CHAPTER 5

PLANT COMMUNITIES OF THE BLOUBERG NATURE RESERVE

Introduction

In an overview of the vegetation of the Soutpansberg Conservancy and the Blouberg Nature Reserve (Chapter 4), three Major Vegetation Types were identified within the BNR, namely the *Eragrostis lehmanniana* var. *lehmanniana–Sclerocarya birrea* subsp. *caffra* BNR Northern Plains Bushveld, the *Euclea divinorum–Acacia tortilis* BNR Southern Plains Bushveld and the *Englerophytum magalismontanum–Combretum molle* BNR Mountain Bushveld. The classification of these three Major Vegetation Types is addressed in this chapter.

Only a few vegetation studies have been done on savannas of the Blouberg, which includes a B.Sc. Honours project by Scholes (1978) and a management report written by Klopper (1988) for the BNR. The unpublished format of these studies makes them inaccessible to the scientific community, reducing their value as research projects. Klopper did however collect valuable field data on the vegetation of the BNR, which includes the north-eastern lower lying sections of the Blouberg Mountain Range. However, Klopper failed to complete the synthetic phase of this phytosociological study, leaving the data unprocessed and ecologically un-interpreted. It was decided to analyze this valuable set of detailed field data in order to propose a first phytosociological approximation of the BNR vegetation.

The vegetation of the BNR is relatively homogeneous compared to the vegetation of the higher lying western sections of the Blouberg and the topographically diverse Soutpansberg Conservancy. Nevertheless, Van Rooyen & Bredenkamp (1996) and Van Wyk & Smith (2001) regarded the vegetation of this area as unique and of very high conservation value. Due to a lack of sound phytosociological data or detailed vegetation descriptions of the Blouberg, Van Rooyen & Bredenkamp (1996) were forced to lump the area's vegetation under the broad term of Soutpansberg Arid Mountain Bushveld. Acocks (1953) recognised four different Veld Types for the

surrounding region and described them as Arid Sweet Bushveld, Mixed Bushveld, Sourish Mixed Bushveld and Sour Bushveld. Most of these Veld Types were described as heterogeneous (Acocks 1953), comprising of many sub–communities with varying agricultural and production potentials. In addition to the savanna vegetation of the area, patches of Afromontane Forest (Lubke & McKenzie 1996) and high altitude grasslands (Van Jaarsveld & Hardy 1991) occur within the Blouberg, west of the BNR. These grasslands along the summits and crests of the Blouberg contain numerous Fynbos floristic elements (Wyk & Smith 2001). Due to major gaps in the available vegetation data, no attempt has yet been made to synthesize, classify and to describe the plant communities of this region.

Vegetation classification

An analysis of the BNR vegetation data resulted in the identification of three Major Vegetation Types (Table 1, Chapter 4) and eight plant communities (Table 2, 3 and 4). A dendrogram (Fig. 4) of the hierarchical classification was produced using the software package TWINSPAN (Hill 1979a). A Detrended Correspondence Analysis ordination with the software package DECORANA (Hill 1979b) produced some weak clustering of relevés, representing the Major Vegetation Types of the BNR. Some trends in environmental gradients were correlated with the strongest ordination axes. No distinct clusters representing any of the individual plant communities of the BNR was observed.

Due to the artificial boundaries of the relatively small BNR, the plant communities described from the BNR do not represent the total diversity in vegetation of the entire Blouberg Mountain Range. Werger (1974), Coetzee (1983), and Du Plessis (2001) warned against the premature syntaxonomic classification and formal description of vegetation from localised studies that may not be representative of the full diversity in vegetation from the surrounding landscapes. Such classifications may lead to the lumping of syntaxa that may otherwise belong to separate hierarchical divisions. For this reason, it was decided not to attach formal syntaxonomical names to the plant communities described for the BNR.

Strong emphasis was placed on long-lived perennial species for the purpose of community description. These species were specifically chosen to ensure relatively

long-term predictability regarding effective plant community identification by future fieldworkers and managers. Due to the fleeting existence and unpredictable appearance of annual and weak perennial species within communities of arid and semi-arid ecosystems, it was decided to treat such species as the more temporary and fluctuating component within the vegetation of these event-driven systems (Westoby *et al.* 1989a, b). The informal classification of the vegetation of the BNR is as follows:

1. *Eragrostis lehmanniana* var. *lehmanniana–Sclerocarya birrea* subsp. *caffra* BNR Northern Plains Bushveld Major Vegetation Type
   1.1 *Spirostachys africana–Sclerocarya birrea* subsp. *caffra* community
   1.2 *Solanum panduriforme–Sclerocarya birrea* subsp. *caffra* community
   1.3 *Terminalia prunioides–Sclerocarya birrea* subsp. *caffra* community

2. *Euclea divinorum–Acacia tortilis* BNR Southern Plains Bushveld Major Vegetation Type
   2.1 *Acacia nilotica–Acacia tortilis* community
   2.2 *Combretum apiculatum–Acacia tortilis* community
   2.3 *Rhus leptodictya–Acacia tortilis* community

