species was reported for the south-eastern Mpumalanga region in the vicinity of Amsterdam during the late 1800s. In this area Blue Wildebeest and Black Wildebeest were reportedly separated seasonally and apparently also never occurred simultaneously in that specific area (Forbes Diaries, National Archives).

Population

Globally, the last estimate was a total population of more than 18,000 (with over 11,000 in its natural range and over 7,000 on farmlands in Namibia, an area outside its natural range which is not included in this assessment), of which about 80% was on private farms and conservancies and 20% in protected areas (IUCN SSC Antelope Specialist Group 2008). Black Wildebeest subpopulation sex and ratio data for two Free State protected areas over a period of two years revealed average mature subpopulations of 66% and 68% (E. Schulze unpubl. data). Within the assessment region, there are an estimated 16,260 individuals (counts conducted between 2012 and 2015) on formally and privately protected areas across the Free State, Gauteng, North West, Northern Cape, Eastern Cape, Mpumalanga and KZN provinces (Table 2). This yields a total mature population size of 9,765–11,382 (using a 60–70% mature population structure). Additionally, there are currently (2013–2014) at least another 18,072 individuals existing on wildlife ranches across the country. This is likely to be an underestimate as not all private sector data are available.

In the North West Province, the subpopulations are thriving to the extent that hunting alone is no longer an effective control measure and large scale translocation and culling are required for effective population management (Power 2014). The provincial population is stable or increasing and face no severe threats (Nel 2015). There are an estimated additional 3,980 Black Wildebeest on private game farms in the province, but these farms often stock Blue and Black Wildebeest together, thereby presenting the risk of hybridisation (Power 2014). Similarly, in the Eastern Cape Province, the conservation value of both Oviston and Mpofu Nature Reserves has been undermined by exposure to *C. taurinus*, but 718 individuals from Oviston Nature Reserve have since been kept separate from the rest of the subpopulation. This highlights the need to keep Black and Blue Wildebeest separate within the natural range of Black Wildebeest and to ensure the conservation value of formally protected areas. From a genetic perspective, the *ex situ* population of Black Wildebeest in European zoos may potentially be important, since some of these animals are descendent from animals exported in the 1950s and 1960s, and are thus representative of the genetic make-up of the species before large scale translocations started in southern Africa. For example, at present, the number of subpopulations generally considered pure based on management history is restricted to Benfontein Game Farm (Northern Cape), SA Lombard Nature Reserve (North West), Suikerbosrand Nature Reserve (Gauteng), possibly Geluk Farm (Free State), and extra-limitally in Grootte Schuur Estate (Western Cape). This yields at least 1,347 individuals in total (808–943 mature). Closer, uniform monitoring of the genetic integrity of subpopulations on all formally protected areas is in progress and the number of pure populations may rise. This species must be reassessed as soon as more data are available.

Overall, the population size is increasing, especially on private land. The 12 subpopulations in provincial nature reserves in the Free State Province are all increasing at an average annual growth rate of 29%, with the total number standing on 2,568 individuals in 2014 (from 2,404 individuals in 2004). Similarly, on Golden Gate Highlands National Park (which now includes QwaQwa National Park), the subpopulation has increased rapidly (from 167 to 3,267 animals between 1994 and 2016) (Bissett et al. 2016). In the Eastern Cape Province, recent data from the provincial reserves exhibit positive growth rates: Commando Drift, Tsolwana and Oviston Nature Reserves have all exhibited 7–9% growth from 2003 to 2013. The only reserve with negative growth was Ongeluksnek,

Table 2. Summary of population size estimates for Black Wildebeest (*Connochaetes gnou*) in both provincial and national protected areas

	Subpopulation size	Year	Reserves
Provincial			
Free State	2,568	2014	12
North West	2,413	2013	6
Mpumalanga	275	2013	3
Eastern Cape	3,789	2013	7
KwaZulu-Natal	812	2014	8
Gauteng	587	2014	2
Northern Cape	45	2014	1
Other			
SANParks (all)	4,775	2012–2015	5
Private Protected Areas	996	2014	4
Total	16,260		48

which declined by 24% after a founder population of 22 was reintroduced in 2010. In KZN, the subpopulations in Chelmsford, Coleford, Impendle, Midmar, Ntsikeni and Wagendrift Nature Reserves are all increasing or stable. Generation length for this species has been calculated as 7.8 years (Pacifici et al. 2013), yielding a 24-year three-generation period (1992–2015). Overall, there has been an estimated population increase of 213% (2,567 to 8,063 individuals) over three generations (1992–2015) using a sample of 16 formally protected areas for which long-term data are available.

