

WHITE AND BLACK RHINOCEROS AS GAME RANCH ANIMALS

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WHITE RHINOCEROS

DISTRIBUTION

Past : Rock engravings and skeletal remains indicate that the white rhinoceros occurred from the coastal lines of Morocco, Algeria and Tunisia through the Sahara to East and Southern Africa^a.

Present : The present distribution of the species is in two parts; the northern race, which is extinct except in Zaire (17 individuals in the Garamba National Park) and the southern race, south of the Zambezi. The strongholds of the white rhinoceros today are the Northern and Eastern Transvaal and Zululand^b.

STATUS

The first official count in 1929 showed 120 animals in Umfolozi and 30 on neighbouring property^b. The southern white rhinoceros population is today approximately 5 300 animals (Pienaar, pers. com., 1994).

HABITAT

In the Kruger National Park their preferred habitat is a moderately undulating granitoid plain with *Combretum zeyheri* woodland^b. White rhinoceros select mainly grassland types rather than particular grass species. During the wet season they prefer short grass and move to medium to long *Themeda* veld during the dry season, but at the end of the dry season when the *Themeda* veld is grazed down, they will move up hill slopes^a. They prefer open water for daily drinking and wallowing, with trees for shade during the heat of the day.

SOCIAL BEHAVIOUR

White rhinoceros occur in small groups which may consist of single territorial bulls, submissive bulls, cows with different age groups (usually accompanied by previous calves) and the suckling calf. The territorial bull will defend his territory (0,75-2,6km²) against other bulls, but will tolerate subsidiary bulls^a. The home range of a cow will overlap with those of other cows and with those of more than one bull. The sizes are determined by the availability of food and water. Sub-adult females will break the bond with their mother at seven years of age, when they reach sexual maturity.

BLACK RHINOCEROS

DISTRIBUTION

Past : The range covered the southern third of Africa and extended northwards between the eastern side of the Rift Valley and the East Coast of Africa^b. Further northwards the species inhabited a broad band of open woodlands stretching from the horn of Africa to the west coast south of the Sahara.

Present : The main populations occur in national parks in Zimbabwe, Namibia and South Africa.

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STATUS

The total black rhinoceros population in Africa dropped from 65 000 in 1970 to 2 475 in 1992. The total population in 1992 for South Africa was estimated as 819 animals (Pienaar, pers com).

HABITAT

Black rhinos occur in a wide range of habitats ranging from forest to savanna woodland and shrub and from sea level to 2700 m in East Africa⁸. They need adequate browse at a height of 1,5 m in the form of shrub and young trees. The animals are dependent on water.

SOCIAL BEHAVIOUR

The animals tend to be solitary, with the only stable bond, being that between mother and calf. This only lasts till the birth of the next calf. Although black rhinoceros have dung heaps, they are not territorial. Fighting may occur between males and occasionally between males and females. Home ranges overlap and the sizes vary with the density of the population and the vegetation. The population density ranges from 0,1/km² in Umfolozi to 0,7/km² in Hluhluwe².

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MORTALITIES⁷

Droughts

White and black rhinoceros are dependent on open water. During droughts artificial water sources must be supplied and lucerne can be fed at feeding spots as a supplement. Many black rhinos died during the drought in the Tsavo National Park, Kenya.

Parasites

Babesiosis, trypanosomosis and theileriosis are blood-borne diseases that may occur in rhinos under natural conditions. White rhinos that were not immune to trypanosomosis died in Zimbabwe when they were introduced into the Zambezi Valley where trypanosomosis occurs (A M Coetzee, pers. com., 1994).

Predators

Lions are responsible for killing black and white rhinos. Usually they kill young animals, but they can injure adult animals to such an extent that they must be destroyed. In Zululand spotted hyenas are responsible for killing black rhino calves. This phenomenon can be noticed by torn-off ears or partially tailless animals².

Poisonings

A population crash occurred in Hluhluwe where 46 black rhinos died. All the animals, except two, were found within 500m of water. The clinical symptom was partial paralysis of the forelegs with no pathological findings². The cause of the deaths may be due to botulism and it is therefore important to keep water points clean and remove carcasses from drinking points. Burning of carcasses, vaccination of animals and licks during the dry season are recommended on small ranches.