3. *Englerophytum magalismontanum–Combretum molle* BNR Mountain Bushveld Major Vegetation Type
   3.1 *Pseudolachnostylis maprouneifolia–Combretum molle* community
   3.2 *Hyperacanthus amoenus–Combretum molle* community

Table 2 Phytosociological table of the plant communities of the *Eragrostis lehmanniana* var. *lehmanniana–Sclerocarya birrea* subsp. *caffra* BNR Northern Plains Bushveld Major Vegetation Type

Community no.	**1**	**2**	**3**
Releve number	4 4 4 4 4 4 4 4 4 4	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4 4 4 4 4 4 4 4 4
	8 8 7 8 8 8 8 9 9 9	5 7 7 4 6 4 4 4 4 5 5 5 6 4 4 6 4 3	1 0 1 0 1 1 1 3
	5 6 9 0 2 3 4 0 1 2	0 2 7 8 4 2 3 4 7 1 2 3 3 1 9 1 0 7	3 6 2 7 4 5 6 0
Diagnostic species of the *Spirostachys africana–Sclerocarya birrea* subsp. *caffra* community			
Species Group A			
Hibiscus calyphyllus	1 b b 1 b b 1 b 3	1 1 1 1	1 1 1
Spirostachys africana	1 b b b 3 b b 1		
Dactyloctenium aegyptium	b 1 1 1 4 1 1	b 1 b	
Arctotis species	3 1 b 1 b 4 3	1 b 1 1 1	1 1
Eragrostis biflora	1 1 b 4 1 3	1 b	b
Triumfetta pentandra	1 1 1 b 1 1		
Phyllanthus pinnatus	3 5 b 3	3	
Euphorbia crotonoides	1 b 1 b		
Secamone parvifolia	1 1 1 b	1	1 1
Grewia flava	3 1 3 3		4
Ochna inermis	b 1 b 1		
Spermacoce senensis	1 1 1 1	1	
Corchorus species	1 1 1 1	1 1 1 1	1 1
Chamaecrista biensis	b 1 1 1	1	1 r 1 1
Euclea natalensis	1 b 1	1	
Combretum hereroense	b 1 1		
Lepidagathis scariosa	1 b 1	1	
Barleria elegans	1 1 1		
Gardenia volkensii	b 1 b	1	
Gymnosporia buxifolia	1 1		
Diagnostic species of the *Solanum panduriforme–Sclerocarya birrea* subsp. *caffra* community			
Species Group B			
Solanum panduriforme	b	1 1 b 1 1 1 1 1 b 1 1 1	1 1 1
Portulaca pilosa		1 1 1 1 1 1 1 1	
Justicia flava	1 1	1 1 1 1 1	
Abutilon guineense	3	1 1 1 1 1	
Euclea divinorum		1 b b 1	
Acalypha indica	b 1 1	1 4 1 1	1 1
Euphorbia ingens		4 1 1 1	
Kirkia acuminata		b 1	1
Albizia anthelmintica		b	
Crotalaria laburnifolia		1 b	
Albizia harveyi		b 1	

Species Group C

Digitaria eriantha	1 3b b b 3 3b	b b b 1b b 3b b b 4b 3 3 1 3 1	3 5
Phyllanthus burchellii	1 1 1 1 1 1 1 1 1	1 1b 1 1 1 1 1 1 1 1 1 1	
Melhania forbesii	4b 1 1 1 1	1 1 1b b b 3 3 1 1 1 1b 1	1 1
Combretum mossambicense	b 3b 4 3 1 1 1	b b b 1b 1b 1b b b	b 1
Sida ovata	b 1 3 1 b	1 b 1 1b b 1 1 1b 3b b b	b 1
Erythrophleum africanum	1 1 1 1 1	1 1 1 1 1 1 1 1 1	
Cissus cornifolia	b 1 b b	1 1 1b 1b b b	1
Hermannia grisea	b b 3b 3	3b 1 b 1	
Tragus berteronianus	1b b 1 1 b 1	1 1 1 1 1	
Ehretia rigida	b b	1 1b 1b b b b	b
Indigofera rhytidocarpa	1 1 1 1 1	1 1 1 1 1 1	
Ziziphus mucronata	1	b b b 1 b b 1 1	
Philenoptera violacea	b b 4 4	b 3 b 1 1	
Pristimera longipitiolata	1 3b 1b 3	b b	1
Talinum tenuissimum	1 1	1 1 1 1 1 1	1
Vangueria infausta	1 1b b	b 1b 1	
Terminalia sericea	b b 3	b 3 1b	
Zornia species	1 1 1	1 1 1 1	1
Asparagus exuvialis	b b 1	b 1 1 1	1
Monechma divaricatum	5 b b	1 1 1 1	1b

Diagnostic species of the *Terminalia prunioides–Sclerocarya birrea* subsp. *caffra* community

