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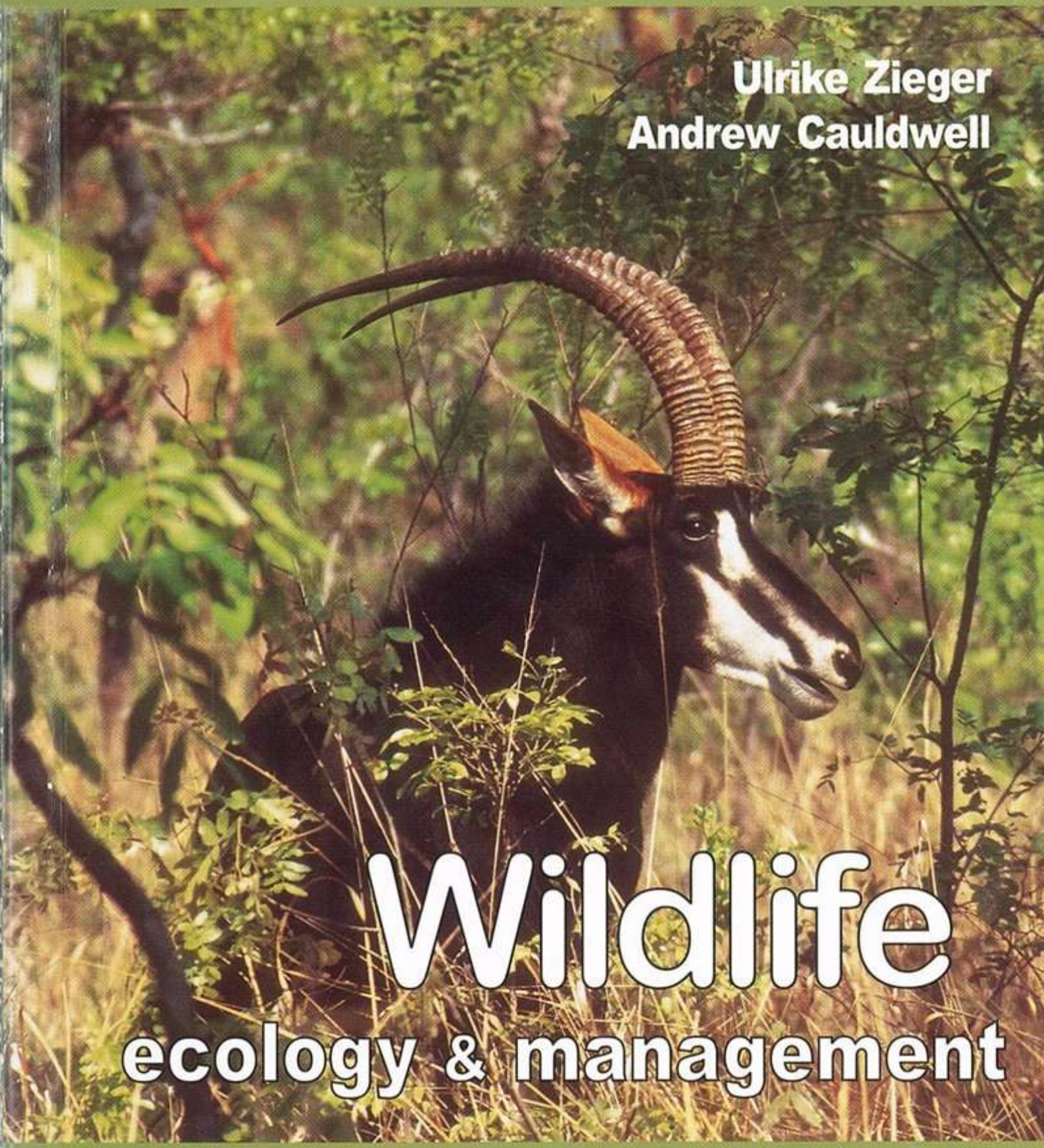

Wildlife
ecology & management

Practical aspects for
Zambian
game ranches

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Front cover: Sable Antelope, Mtendere Game Ranch, Chibombo, Zambia

Back: Greater Kudu, Umfolozi Game Reserve, South Africa

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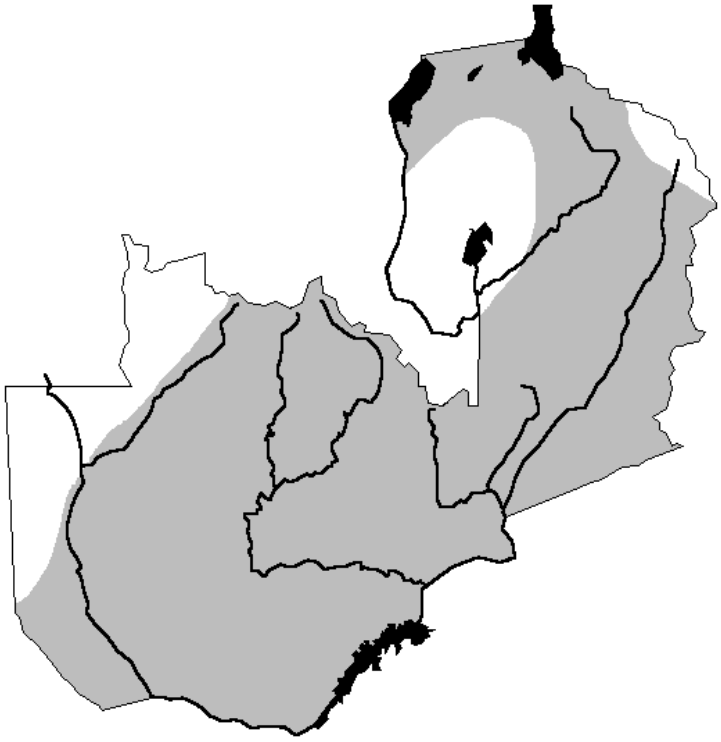
2.3 ODD-TOED UNGULATES

