

South African Mammal CAMP 2002/3

Diceros bicornis minor

Vulnerable

Black Rhinoceros

This is a National Assessment

Taxonomy

1. Scientific Name / Ambiguities Authority (Date)

Diceros bicornis minor (Linnaeus, 1758)

LEVEL: Subspecies
 FAMILY: Rhinocerotidae
 ORDER: Perissodactyla
 CLASS: Mammalia

Common Names	Language
Faru	Swahili
Tshukudue Ntsho	Setswana
Black Rhino	English
Hook-lipped Rhinoceros	English
Swartrenoster	Afrikaans

3 subspecies currently found in South Africa. By far the most abundant is *Diceros bicornis minor* with isolated populations of *Diceros bicornis bicornis* and the extralimital *Diceros bicornis michaeli*.

2. Area of Assessment: South Africa

Provinces: KwaZulu-Natal
 Limpopo Province
 Mpumalanga
 North West Province

Historical and Current Extent

HISTORICAL DISTRIBUTION: Widespread occurring over a bigger range than white rhinoceros throughout Sub-Saharan Africa - See AfRSG action plan.

CURRENT DISTRIBUTION: Indigenous populations in a number of countries including SA, Malawi, Zimbabwe (other subspecies occur in Namibia, Tanzania, Kenya, Cameroon, Rwanda). There is no subspecies mixing within SA.

CURRENT GEOGRAPHIC EXTENT: Eastern lowveld in Limpopo and Mpumalanga and KZN lowveld habitats. In the Limpopo Province extends westwards to the North West Province. Distribution possibly predicted by rainfall isohyets. (500mm).

MIGRATION REGIONS: Non-migratory.

HABITAT: 2-Savanna, 2.1 all latitudes. - **NICHE:** Browser occurring in the bushveld habitats of Limpopo, Mpumalanga and KZN. Zululand thornveld and lowveld bushveld). Dense cover requirements and sufficient browse, permanent water.

3.-4. Occurrence and Occupancy

EXTENT OF OCCURRENCE: > 20,000 sq km. - **OCCURRENCE NOTES:** Although previously widely distributed the species now only exists in a few isolated pockets within its former range. The majority of these are on formal conservation areas although some black rhino are also held on private lands. The extent of occurrence is also for all three subspecies. The extent of occurrence for *D.b.bicornis* would be confined to that of the western portion of the country while that for *D.b.minor* would be the eastern portion. The *D.b.michaeli* only exist in relict extralimital populations in SA.

OCCUPANCY AREA: > 2,001 sq km. - **OCCUPANCY NOTES:** In 1999 it was estimated that the populations of Black Rhino in SA covered at least 32555 km². Due to the fragmented nature of their

distribution Black Rhino are confined to the larger national parks and reserves as well as some private properties. The average size of private properties which hold black rhinoceros is ± 16 500 ha which is larger than that for White Rhino. The black rhino subspecies are also confined to different areas.

5. Subpopulations

- NUMBER OF SUBPOPULATIONS: 2.
- A continuing decline in subpopulations? **No**
- Extreme fluctuations in Number of subpopulations? **No**

5b. Description of Subpopulations

Greater Kruger National Park		Area	km ²
GIS Latitude	Longitude		
Population	Low	400 High:	450
Habitat:			
Comments: The KNP population has been conservatively estimated at 230 individuals with a possible additional 49.			

KwaZulu-Natal Protected Areas		Area	1350	km ²
GIS Latitude	Longitude			
Population	463	Low	High	
Habitat:				
Comments: In 1999 the estimated size for rhinoceros in the Hluhluwe Umfolozi was 385 (recent estimates indicate that this population is declining). Mkuze was listed as a Key 2 population with 78. Extensive notes provided by Emslie on TDS with respect to Key populations as assessed by the AfRSG.				