Species Group D

Melhania rehmannii		1	b 1b b 1b
Limeum viscosum		1 1 1	1 1 1 1 1 1
Ocimum gratissimum	1	1 1	1 1 1 1 1
Hermannia glanduligera			1 1 1 1 1
Lannea schweinfurthii		3 3	1 b 3 3
Blepharis subvolubilis	1	b 3 1	b 1 1 3
Terminalia prunioides			1 b b
Commiphora schimperi			b 1b
Phyllanthus species	1		1 1
Combretum species		1	1 1
Hirpicium species		1 1	1
Alyssum species		1 1 1 1	1

Species Group E

Cyperus angolensis	1	1 1 1 1 1 1 1 1 1 1 1 1	1 1b b b 1 1
Aristida congesta	1	1b b b b b b 1 1b 3	1 1b 1 1 1 3
Urochloa mosambicensis	1 1 3	1b b 3 b b b b 1 1b 3	5b b 4b
Eragrostis rigidior	b 1	1 1b 1 b b b 1 3b b	3 b 3b
Grewia bicolor var. *bicolor*	b 1 3	b b 3b 1b b 3b	3 b 3b b
Lantana rugosa	1	1 1 1 1 1 1 b	1 1 1 1
Pogonarthria squarrosa	1	b 1 1 b 1 1	1 1 3
Ruellia species	1	1 1 b	1 1 1

Species Group F

Eragrostis lehmanniana	4 3 3 4 3 3 3b b	3b 1b 5 5b 3 3 3 3 3b 4 3b 4 3	1 5b b 5 1
Hibiscus praeteritus	1 1b 1 1 1b 1 b	1 1 1 1b 1 1b 1 1 1 1b 1 1b 1	1 1 1 3 1 1
Panicum maximum	5b 3 4 3 5 3b 1 3	3 5 4 5 3 3 5 5 4 5 4 5 3 5 5	5b 1 3 5 4
Acanthospermum species	b 3 3b b 3 4 1b b	1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1b 1
Tephrosia purpurea	1 1b 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1

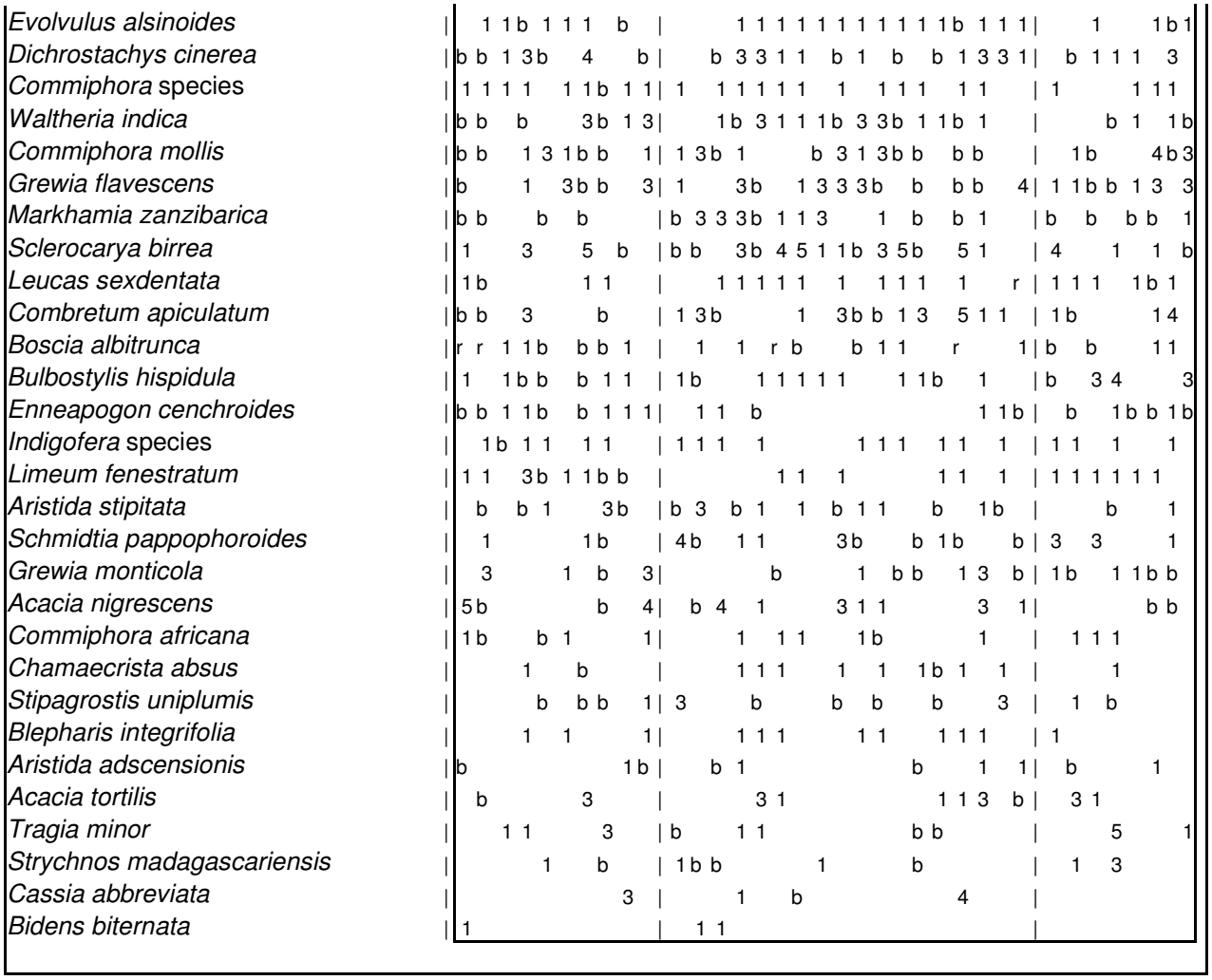
Evolvulus alsinoides
Dichrostachys cinerea
Commiphora species
Waltheria indica
Commiphora mollis
Grewia flavescens
Markhamia zanzibarica
Sclerocarya birrea
Leucas sexdentata
Combretum apiculatum
Boscia albitrunca
Bulbostylis hispidula
Enneapogon cenchroides
Indigofera species
Limeum fenestratum
Aristida stipitata
Schmidtia pappophoroides
Grewia monticola
Acacia nigrescens
Commiphora africana
Chamaecrista absus
Stipagrostis uniplumis
Blepharis integrifolia
Aristida adscensionis
Acacia tortilis
Tragia minor
Strychnos madagascariensis
Cassia abbreviata
Bidens biternata