Table 1: Reproduction data

Characteristic	White Rhinoceros	Black Rhinoceros
Sexual maturity		
Males	8 years	8 years
Females	6 years	6 years
Oestrus cycle	27-44 days	35 days (average)
Gestation period	484 days	454 days
Calving interval	2,63 years (Umfoloji) 2,70 years (Kruger Park) 2,85 years (Matopos) 3,45 years (Kyle)	63 months (Hluhluwe) 42 months (Corridor) 36 months (Umfoloji) 48 months (Ngorongoro) 46 months (Olduvai) 40 months (Tsavo) 48 months (Amboseli) 26 months (Addo)
Suckling period	12-18 months	19 months
Maximum age	40 years	38 years
Reproductive seasonality	Peaks March and July (throughout year)	Peaks Oct-Nov and Apr-July (throughout year)
Population growth rate	-	11% per year (Umfoloji) 5,3% per year (Hluhluwe)
Data from	Owen-Smith, 1988	Hitchins & Anderson, 1983

Natural mortalities

Fighting between dominant bulls of the same species may be responsible for about 50% of mortalities. Intra-species fighting (white rhino with white rhino or black rhino with black rhino), as well as inter-species fighting (between rhino and elephant or between black and white rhino) may occur. The sharp point of the horn can be removed to prevent penetration wounds. When young animals are introduced to properties where white rhinos already occur, sub-adults may be killed by the resident rhinos.

Other causes are animals stuck in mud wallows, struck by lightning, drowned in strong-flowing rivers and falling from kranses. The latter may be due to the use of Hyoscine during capture operations, which causes blurred vision.

Unnatural mortalities

Poaching for the horn is the major threat to the rhino population in Africa. The horn is used for Chinese carved ceremonial cups, Yemeni dagger handles (jambias) and in China for medicinal purposes³. Li Shin Chen wrote in the sixteenth century that rhino horn would cure the following diseases and ailments: snake bite, hallucinations, typhoid, headache, carbuncles, boils, fever,

purposes³. Li Shin Chen wrote in the sixteenth century that rhino horn would cure the following diseases and ailments: snake bite, hallucinations, typhoid, headache, carbuncles, boils, fever, vomition and food poisoning. Chen's 50 volume work including 12 000 medicinal recipes, is considered the most outstanding study of Chinese pharmacology. The world rhino population supports a trade of eight tons of horn per annum (2 580 rhino deaths).

SCREENING OF SUITABLE RANCHES¹

- The habitat must be suitable
- Areas of less than 10 000ha must have physical boundaries preventing dispersion
- Poaching threat must be controlled
- No deproclamation of land
- The land-use must be compatible with the conservation of the species
- The potential of population increase must be higher in the recipient than in the donor area
- The potential effective founder population must consist of at least 10 rhinoceros
- The number of founders must not exceed 50% of the ecological carrying capacity
- The ecological carrying capacity must be at least 20 rhinoceros
- If previous introductions were unsuccessful, causes must be rectified
- Introductions must not adversely affect other Red Data Book species
- Veterinary clearance must be granted
- Predation must be limited
- Genetic inbreeding must be limited
- Disease threat to small populations must be limited.

INTRODUCTION TECHNIQUES

White rhinoceros tend not to eat in bomas directly after capture, which complicates boma training. During 1992 we captured 30 white rhinoceros at Sabie-Sand with the Thaba-manzi capture unit. The animals were captured and introduced directly into the veld on a long-acting tranquillizer, Trilafon (Perphenazine enanthate) had been administered. Sub-adult animals received 150 mg, adult females 200 mg and adult bulls 250 mg of Trilafon during capture. Animals were released on properties with electrified fences, some of which were smaller than 3 000 ha, which already had other white rhinoceros. The introduction of rhinoceros directly into the veld with use of Trilafon, seemed to be successful because no mortalities occurred and not a single animal broke out of the ranches. This method saves the farmer boma construction costs, feeding costs or losses due to mortalities.

Age and sex ratios

The ratio under natural conditions is 1 bull : 1 cow. On game ranches fewer males can be introduced to eliminate fighting between bulls. At least two sexually matured bulls must be introduced to allow a replacement if the one bull dies.