6. Habitat status:

STATE OF HABITAT: Fragmented.
 - **PRIMARY CAUSE OF CHANGE:** Some increase in areas as rhinoceros relocated to additional suitable areas. Economic incentives to enter into game farming with rhinoceros for ecotourism. Possible loss of available habitat beyond current area of occupancy through agriculture and livestock ranching (specifically desertification in thicket habitats of the Eastern Cape).
CHANGES IN QUALITY: Stable.
NOTES ON QUALITY: Changes in habitat quality are variable and vary from region to region. Consolidation of areas into protected areas may improve quality of habitat
HABITAT NOTES: Favours small Acacias especially <1m, not hidden by grass, also Euphorbiaceae. Prefer dense cover with sufficient browse in terms of palatable forbs, and broadleaved shrubs. Intra and inter specific conflict between rhino may increase in areas where densities are too high

7. Threats:

Threat	now	future	under	rever-	have	rank
			stood	sible	ceased	
Habitat Loss (Human Induced)						
1.1. Agriculture						
Livestock ranching	Y	Y	N	N	N	4
Habitat modification by goats in the Eastern Cape (with specific reference to Andries Vosloo), may reduce areas available for inclusion and expansion of existing protected areas for rhino. Recovery of these habitats may not be possible.						
Direct Loss/Exploitation						
2.2. Trade						

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Illegal: Commodities N Y N N N 1
 Poaching levels currently sustainable and well policed but declines in capacity could lead to future increases in poaching incidents. Currently no sport hunting permitted.

Indirect Effects

3.3. Ecological imbalance

Competitors N Y N N N 3
 Potential conflict with elephant and conspecifics, particularly in high density and small areas. Local declines. Small areas run the risk of rhinoceros numbers exceeding ECC, which could affect habitat and population performance.

Pathogens/parasites N Y N N N 5
 Concern over the incidence of TB in black rhinoceros which could affect the major populations in the KNP

Intrinsic

7.4 Genetic

Inbreeding N N N N N 2
 Inbreeding is a potential threat in small isolated populations. Genetic analyses in HUP and Mkuze have shown high levels of heterozygosity.

Number of locations for serious threat: 0

Notes: Biggest threat remains illegal demand for rhino horn which feeds the poaching of the species. Adequate security and intensive monitoring can counter the effects of poaching incidents, but this is dependant on continued conservation effort and sufficient resources. There are localised concerns over habitat modification in the Eastern Cape.

8. Trade:

Trade described as domestic; commercial; international

Parts in Trade: Horn
 Live animal

Effects: The continued trade in rhino horn may have a detrimental effect on local populations (particularly elsewhere in Africa). On the other hand the free trade in live animals has seen black rhino established on private land in South Africa. There is a thriving commercial market for these rhinoceros to improve conservation efforts. The international trade has seen Black Rhino relocated to other areas in Africa where these species have previously been hunted out. A number of black rhinoceros have also been relocated to zoos across the world. There is no legal trade permitted in rhino horn which requires that animals are either poached or horn stocks raided. Unfortunately limited numbers of black rhino available result in low founder population sizes on private land; founder numbers should exceed 20 animals with an ECC of about 50. Currently no hunting.

9-10. Population: numbers and trends

9A. Length of generation: 14 years - breeding pairs:

	Total Pop.	Mature
9B. Total Population:	< 2,500	< 2,500
10A. Recent past trends:	Stable	Increasing
10B. Will population decline?	No	No
Rate of decline (past)	For	years
Predicted Rate (future)	For	years

Percentage of mature individuals in one subpopulation: 55

The current SA population of *D. b. minor* has been increasing since 1990s and has been relatively stable since 1997. There is no

predicted decline assuming that conservation areas are able to continue security and monitoring. In 1999 SA had 2 out of 5 Key 1 populations, 1 out of 6 Key 2 populations and 6 out of 18 Key 3 populations. AfRSG figures for 2001 indicate that the SA population of *D. b. minor* is an estimated 1094 (Emslie & Brookes 2001). In 1999 SA conserved 38 % of Africa's Black Rhino (all subspecies, 1074 / 2704). The SA Red List assessment may differ from the global assessment of CR as numbers have increased in this country in recent years.