Table 3 Phytosociological table of the plant communities of the *Euclea divinorum–Acacia tortilis* BNR Southern Plains Bushveld Major Vegetation Type

Community no.	**1**	**2**	**3**
Releve number	5555555555555555555555555555555	6666665566666566	55555544
	1233255566663555555444443 4	1111234000114 01	88888833
	8704467808672012345247893	7689065789216 65	23456813
Diagnostic species of the *Acacia nilotica–Acacia tortilis* community			
Species Group A			
Eragrostis rigidior	b 33b 1 b bbb 1bb 44 433 33b	b 1 b b	15
Evolvulus alsinoides	11111 1 1 11 1 1 b 11	1 11 1	
Melhania forbesii	b 3 b 1 bb 11 b 11b 11	1 1	1
Acacia nilotica	3b b 5 3b 1 3bbb 3 b		2
Aristida congesta ssp. *congesta*	b 31 b b b b 13bbb	11	
Urochloa mosambicensis	333 bb 1 b 3313 1	b 1	
Acacia karroo	3bb bbb b b bb 3	3 b	
Blepharis integrifolia	11 1 1 b 1 11 111	1 1 1	
Sida ovata	111 b 111 11 1	1	
Combretum imberbe	3 b b 1 11b bb	4 b	2
Ximenia americana var. *microphylla*	21 bb b 1 b b	1 1	
Abutilon austro-afric	11 1 111 1		
Schotia brachypetala	1 1 1 5 1 bb	b	2 2
Grewia flava	b 1 3b b b	b	

Diagnostic species of the *Combretum apiculatum–Acacia tortilis* community

Species Group B

Combretum apiculatum ssp. *apiculatum*	5 b 4 1 2	3 1 3 2 b b b 3 b 3 3 1	r
Aristida species		2 2 1 1 1 1 2	
Ocimum gratissimum ssp. *gratissimum*	1 1 1 1 1	1 1 1 1 1 1	
Heteropogon contortus	b 1 b b	3 3 b 1 5 3	
Cheilanthes involuta	1 1	1 1 1 1 1 1	
Acalypha indica	1 1 1 1	1 1 1 1 1 1	
Ormocarpum trichocarpum	b 1	1 b b 1 1	
Rhynchosia vendae	1 2	1 1 1 1 1	
Albizia harveyi		2 2 2 5	
Berkheya mackenii		1 2 1 1	
Cymbopogon pospischilii	1 1	b 3 1 b	
Pristimera longipitiolata		1 2 1 1	
Markhamia zanzibarica	2	3 2 2 2 2	
Themeda triandra	b 1 b	b b 1 b	
Pappea capensis	1	2 1 b 1	r 1 2
Ozoroa paniculosa var. *salicina*		b 1 1	
Psiadia punctulata	1	3 1 1	
Commiphora pyracanthoides		2 2	
Berchemia zeyheri	2 b	b b	
Pseudolachnostylis maprouneifolia		1 2	

Species Group C

Acacia nigrescens	3 b 5 2 1 1 4 3 1 4 b 1 5 3 b 4 2 1	b 1 2 2 3 3 3 3 4 b 4 r 3 2 1	5 2
Hibiscus praeteritus	1 1 1 1 1 1 1 1 1 1 1 1 1 b 1 1 b 1 1 2 1	1 1 1 2 1 b 1 1 1 1	
Lantana rugosa	1 b b b 2 1 1 b 1 1 b 1 1 1 1 1 1 1 1 3 2	1 1 1 1 1 1 1 1	1 1
Enneapogon cenchroides	b b b 3 1 1 1 1 b b 1 b 5 b 2	1 3 2 b 1 5 b 3 b 1 2 2	1
Tephrosia purpurea	1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1	1
Solanum panduriforme	b 1 1 1 1 b 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1	1 1
Rhinacanthus xerophilus	1 1 1 1 1 1 1 1 1 1 b 1 1 1 1	1 1 1 1 1 1 1 1	