Current population trend: Increasing

Continuing decline in mature individuals: No

Number of mature individuals in population: At least 9,564–11,158

Number of mature individuals in largest subpopulation: 1,960–2,287 in Golden Gate Highlands National Park.

Number of subpopulations: > 48

Severely fragmented: Yes. All subpopulations exist in fenced protected areas or ranches.

Habitats and Ecology

This species is a selective short grass grazer and inhabits the open plains grasslands and karoo shrublands of South Africa and Lesotho (von Richter 1971b, 1974b; Codron & Brink 2007; Codron et al. 2011). The high central plateau grasslands are characterized by flat to rolling plains, and mountainous areas with altitudes ranging from 1,350–2,150 m asl (Vrahimis 2013). Open habitats are essential for the reproductive behaviour of the Black Wildebeest because territorial males require an unobstructed view of their territories in order to breed. The specialised territorial breeding behaviour of the Black Wildebeest is the reason why the Black Wildebeest is historically confined to the Highveld and Karoo areas and why it is reproductively isolated from the sympatric Blue Wildebeest. Ecological separation between the two species is incomplete although habitat heterogeneity is a key factor keeping the two wildebeest species separated (Brink 2005, 2016; Helm 2006). Given the functional meaning of Black Wildebeest horn and cranial shape (Brink 1993, 2016), the evolutionary process appears to have been linked to, or possibly caused by, a shift in mating behaviour towards permanent territoriality in males, which contrasts to Blue Wildebeest that have both territorial and non-territorial mating systems. The Black Wildebeest can be distinguished from the Blue Wildebeest by its white rather than black tail. The alternative name of these two species, “gnu”, comes from the male’s characteristic nasal call, described as “*ge-nu*”.

Ecosystem and cultural services: The Black Wildebeest is a feisty, gregarious species that often occurs in high densities with other selective short grass grazers such as Springbok (*Antidorcas marsupialis*) and Blesbok (von Richter 1974a). Unfortunately, concentrations of these species often lead to grassland degradation and the establishment of largely homogeneous grazing lawns in higher rainfall areas and areas with a poor basal cover in lower rainfall areas. Due to this tendency, many game farmers prefer to rather keep Blue Wildebeest than Black Wildebeest in order to prevent veld deterioration. Despite its reputation as a habitat degrader, the Black Wildebeest is still considered a flagship species of the central


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grasslands, mainly due to their unique, spirited behaviour and endemic status.

A prancing Black Wildebeest appears on the South African five Rand coin and the animal has in the past been displayed on South African postage stamps (von Richter 1974a).

Use and Trade

The level of trade is domestic, commercial and international. The trade in live animals at game auctions, trophy hunting and culling for the venison market are the main uses of the species for economic gain. The numbers taken by trophy hunts are unlikely to have a detrimental effect on the population. Presently, with the large-scale increase in the number of game ranches being developed throughout South Africa, landowners are keeping a wider range of species on their properties, primarily to cater for local and overseas hunters. This has resulted in an increasing number of farms keeping both wildebeest species together. Wildlife ranching may also lead to bush encroachment, which may facilitate hybridisation as Black Wildebeest prefer open plains (Brink 2005). This has led to several confirmed cases of hybridisation in some provinces, and the genetic integrity of especially the Black Wildebeest is being threatened by this activity.

While the extensive distribution that the Blue Wildebeest has in Africa means that this species is not similarly threatened, the genetic integrity of the South African subpopulations is at risk, a threat that could seriously impact on the credibility of the local hunting industry. It goes without saying that this would also have serious economic implications for the value of both these species. In order to remedy this situation, it is of utmost importance to impose stricter translocation regulations, on a national level, to address this serious problem.

Threats

Historically, the main threat to this species was hunting pressure, habitat loss, and periodic outbreak of disease (Vrahimis 2013). However, now that the species has recovered and numbers are increasing, the only significant threats are hybridisation with the Blue Wildebeest, which can occur when the two species are mixed unnaturally on fenced land (East 1999; Grobler et al. 2011); and loss of genetic diversity from existing in isolated fenced areas, leading to isolation from the wider gene pool of the species. The effects of fragmentation and

Table 3. Use and trade summary for the Black Wildebeest (*Connochaetes gnou*)

Category	Applicable?	Rationale	Proportion of total harvest	Trend
Subsistence use	No	-	-	-
Commercial use	Yes	Extensive use in trophy hunting, live animal sales and venison. Hides provide good quality leather.	All	Increasing
Harvest from wild population	Yes	Mostly live animal sales and culling for the venison market.	Minority	Increasing
Harvest from ranched population	Yes	Majority of harvesting is from extensive wildlife ranches.	Majority	Increasing
Harvest from captive population	No	-	-	-

isolation may be increased by small founder population size. Both threats require a Biodiversity Management Plan and the formulation of a metapopulation strategy.