Minimum herd size

The introduction time must be as short as possible to prevent fighting between animals. A minimum of six animals, with the ideal of 8 (3 bulls : 5 cows) is recommended during one introduction programme.

Carrying capacity

The carrying capacity for white rhinoceros varies from 1 to 4 animals per 100 ha, and for Umfolozi 3,2 animals per 100 ha. The carrying capacity for black rhino is 0,7 animals per 100 ha for Hluhluwe (highest in Africa) and 0,1 animal per 100 ha in Umfolozi². Densities in Zimbabwe vary between 0,1-0,3 black rhinos per 100 ha.

Time of the year

Rhino must be released at the end of the rainy season so that animals can find water and food easily, however, it may still be too warm to capture animals.

Fences

Good standard electrified fences are important to keep animals in an area, especially introduced from veld to veld.

UTILIZATION OF ANIMALS

Breeding animals extensively

Currently the prices of white rhinoceros vary from R25 000 - R35 000 and for black rhinoceros R150 000 - R200 000 per animal. These prices are high because of the hunting value of white rhinoceros and the scarcity of the black rhinoceros. Rhino breeders are therefore important for the restocking of other ranches. It is therefore a question of supply and demand.

Breeding animals intensively

Especially black rhinoceros can be bred intensively because of their high financial value, ability to adapt in bomas, good security to prevent poaching and to prevent natural mortalities. Figure 1 shows a breeding boma for rhinos, with one bull and four cows. When the cow is in oestrus, she will approach the bull and they can be introduced during the oestrus period of 2-3 days. Calves born in captivity will be tamer and can be weaned at an earlier age. The calving interval can be reduced and the total number of calves per unit time can be increased. The disadvantages of this system are that it requires a high capital outlay and a high standard of management.

Trophy hunting

Hunters will currently pay R75 000 to bag a trophy white rhinoceros bull. The demand at the Safari Club International in 1994 was 50 animals. Utilizing 1% of the RSA white rhinoceros population generates R3,75 million in foreign currency. The principle is to put a dollar sign on the head of the animal and the animal will conserve itself. The practice of hunting endangered animals is confusing and ethically not acceptable to the public. Conservation bodies ask for money from the public to conserve animals on the one hand, while on the other hand, hunters shoot these animals.

Farming rhino for their horns

This involves the capture of the animals and removing the horn painlessly without killing the animal. The horn regrows and will provide a sustainable income. Indications are that, as a land use, returns might be as high as US \$50/ha, which should be compared with cattle farming at approximately US \$5/ha⁷. The question can be asked, why shear the wool of sheep and sell it but not the horn of a rhino?

POLITICS IN RHINO CONSERVATION

The problem with conservation in Africa is that First World laws are applied to Third World standards. Conservation bodies have to apply a combination of strategies to save the rhino from extinction.

Anti-poaching strategies

- Higher and stricter law enforcement regulations
- Larger populations should be split into smaller groups on smaller reserves with better anti-poaching strategies, e.g. 1 scout/2000 ha (small reserves) versus 1 scout/5000 ha (larger reserves). Don't put all your eggs in one basket
- Electrify fences of smaller reserves to prevent animals breaking out and poachers coming in
- Pay local people a higher fee as informants of poaching, that what they would receive from the poacher
- Supply jobs to local people (convert the poacher into a scout).

Changing consumers' attitudes

- Replace rhino horn with other biological products, e.g. Saiga antelope horns as surrogate in Japan and buffalo horn in Yemen
- Poisoning of the horn with 1080 to force people to use other products (drastic).

Management of populations

- Breed animals under intensive conditions
- Dehorn animals
- Rotate bulls regularly among small reserves to prevent inbreeding
- Predator control on game ranches if necessary
- Legalise auctions where consumers or the middle-man can buy the product.