Boscia albitruncа var. *albitrunca*	b b 1 b r 1 1 1 b b 1 1	b 1 1 2 1 1 1 1 1	
Cyperus angolensis	1 1 1 1 1 1 1 1 1 b 1 1 1	1 1 1 1 1 1 1 1	
Maesa lanceolata	1 1 1 1 1 1 1 1 1 1 1 1 1	b 1 1 1 1 r	
Aristida adscensionis	b b 1 1 b 1 b 1	1 1 1 1 b 1 b b 1 b 2	
Melhania prostrata	1 1 1 1 1 1 3 1 b 1 1	1 1 1 1 1 1	
Enteropogon macrostachyus	b 2 1 1 4 b 2 5	2 1 b 5 b 5 2 4	1
Corbichonia decumbens	1 b 1 1 1 1 1 1 1 1 1	1 1 1 1	
Acanthospermum species	1 1 1 1 1 1 1	1 1 1 1 1 1 1 1	1
Commiphora mollis	3 1 b b 5 5	5 2 2 2 5 3 2	
Eragrostis biflora	1 1 b 1 1	1 1 1 1 1 1 1 1	
Waltheria indica	1 3 1 b 1 1 1 2 1	1 1 1	3
Aristida congesta ssp. *barbicollis*	b b b b	1 1 b b 1	
Vernonia fastigiata	1 1 1 1 1 1	1 1 1	
Commiphora species	1 1 1 1 1 1	1 1 1	
Kirkia acuminata	5 b 1 4	2 b 3 3 2	
Combretum zeyheri	1 b b 2	b 1 b 1	
Strychnos madagascariensis	2 2	b b 3	
Indigofera species	1 1 1	b 1	
Diagnostic species of the *Rhus leptodictya–Acacia tortilis* community			
Species Group D			
Acacia ataxacantha			2 4 2 2 1 5 2
Senna petersiana			2 2 1 1
Species Group E			
Panicum maximum	5 4 5 5 5 5 5 5 5 5 5 5 5 5 3 5 4 3b 5 3 4	3 5 5 4 5 5 5 4 5 5 4 2	5 5 5 5 5 5 5
Hibiscus calyphyllus	1 b b 1 2 1 b b b 1 1 1 1 1 1 1 b 1 1 b 1 b 1 1	b 1 1 1 b 1 1 1 1 1 1	1 1 1 1
Lepidagathis scariosa	b 1 1 b 1 1 1 1 1 1 1 1 1 1 1 1 1 b 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1	1 1 1 1
Grewia monticola	b 3 b b 2 b b 1 b b b b 1 b 3 b 1 3 1 b b 1	b 3 1 2 2 b 1 1 2 2	2 2 2 1 1
Dichrostachys cinerea ssp. *africana*	3 3 1 3 1 b 3 3 b 3 3 b b b 3 b 3 3 b b 1 b	1 b b b b 1 1	2 1 3 5 5 1 2
Grewia flavescens var. *flavescens*	3 3 2 b 1 b 1 3 b 1 b b b b b 3 3	1 3 3 2 3 b b 2 2	4 2 3 5 2 2 4
Ehretia rigida	1 b 1 1 b b 1 b 1 b b b 3 1 b 1 b b 4 1	b 1 1 1 1	2 1 2 1 1

Euclea divinorum	1 b 1 1 b 3 b b 3 b 1 b 4 b 3 b 1 b 3	3 1 1 3 1	2 2 2 1 2
Ziziphus mucronata ssp. mucronata	1 b 1 3 b 1 b b b 4 3 b b 3	2 2 1 1 b b 2	4 1 1 1 2
Acacia tortilis ssp. *heteracantha*	b 3 5 5 3 5 b 3 1 b 5 3 b 4 3	b 3	3 3 1 2 1
Grewia bicolor	b b b 3 3 b b 3 b b b 2 2	3 2 1 3 2	2 2 2
Flueggea virosa ssp. *virosa*	1 b b 3 1 b 1 1 1 b	1 b 1 1 2	2 1 1 2
Rhus leptodictya	1 1 b b b b	b 1 1	2 2 2 2 3 2 2 2
Arctotis species	1 1 1 b 1 1 2	1 1 2 1 1 1 1	1 1 1
Cissus cornifolia	b 2 b b	1 2 1 1 1 1	2 r 2 1 1 1
Philenoptera violacea	r 1 b b r 1 1 1 b 2		3 2 1 3 5 4
Gymnosporia buxifolia	1 4 3 1 1 b 1 1	b b 1 3	2 2 2 1
Sclerocarya birrea ssp. *caffra*	1 b	1 b 1 1	2 2 2 2
Digitaria eriantha	b b 1 1	b	1 2
Dombeya rotundifolia var. *rotundifolia*	b b	4 b	1 2