Black and Blue Wildebeest are two distinct species and do not interbreed naturally because they occupy different habitats (for example, Black Wildebeest cannot reproduce in habitats with extensive tree cover), although there may have historically been hybrid zones with flux in movement patterns. Fossil evidence and historical records suggest that the two species have a long history of sympatric occurrence in central southern Africa (Brink et al. 1999; Skead 2011). It is likely that reproductive isolation would have been in effect following the speciation of Black Wildebeest and that it remained intact until extensive habitat loss in the central interior of southern Africa (Brink 2005). This started in the early 19th century, but the skeletal evidence for hybridisation is seen only very recently, since the 1990s. This may be linked to increased levels of habitat loss and disturbance as these two species have been forced into sustained sympatry which may have led to artificial inflation of hybridisation frequency. The occurrence of Black x Blue Wildebeest hybrids (cross-breeds) was first reported in KZN in the early sixties. First generation hybrids are easily identified, but the offspring of hybrids that have interbred with pure Black Wildebeest are difficult to recognize on appearance alone. Hybrids are fertile (Fabricius et al. 1988; Ackermann et al. 2010). In several cases it appears that a disruption of the normal demographic/social structure has been involved as well. An example of this was reported for Spioenkop Nature Reserve (Langley 1995). A morphometric analysis of skeletal materials housed in the Florisbad Quaternary Research Department, which were collected from Free State provincial nature reserves over the last decade, revealed a high incidence of skull and tarsus abnormalities which might be linked to historical incidences of hybridisation (J. Brink unpubl. data). Further data is required to corroborate the extent and severity of hybridisation in formally protected areas. The threat of hybridisation, however, can be managed. As long as hybridisation is not allowed to occur on national or provincial protected areas, and the establishment of private protected areas continues to counter the loss of habitat through agriculture and mining, this species should continue to prosper.

Current habitat trend: Declining in area and quality, mainly due to expanding agricultural activities, a rapid increase in opencast mining activities and bush encroachment. In the Free State, loss of natural vegetation during the period 1994–2009 amounted to 6% (7,871 km^2) of the surface area, while the period 2000–2009 experienced a 2.4% loss (N. Collins, unpubl. data), where the greatest loss occurred in the Grassland biome (6.4%). It remains to be evaluated whether the expansion of wildlife ranching is mitigating the net loss of pristine habitat. Climate change is also projected to be a threat as it may influence the extent and quality of grasslands across the Black Wildebeest range. Black Wildebeest are not particularly sensitive to drought as their natural range also includes the Karoo and many semi-arid areas, which indicates a high tolerance to drier conditions. The same applies to the quality of grasslands as they can survive in degraded grassland.

Conservation

In 2008, about 20% of the population occurred in protected areas and around 80% occurred on private farmland and conservancies (East 1999). The current situation is unknown and should be reassessed through a population survey. Formally protected areas demonstrate the potential for rapid population growth of Black Wildebeest. Conservationists should focus on adequately protecting these reserves and sustaining their habitat quality. The most immediate conservation intervention necessary is separating *C. taurinus* and *C. gnou* within the

Table 4. Possible net effects of wildlife ranching on the Black Wildebeest (*Connochaetes gnou*) and subsequent management recommendations

Net effect	Unknown
Data quality	Inferred
Rationale	While the private sector has significantly increased numbers, it may also be increasing the frequency of hybridisation between the two wildebeest species, as well as increasing population fragmentation through fencing.
Management recommendation	Impose stricter translocation regulations and protocols.

Table 5. Threats to the Black Wildebeest (*Connochaetes gnou*) 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	*8.2. Problematic native species/ diseases*: hybridisation with Blue Wildebeest.	Fabricius et al. 1988	Empirical	Local	Unknown
		Ackermann et al. 2010	Empirical	Regional	
		Grobler et al. 2011	Empirical	Regional	
2	*2.3.2 Livestock Farming & Ranching*: expansion of wildlife ranches leads to fragmented population and small subpopulation sizes. Current stress *2.3.1 Hybridisation*: with Blue Wildebeest.	Grobler et al. 2011	Indirect	Regional	Inferred to be increasing with expansion of wildlife ranching sector.
3	*2.1.3 Agro-industry farming*: historical grassland habitat loss from agricultural expansion. Current stresses *1.1 Ecosystem Conversion*, *1.3 Indirect Ecosystem Effects* and *2.3.5 Inbreeding*: grasslands converted and fragmented with low subpopulation size potentially causing inbreeding.	Driver et al. 2012	Indirect	National	Ongoing
4	*3.2 Mining and quarrying*: grassland habitat loss from mining expansion.	Driver et al. 2012	Indirect	National	Ongoing

natural range of *C. gnou*. This is especially important in formally protected areas, which should be maintained as source pools of genetically diverse Black Wildebeest.

