CHAPTER 2

STUDY AREA

2.1 Reserve location and history

This study was conducted on Welgevonden Private Game Reserve (WPGR), situated in the Waterberg region of the Northern Province, South Africa. The reserve is located at 24° 10' 03" - 24° 25' 03" S and 27° 45' 07" - 27° 56' 01" E, and shares 13.8 km of its western boundary fence with Marakele National Park. WPGR, proclaimed early in 1993, is a group of 15 old farms (both cattle and crop farms) and has a total surface area of 334.3 km^2. Included in this surface area are two new farms which were incorporated into the main reserve between August and October 1998. This new portion of land extends from the vegetation type of the main reserve (Waterberg Moist Mountain Bushveld (Low & Rebelo 1996)) into a new vegetation type (Mixed Bushveld (Low & Rebelo 1996)). WPGR has 38 (of the proposed 62) lodges, which are fully operational.

2.2 Climate

This region has distinct wet and dry seasons from October to March and April to September respectively. The summers are hot and wet, and the winters are cold and dry. The mean annual rainfall was recorded as 670 mm by Elandshoek Weather Station. The mean annual rainfall as recorded by Vaalwater Weather Station was 613 mm. Climatic data from the Vaalwater Weather Station (Station number: 0632/077LO; Latitude 24° 17' S; Longitude 28° 03' E; Altitude: 1215m above sea level) was obtained from the weather bureau. This weather station lies approximately 10 km east of WPGR. The average maximum temperature is 26.5°C and the average minimum temperature is 11°C. The mean temperature is 18.8°C. An average of 91.7% of years (from 1979 to 1998) experienced a moderate frost, with mean frost season length being 51 days.

2.3 Geology and soils

The Waterberg Group consists chiefly of a succession of course clastic sedimentary rock, which shows two upward-fining sequences (Callaghan 1987). The Waterberg strata form rugged topography, and some striking krantzes. Topography is less well developed, however, in a lower portion of the sequence in which there are more shales and also more felspathic sandstones (Truswell 1970). This semi-mountainous terrain is derived from Waterberg sandstone and is therefore predominantly sandy (mean sand content 97.2%; SEM=0.039), with a very small percentage of clay (mean clay content 2.45%; SEM=0.029) (Frost & Peres unpubl.). The soil composition of the Waterberg plateau and its foothills, is mostly yellow and grey fersiallitic sands and loams derived from weathered sandstones and conglomerates (Harmse 1978).

2.4 Vegetation

Acocks (1988) classifies the Waterberg region into two main vegetation types; Sourish Mixed Bushveld on the gentle slopes to the mountains, and Sour Bushveld which forms the open savanna and occupies the largest part of the bushveld mountains of the Waterberg. According to Acocks (1988) the following are examples of the species which can be found in the Sourish Mixed Bushveld: *Acacia caffra, Grewia spp., Pappea capensis, Dichrostachys cinerea, Dombeya rotundifolia, Combretum zeyheri, Ziziphus mucronata* and *Burkea africana.* In the less rocky parts of the region, the Sour Bushveld is characterised by species such as: *Faurea saligna, Englerophytum magalismontanum, Lannea discolor, Vangueria infausta, Gardenia volkensii* and *Pachystigma triflorum* to name a few.

Low and Rebelo (1996) offer a more recent perspective on the vegetation types of the Waterberg. According to their vegetation map, the reserve spans two vegetation types namely: Waterberg Moist Mountain Bushveld and Mixed Bushveld. Both these vegetation types are categorised under the Savanna Biome, which is the largest biome in southern Africa and occupies one-third of the area of South Africa itself (Low & Rebelo 1996). Many of the woody plant species which comprise these two vegetation types are the same as those given by Acocks (1988) with a few more examples provided by Low and Rebelo (1996): Waterberg Moist Mountain Bushveld (also known as Sour Bushveld (Acocks 1988)), includes *Terminalia sericea, Protea caffra, Diplorhynchus condylocarpon, Pseudolachnostylis maprouneifolia, Grewia flavescens, Ochna pulchra* and more. In Mixed Bushveld (Acocks (1988) referred to this as Mixed Bushveld and Sourish Mixed Bushveld), the following species are commonly found: *Combretum apiculatum* (where the soils are shallow), *Grewia flava and Peltophorum africanum* as well as all the other species mentioned by Acocks (1988) for this vegetation type, many occurring on deeper and more sandy soils.

2.4.1 Habitats types on WPGR

An official vegetation map is not yet available since the vegetation survey is still in progress. An habitat map was compiled using aerial photographs and a GIS program (Arcview). For the purpose of this project three main habitat types were used during the collection of data namely: plateau, hillslope and valley bottom (Fig. 2.1). These habitat types were defined on the basis of physical landscape features, as well as prominent vegetation structure and distinguishing woody species present.