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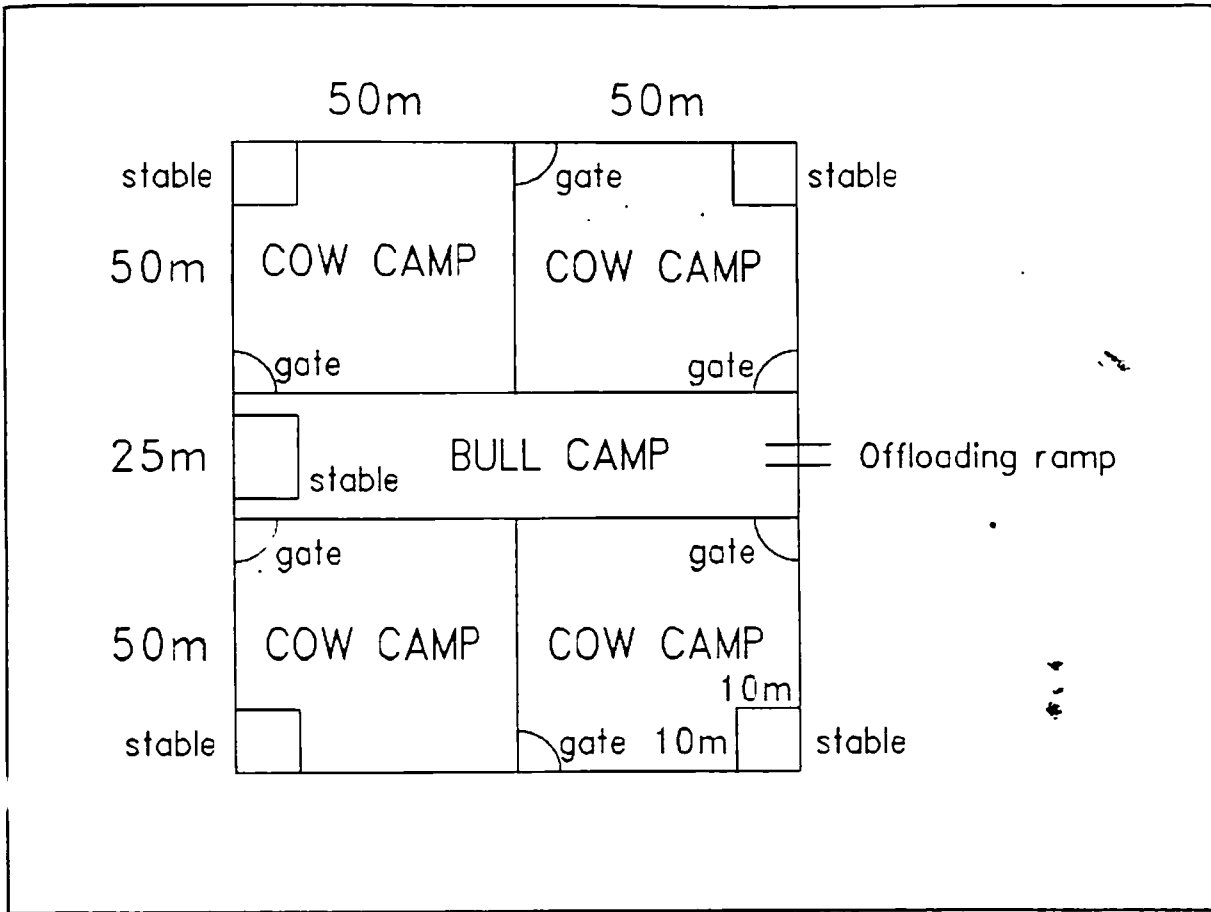


Figure 1: Boma for intensive breeding of Rhinoceros

CHAIN	CONSUMER	MIDDLEMAN	POACHER	RHINOCEROS	CONSERVATIONISTS
STRATEGIES	Use products as cultural customs	Stockpile horn Shoot dehorned rhino	Keep his family alive	SURVIVE	Anti-poaching Breeding Research Education public
PROBLEMS	Difficult change cultural customs	Sources depleted	No jobs	Face extinction	Lack funding
DRASTIC MEASURES	Poisoning of horn with 1080	Jail smugglers	Shoot poachers	Dehorn rhinos	Split animals smaller populations on smaller properties where they can be protected
PROPOSED SOLUTIONS	Demand product	Can buy legal product	Supply jobs	Supply product	Change laws

AUCTION

Fig 2: THE SOLUTION OF RHINOCEROS CONSERVATION