The deliberate mixing of Blue and Black Wildebeest on any property would be a contravention of the SA National Biodiversity Act (Environmental Management: Biodiversity Act). Furthermore, it would also not be in line with the original IUCN guidelines for the reintroduction of species (IUCN SSC 2013). All provincial nature conservation agencies have taken action to avoid wildebeest hybridisation by attempting to keep the two species separate. The 2008 NEMBA (National Environmental Act) TOPS (Threatened or Protected Species) regulations, in terms of the National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004), prohibits the translocation of species to an extensive wildlife system where a possibility of transmitting disease or hybridisation exists. In the Free State, legislation exists for private landowners too. The Free State's Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA) Standard Conditions on Adequate Fencing Permits policy does not allow for the live relocation of any wildebeest from an area where both species are present because of possible hybridisation concerns, unless purity is proven by means of DNA testing. Culling of hybrid subpopulations has already occurred on Maria Moroka Nature Reserve in the Free State, Spioenkop Nature Reserve in KZN and Malolotja Nature Reserve in Swaziland and on some private properties such as Laohu Valley Reserve in the southwestern Free State.

Benfontein Game Reserve in the Northern Cape and SA Lombard Nature Reserve in the North West Province have pure subpopulations of Black Wildebeest (established in 1954 partly to protect Transvaal's last herds) that can re-stock potentially contaminated populations. Suikerbosrand Nature Reserve in Gauteng is also likely to contain a pure subpopulation. Groote Schuur Estate in the Western Cape also has a pure subpopulation that can be used to re-stock other reserves but this subpopulation is not counted in this assessment as it is outside the natural distribution range.

Recommendations for land managers and practitioners: The highest priority with regards to Black Wildebeest conservation is to develop genetic markers for determining hybrid Black Wildebeest populations. This work is well advanced at the University of the Free State and the National Zoological Gardens, but consensus on parameters for purity still need to be agreed on by stakeholders. Until these markers are in general use,

Table 6. Conservation interventions for the Black Wildebeest (*Connochaetes gnou*) 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	*5.2 Policies & Regulations*: strengthen regulations separating Black and Blue Wildebeest, especially within natural distribution range.	-	Anecdotal	-	-	Department of Environmental Affairs
2	*3.3.1 Species Re-introduction*: genetic testing of existing subpopulations and replacement of hybrid subpopulations with pure animals in formally protected areas.	-	Anecdotal	-	-	Provincial conservation authorities
3	*2.3 Habitat & Natural Process Restoration*: land managers should restore grassland habitats.	-	Anecdotal	-	-	Land managers

translocations from formally protected areas to private reserves and amongst private reserves should be continued (but not from private reserves to formally protected reserves). Standardised genetic testing and monitoring should be encouraged across all provinces and in Namibia. Live removal from areas that previously or currently house both species should be prohibited. Habitat management aimed at the preservation and maintenance of grasslands should be a priority to ensure population growth.

Research priorities: The determination of the genetic integrity of all populations and the resulting identification of "clean" subpopulations is a priority. Ongoing research aims to achieve this, to establish robust genetic markers and thresholds for purity to detect hybrids. Once this is done and all populations have been tested (by means of a standardised procedure), the replacement of hybrid populations should commence**.**

Therefore, priority research projects should be:

- Continued genetic studies to establish robust genetic markers to detect hybrids and develop a standardised genetic testing procedure.
- Determine the genetic integrity of all Black Wildebeest populations and identify pure populations using the standardised genetic testing procedure.
- Remove all hybrid populations and replace them with stock from pure populations. Also to consider the role of backcrossing in diluting the effects of hybridization.
- Impacts of the establishment of this species outside it former range should be ascertained.

Encouraged citizen actions:

- Submit photos of Black Wildebeest showing any abnormalities to your local conservation agency.
- Do not stock both Blue and Black Wildebeest on the same property.

Data Sources and Quality

Table 7. Information and interpretation qualifiers for the Black Wildebeest (Connochaetes gnou) assessment

Data sources	Field study (literature, unpublished)
Data quality (max)	Estimated
Data quality (min)	Suspected
Uncertainty resolution	Best estimate
Risk tolerance	Evidentiary

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Details of the methods used to make this assessment can be found in *Mammal Red List 2016: Introduction and Methodology.*