Table 4 Phytosociological table of the plant communities of the *Englerophytum magalismontanum–Combretum molle* BNR Mountain Bushveld Major Vegetation Type

Community no.	1	2
Relevè number	5 5 6 5 6 6 6 5 5 5 6	6 6 6 6 6 6
	4 4 0 9 1 1 9 9 9 0	2 2 2 2 2 2
	0 1 5 8 0 4 5 7 9 0	2 3 5 4 7 8
Diagnostic species of the *Pseudolachnostylis maprouneifolia–Combretum molle* community		
Species Group A		
Strychnos madagascariensis	3 2 2 2 1 1 2 2 2 2	
Pseudolachnostylis maprouneifolia	1 2 3 2 2 2 2 2 2	2
Cyperus angolensis	1 1 1 2 1 1 1 1 1	
Cheilanthes involuta	1 1 1 1 1 1 1 1	
Schmidtia pappophoroides	2 2 1 3 3 3	
Trichoneura grandiglumis	1 1 1 1 1 1 1	1 1
Elephantorrhiza species	2 2 1 1 2	2
Burkea africana	2 2 2 2 2 2	3 4
Enneapogon cenchroides	1 1 1 1 1 1	
Waltheria indica	1 1 1 1 2	
Solanum panduriforme	1 1 1 1 1	
Combretum apiculatum ssp. *apiculatum*	3 2 3	
Sida ovata	1 1 1	
Eragrostis lehmanniana var. *lehmanniana*	1 1 2	
Terminalia sericea	4 2 2	1
Eragrostis biflora	1 1 1	
Bulbostylis hispidula ssp. *pyriformis*	1 1 1 1	
Acacia sieberiana var. *woodii*	3 2	
Andropogon chinensis	2 2	
Boophane disticha	1 1	
Brachiaria nigropedata	1 1	
Felicia clavipilosa	2 1	
Selaginella dregei	2 3	
Stipagrostis uniplumis var. *uniplumis*	5 2	
Lannea discolor	2 2	
Leonotis ocymifolia	1 1	1
Vangueria parvifolium	2	
Dyschoriste transvaalensis	2	
Diagnostic species of the *Hyperacanthus amoenus–Combretum molle* community		
Species Group B		
Hyperacanthus amoenus		1 1 2 2 3
Mimusops zeyheri		2 2 2 2
Diospyros lycioides		2 1 1
Themeda triandra	2	1 2 1
Tricliceras schinzii	2	1 2 1

Crassula swaziensis											1			1		
Leucadadendron spissifolium ssp. *spissifolium*						1								1		1
Rhus magalismontanum ssp. *coddii*								1			4	3				
Cotyledon barbeyi											1			1		
Cryptolepis cryptolepioides											2	1				
Dichapetalum cymosum											2	2				
Dicoma anomala											1	1				
Cyperus species											1	1				
Olinia emarginata											2			2		
Perotis patens					2						1			1		
Rhynchosia monophylla											1	1				
Ficus abutilifolia												1				
Olea capensis ssp. *enervis*											1					
Species Group C																
Combretum molle	1	2	2	2	2	1	2	2	3		1		2		2	3
Panicum maximum	5	5	5	1		5	4	2		2			4	1	5	5
Vitex rehmannii	2	1	1		1	1		1	2		2		1		2	1
Digitaria eriantha	1	1	2	2			2	1	1	2	1	1		1		
Tephrosia purpurea	1	1	1	2	1		2	1	2	1	1	1				
Englerophytum magalismontanum	1	1	1	1		1					2	1	2	3	2	
Loudetia filifolia			2	4	5		2	2	1	2	2	3	2			
Commiphora species	1			1	1		1				1	1	1	1		
Aristida species				3	2		3	3	3	1	1	3				
Vangueria infausta			2		1	2	1				2	2		1		
Rhynchosia vendae			1	1			1	1	1		1		1			
Dalechampia species			1		1	1					1	1				1
Combretum zeyheri	2	2			2								2		3	
Cissus cornifolia			1	1		3							1		2	
Grewia flavescens var. *flavescens*			2			2				2						2
Pappea capensis			r			2										2
Bridelia mollis			2			2									2	
Ziziphus mucronata ssp. *mucronata*			2			2									2	
Lantana rugosa						1								1	1	
Psiadia punctulata						1										1
Indigofera species				1							1					

Community description

1. *Eragrostis lehmanniana* var. *lehmanniana–Sclerocarya birrea* subsp. *caffra* BNR Northern Plains Bushveld Major Vegetation Type

The *Eragrostis lehmanniana* var. *lehmanniana–Sclerocarya birrea* subsp. *caffra* BNR Northern Plains Bushveld Major Vegetation Type is associated with the northern foot slopes and plains of the Blouberg Nature Reserve. The generally flat landscape has a maximum incline of three degrees. Prominent Soil Forms associated with this Major Vegetation Type are the Hutton Soil Form (MacVicar *et al*. 1991) of the Land Type Ae derived from alluvium on sandstone of the Wyllies Poort Geological Formation (Botha 2004a; Patterson & Ross 2004a).