11. Data Source

DATA SOURCE: Census Monitoring; Field Study; Literature; DATA QUALIFIER: Estimated; NOTES: The data are based on recent figures from private land (2001) but earlier estimates from protected areas (1998/99). Much of the information has previously been captured in the AfRSG reports. Level of uncertainty is highly variable with estimates from some areas well known and less known in others. Many populations have quality estimates based on Bayesian Mark Recapture RHINO analysis on ongoing ID monitoring.

12. Recent Field Studies

Hall-Martin & Castley 2001 - survey on private land
 Adcock - 2001 RMG carrying capacity models
 Knight et al 1998 - species management plan within SANParks
 Linklater, W. 2002 - dispersal success
 Pienaar, D. - KNP monitoring
 Emslie, R. - Ongoing AfRSG monitoring
 Du Preez, P., Hearn, M., and Kotze D. (listed by R. Emslie no further info)
 Wilson, S. 2002, Browse efficiency (AENP)

13. Status (Red List)

Assigned status	Red List version Ver 3.1
Global:	Criteria:
National: Vulnerable	Criteria: D1

- NOTES ON STATUS: The status has been assessed globally by the African Rhino red list authority as CR A2abc. However, the trends in SA differ to those globally and the population is increasing. Although the total numbers of mature individuals may be greater than 250 these are not all within a single subpopulation.

Previous status

Global: Critically Endangered	Date/ver. 2000
National: Vulnerable	Date/ver. 1986

CITES: Appendix I. - NATL RED DATA BOOK: Vulnerable (1986). OTHER LEGISLATION: Provincial ordinance, and CITES regulations.

PROTECTED AREA: Primarily but also on private land (recently increases in number of properties). - PROTECTED PLAN: See AfRSG Action Plan (Emslie and Brookes 1999).

Regional Assessment Data:

Regional population is % of global population	
Is the regional population isolated?	Yes
Migration between regional & neighbouring populations?	No
Barrier between regional and neighbouring populations?	Yes
Regional population enhanced by in-migrations?	No
Regional population stabilised by in-migration?	No
Is Regional population a sink?	No

Notes: Most national parks are fenced but future transfrontier parks may lead to movement of animals across borders. Isolated cases of small numbers of animals moving into the KNP from Zimbabwe.

14. Research Recommended

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Survey Studies; limiting factor research; epidemiology; - OTHER RESEARCH: Need to understand the impacts of other browsers in some areas as well as habitat changes in some donor populations. Ways to improve monitoring and estimation in the KNP. Studies on social behaviour and how to improve translocation success. Possible research into TB.

- Museum Records and Personal Observations
- Extent of Occurrence

15. Management Recommendations

Habitat management; wild population management; monitoring; sustainable utilisation; limiting factor; work in local communities; Investigate live sales see RMG black rhino conservation plan and AfRSG recommendations in Continental Action Plan.

16. Captive Breeding / Cultivation Recommendations

17. Facilities: National Zoo; 1 male
 Johannesburg Zoo; 1 male
 Potgietersrus; 2 males, 2 females, 1 unknown

Population	Males:	Females:	Unsexed:	Total:
In captivity	4	2	1	7

18. Level of Ex Situ Management Recommended

No ex situ programme recommended.

19. Techniques to Propagate the Taxon

Techniques known for this taxon or similar taxon.

20. General Comments

Black rhino in captivity suffer from build up of iron possibly related to captive diets.

21. Sources

Emslie, R.H. & Brooks, P.M. 1999.
 Hall-Martin, A.J. & Castley, J.G. 2003.
 African Rhino Specialist Group, IUCN / SSC.

22. Compilers

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