Black Rhinoceros *Diceros bicornis*

Habitat: Versatile, dependant on availability of shrubs and short trees
Social structure: Solitary
Food: Browse
Age to sexual maturity, male: 8 years
Age to sexual maturity, female: 6 years
Gestation: 15 months
Age at first calf: 7 to 8 years
Intercalving period: 2½ to 3 years
Calving: All year
Birth mass: 40 kg
Adult body mass: 800 to 1 000 kg
Mean mass of individual: 818 kg
LSU equivalent: 1.65
Longevity: 35 to 40 years



Taxonomy

Currently, four subspecies are recognised in Africa, of which one occurs in Zambia: *Diceros bicornis minor.* It was formerly widespread in Zambia except in the western and montane areas.

Ecology

Black rhino occur in a variety of habitats such as forests, riverine woodlands and savannas as long as an abundance of shrubs or low growing trees up to a height of 2 m is available. Water for drinking and bathing is so essential that black rhino seldom move more than 10 km away from it. They avoid tall grasses, preferring to feed in heavily grazed areas. The black rhino is one of the few animals that is favoured by early stages of bush encroachment.

Black rhino live solitarily, except for a cow and her calf. Small, temporary associations can be formed. Black rhino are not territorial, but occupy home ranges. Fighting can, however, occur to establish dominance when their density is high. Natural population densities of 0.01 to 0.7 per km² have been recorded. Population densities in the Luangwa and Kafue National Parks were between 0.2 to 0.3 rhino/km². The size of their range varies depending on the suitability of the habitat. In favourable rhino habitat, such as in the Hluhluwe Game Reserve,

South Africa, ranges of 5 to 30 km² have been recorded, whereas in the Kaokoveld in Namibia the range size was estimated to be 500 km².

Black rhino are browsers that feed on a wide variety of species. The preferred feeding height is from 0.5 to 1.2 m. High branches are pulled down and broken, and sometimes trees are pushed over. Besides Acacias, *Dicrostachys cinerea* (sickle bush), *Diplorhynchus condylocarpon* (mtowa), *Ficus* (figs) and *Euphorbia* species are among their preferred food plants. Thorns, high tannin contents and even Euphorbia latex are well tolerated. The vegetation on termite mounds is well utilised, provided it is accessible and slopes are not too steep. Black rhino surprisingly tend to avoid *Acacia nigrescens* (knob thorn) and *Ziziphus* (buffalo thorn) species, which are generally sought after by other browsers. They will also feed to a large extent on forbs depending upon availability. They show a preference for burnt areas, with an apparent liking for freshly scorched vegetation. They are, however, susceptible to malnutrition and starvation under drought conditions. The East African subspecies (*D. b. michaeli*) is known to include up to 30 % grass in its diet.

Black rhino can breed throughout the year, but calving may peak during the rainy season. Bulls in attendance of a female in oestrus may fight each other vigorously, inflicting fatal wounds. A calf suckles for up to a year, and is rejected by the cow during her next pregnancy or after giving birth to a new calf. Mothers tend to become irritable and aggressive when they feel threatened, and defend their calves viciously. Black rhino are generally potentially dangerous to humans, as they can become bad-tempered and aggressive when harassed.

Comment

Black Rhino are among the most valuable African animals. Having become critically endangered during the 1970s and 1980s due to poaching, great efforts have since been put into their conservation. This has lead to a steady increase in their numbers, and there are currently approximately 3 000 individuals in the southern African subregion, mostly in Zimbabwe, South Africa and Namibia. Black rhino would be an invaluable drawcard for tourists. Landowners prepared to become custodians of these animals should be encouraged, so that the conservation status of black rhino in Zambia can be improved. In Zimbabwe, black rhino have been successfully translocated from State to private land since the 1980s to develop breeding nuclei outside of Parks and Wildlife Estates. In that country, private landowners did not purchase the animals, but have become guardians with restricted user rights. The following management problems have been encountered there during these translocations:

- Capture at a time of year when browse resources were limited (mid to late winter); animals were already weakened, worsening the adjustment problems to a new environment;

- Poor boma management, particularly concerning provision of a sufficient quantity and diversity of browse;
- Serious injuries of the nasal bones due to bashing crates and boma walls when animals were not dehorned or adequately tranquillised;
- Creosote poisoning from freshly treated poles;
- Difficulties in habitat adjustment, particularly in the Zimbabwe Midlands;
- Fights with fatal outcomes when bulls were released into an area where males had already established their home ranges;
- Inadequate fencing and escapes;
- Overestimating the carrying capacity for black rhino;
- Inadequate security in some areas.