The diagnostic species for this group are presented in species group A (Table 1, Chapter 4). This group includes the woody species *Spirostachys africana* and *Erythrophleum africanum*. Diagnostic grass species include *Eragrostis lehmanniana* var. *lehmanniana, Tragus berteronianus* and *Dactyloctenium aegyptium, Pogonarthria squarrosa*. This diagnostic group contains numerous herbaceous species such as *Phyllanthus burchellii, Indigofera* species, *Limeum fenestratum, Bulbostylis hispidula* subsp. *pyriformis, Ruellia* species, *Indigofera rhytidocarpa, Chamaecrista absus, Hermannia grisea, Tragia minor, Corchorus* species, *Talinum crispatulum, Monechma divaricatum, Zornia* species, *Blepharis subvolubilis, Limeum viscosum, Leucas sexdentata, Secamone parvifolia, Chamaecrista biensis, Asparagus exuvialis* fo. *exuvialis*.

Dominant woody species of this Major Vegetation Type include *Spirostachys africana* (Species Group A), *Commiphora* species, *Grewia flavescens* var. *flavescens* (Species Group F), *Boscia albitrunca* var. *albitrunca*, *Cissus cornifolia*, *Combretum apiculatum* subsp. *apiculatum*, *Combretum mossambicense*, *Commiphora mollis*, *Grewia bicolor* (Species Group H), *Acacia nigrescens*, *Dichrostachys cinerea* subsp. *africana*, *Ehretia rigida*, *Markhamia zanzibarica* and *Sclerocarya birrea* subsp. *caffra* (Species Group L). Dominant grass species include *Eragrostis lehmanniana* var. *lehmanniana* (Species Group A), *Eragrostis rigidior*, *Urochloa mosambicensis* (Species Group L), *Digitaria eriantha*, *Panicum maximum* and *Aristida stipitata* subsp. *graciliflora* (Species Group P). Prominent herbaceous species include

Phyllanthus burchellii (Species Group A), *Acanthospermum* species, *Arctotis* species, *Aristida congesta* subsp. *congesta*, *Evolvulus alsinoides*, *Hibiscus calyphyllus*, *Hibiscus praeteritus*, *Sida ovata* (Species Group C), *Cyperus angolensis* (Species Group F), *Solanum panduriforme* (Species Group L) and *Waltheria indica* (Species Group P).

The *Eragrostis lehmanniana* var. *lehmanniana–Sclerocarya birrea* subsp. *caffra* BNR Northern Plains Bushveld Major Vegetation Type shows some floristic affinities with the *Acacia mellifera–Eragrostis lehmanniana* vegetation class, informally described by Smit (2000) as part of the Eastern Kalahari Tornveld. Prominent species shared by the BNR Northern Plains Bushveld and the *Acacia mellifera–Eragrostis lehmanniana* vegetation class include the grasses *Eragrostis lehmanniana, Pogonarthria squarrosa* and *Schmidtia pappophoroides*. A prominent woody species shared is *Boscia albitrunca*. However, these five species all show wide distribution ranges and exhibit wide ecological tolerance and adaptation within the sandveld areas of southern Africa, and are therefore not exclusive to the BNR Northern Plains Bushveld. This Major Vegetation Type shares some of the drought-resistant woody species with the *Adansonia digitata–Acacia nigrescens* Soutpansberg Arid Northern Bushveld Major Vegetation Type, such as *Commiphora mollis, Combretum apiculatum, Boscia albitrunca* var. *albitrunca, Grewia bicolor, Combretum mossambicense, Commiphora africana, Dichrostachys cinerea* subsp. *africana* and *Acacia nigrescens*. These species are also commonly found in the *Adansonia*–Mixed Thornveld (14e) (Acocks 1953), the *Adansonia digitata–Colophospermum mopane* Rugged Veld (Gertenbach 1983) and the *Commiphora–Terminalia prunioides* community (Louw 1970).

Plant communities of the *Eragrostis lehmanniana* var. *lehmanniana–Sclerocarya birrea* subsp. *caffra* BNR Northern Plains Bushveld Major Vegetation Type are presented in Table 2. This Major Vegetation Type is relatively homogeneous and plant communities share most of their dominant and prominent species. Diagnostic species groups of the various communities are generally weak, consisting mainly of short-lived herbaceous and grass species.