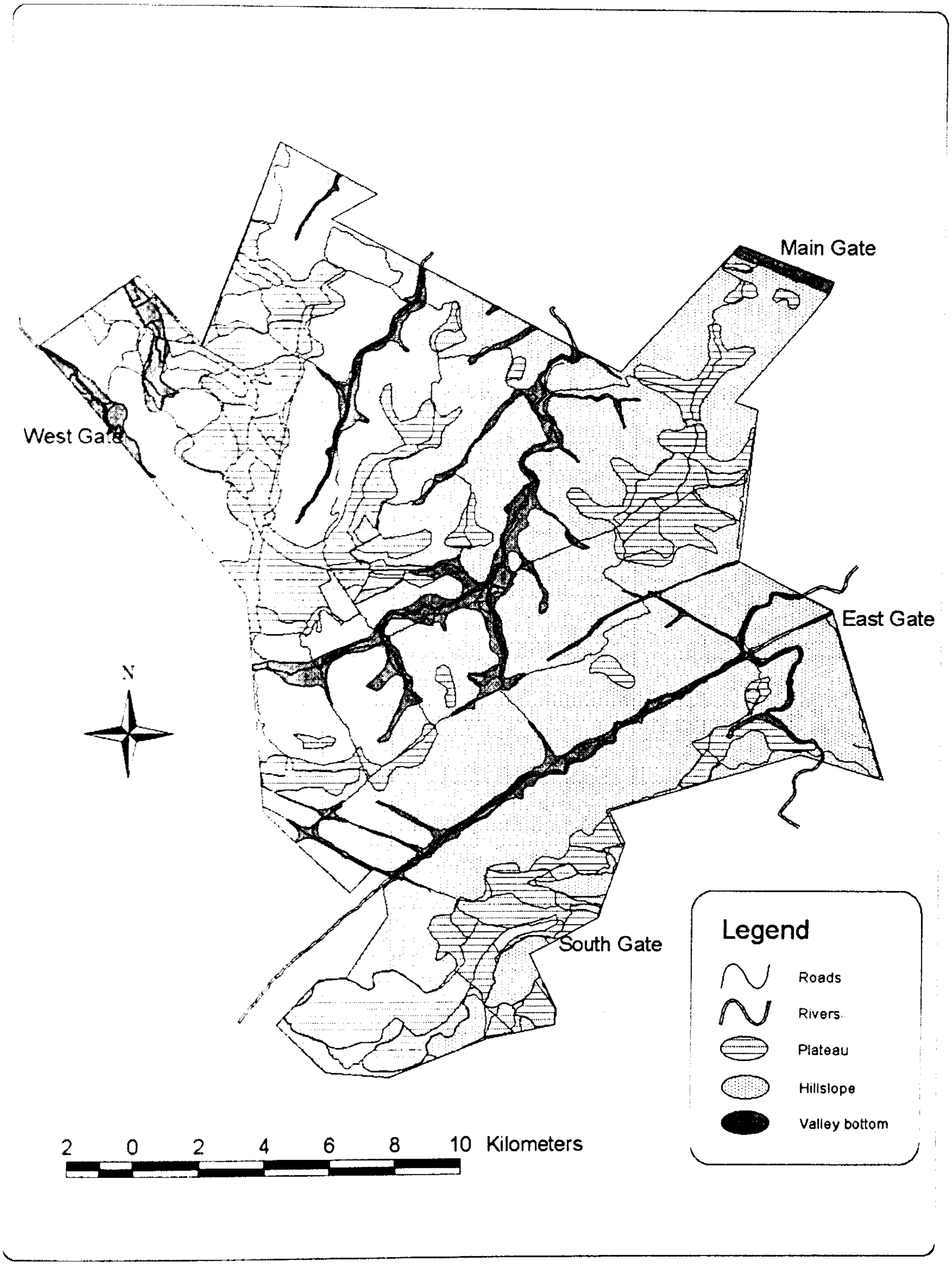

Fig. 2.1. Map of Welgevonden Private Game Reserve showing habitat types, roads & rivers.

2.5 Elephant relocation details

During May 1994, 50 elephants were reintroduced to WPGR from the Kruger National Park. The sex ratio composition of this population was 21 males (two adults, eight subadults, ten juveniles and one calf) and 29 females (seventeen adults, six subadults and six juveniles).

Between 1994 and 1999, eight elephants died and three calves were bom during the first few months of introduction (duToit unpubl.). A game census was conducted on Welgevonden during August 1999. The total elephant count was 64. Since then, one young bull died when it slipped into an erosion gully, one calf (± six months old) was found dead and at least one birth has been reported. Assuming a birth rate of four calves per year, a maximum of 72 elephants can be present on WPGR. This birth rate was calculated based on the number of elephants introduced in 1994 and the number of elephants counted at the time of the September 2001 game count (70 elephants).

2.6 References

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