Habitat management is crucial to successful keeping of black rhino in smaller areas. These animals show a strong selection for bushes up to 1 m tall, whereas those plants greater than 2 m of the same species tend to be avoided. Scattered low scrub with short grass represents ideal habitat. Areas with a grass height above 75 cm tend to be avoided. Regular cool burning, with occasional intense fires to prevent the woody vegetation from growing beyond reach is essential to maintain their habitat. Rhino will consume only 1 to 3 % of the woody vegetation under optimal stocking levels, and therefore have a low impact on the vegetation. The vegetation must rather be actively managed to suit their requirements. Their wide and unusual food plant selection results in minimal competition with other browsing game at normal population densities. Moderate to high elephant densities are considered to have a favourable impact upon rhino habitat, however, excessive elephant populations are detrimental. High numbers of bulk-grazing game are an advantage to keep the grass short, however, this will reduce the ability to apply regular fires.

Black rhino usually adapt well to a holding boma (Photo: Kruger National Park)

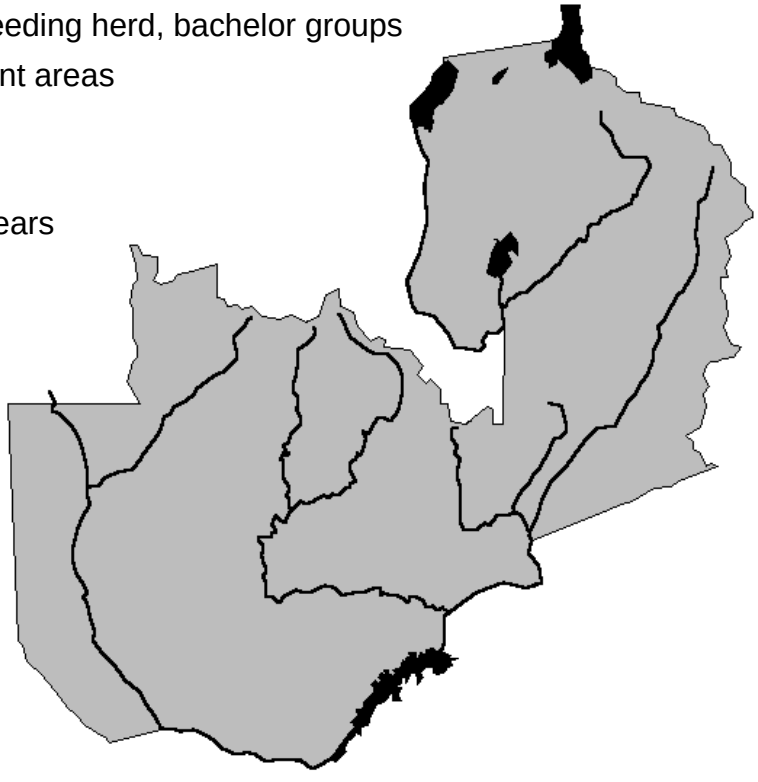
Stocking densities for black rhino are often over-estimated. A maximum stocking density of 1 rhino per 10 km² is recommended in Zimbabwe and South Africa, but this is reduced to 1 rhino per 15 km² in the Zimbabwe Midlands, where miombo vegetation on poor soils is widespread. Population growth rates of 7 to 10 % can occur in favourable habitat, but growth was limited to 3 % in the miombo regions of Zimbabwe.

White Rhinoceros

According to Ansell (1978), white rhino have never been definitely recorded in Zambia. There are some indications that they may have occurred between the Zambezi and Mashi rivers in the southwest of the country. Nevertheless, several white rhino were introduced by the NPWS in the 1960s. Currently several individuals are kept in the Zoological Gardens at Livingstone.

Burchell's Zebra *Equus burchelli*

Habitat: Open woodland, grassland, dambo and dambo-woodland ecotone, water dependent
Social structure: Dominant male with breeding herd, bachelor groups
Food: Grass, bulk feeder, attracted to burnt areas
Age to sexual maturity, male: 2 years
Age to sexual maturity, female: 2 years
Age at male leaving natal herd: 1 to 2 years
Gestation: 360 days
Age at first foal: 3 to 4 years
Foaling interval: 13+ months
Age at weaning: 11 months
Mating: Dec. to Feb.
Foaling: Dec. to Feb.
Body mass, adult: 320 kg
Carcass mass, adult male: 170 kg
Mean mass of individual: 200 kg
LSU equivalent: 0.75
Longevity: 22 years



Taxonomy

Seven subspecies of *Equus burchelli* occur in Africa, two of which are recognised within Zambia. They are *Equus burchelli zambeziensis*, west of the Muchinga Escarpment, and *Equus burchelli crawshaii*, east of the Muchinga Escarpment and in the Luangwa Valley.