A Detrended Correspondence Analysis ordination by DECORANA (Hill 1979b) produced no distinct clustering of relevés within the *Eragrostis lehmanniana* var.

lehmanniana–Sclerocarya birrea subsp. *caffra* BNR Northern Plains Bushveld Major Vegetation Type (Figure 7, Chapter 4). This lack of groupings further emphasizes the homogeneous nature of the vegetation of the BNR Northern Plains. No trends in environmental gradients could be inferred from the relevés associated with the three different plant communities identified from the TWINSPAN (Hill 1979a) classification. For this reason, these three plant communities are only described floristically, without detailed ecological interpretation of their potential environmental driving factors. A possible explanation for the observed homogeneity in the vegetation data gathered by H.L. Klopper may be that some sample plots were placed incorrectly within heterogeneous transitional vegetation, resulting in mixed relevés. Such mixed relevés prevent the formation of distinct clusters during ordination and complicate statistical separation during numeric classification (Kent & Coker 1995).

1.1 *Spirostachys africana–Sclerocarya birrea* subsp. *caffra* community

The diagnostic species for the *Spirostachys africana–Sclerocarya birrea* subsp. *caffra* community are presented in species group A (Table 2). Diagnostic woody species include *Spirostachys africana*, *Grewia flava*, *Ochna inermis*, *Euclea natalensis*, *Combretum hereroense*, *Gardenia volkensii* subsp. *volkensii* and *Gymnosporia buxifolia*. Dagnostic grass species include *Dactyloctenium aegyptium* and *Eragrostis biflora*. Diagnostic herbaceous species include *Hibiscus calyphyllus*, *Arctotis* species, *Triumfetta pentandra*, *Phyllanthus pinnatus*, *Secamone parvifolia*, *Spermacoce senensis*, *Corchorus* species, *Chamaecrista biensis*, *Lepidagathis scariosa* and *Barleria elegans*. A diagnostic succulent species recorded is *Euphorbia crotonoides*.

Dominant woody species recorded for the *Spirostachys africana–Sclerocarya birrea* subsp. *caffra* community include *Spirostachys africana* (Species Group A), *Combretum mossambicense*, *Pristimera longipitiolata*, *Vangueria infausta* subsp. *infausta* (Species Group C), *Dichrostachys cinerea* subsp. *africana*, *Commiphora* species, *Commiphora mollis*, *Grewia flavescens* v. *flavescens*, *Markhamia zanzibarica*, *Sclerocarya birrea* subsp. *caffra*, *Combretum apiculatum* subsp. *apiculatum* and *Boscia albitrunca* var. *albitrunca* (Species Group F). Dominant grass species include *Dactyloctenium aegyptium*, *Eragrostis biflora* (Species Group A), *Digitaria eriantha*, *Tragus berteronianus* (Species Group C), *Eragrostis lehmanniana* var. *lehmanniana*, *Panicum maximum*, *Enneapogon cenchroides* and *Aristida stipitata*

subsp. *graciliflora* (Species Group F). Prominent herbaceous species include *Hibiscus calyphyllus*, *Arctotis* species, *Triumfetta pentandra* (Species Group A), *Phyllanthus burchellii*, *Melhania forbesii*, *Sida ovata*, *Hermannia grisea* (Species Group C), *Hibiscus praeteritus*, *Acanthospermum* species, *Tephrosia purpurea*, *Evolvulus alsinoides*, *Waltheria indica*, *Leucas sexdentata*, *Bulbostylis hispidula* subsp. *pyriformis*, *Indigofera* species and *Limeum fenestratum* (Species Group F).

1.2 *Solanum panduriforme–Sclerocarya birrea* subsp. *caffra* community

The diagnostic species for the *Solanum panduriforme–Sclerocarya birrea* subsp. *caffra* community are presented in species group B (Table 2). The diagnostic woody species *Euclea divinorum* was recorded. Diagnostic herbaceous species include *Solanum panduriforme*, *Portulaca pilosa*, *Justicia flava*, *Abutilon guineense* and *Acalypha indica*. The diagnostic succulent species *Euphorbia ingens* was recorded.

Dominant woody species recorded for the *Solanum panduriforme–Sclerocarya birrea* subsp. *caffra* community include *Combretum mossambicense*, *Ziziphus mucronata* subsp. *mucronata* (Species Group C), *Grewia bicolor* var. *bicolor* (Species Group E), *Dichrostachys cinerea* subsp. *africana*, *Commiphora* species, *Commiphora mollis*, *Grewia flavescens* var. *flavescens*, *Markhamia zanzibarica*, *Sclerocarya birrea* subsp. *caffra*, *Combretum apiculatum* subsp. *apiculatum*, *Boscia albitrunca* var. *albitrunca*, *Grewia monticola* and *Acacia nigrescens* (Species Group F). Dominant grass species include *Digitaria eriantha* (Species Group C), *Aristida congesta* subsp. *congesta*, *Urochloa mosambicensis*, *Eragrostis rigidior* (Species Group E), *Eragrostis lehmanniana* var. *lehmanniana*, *Panicum maximum*, *Aristida stipitata* subsp. *graciliflora* and *Schmidtia pappophoroides* (Species Group F). Prominent herbaceous species include *Solanum panduriforme* (Species Group B), *Phyllanthus burchellii*, *Melhania forbesii*, *Sida ovata* (Species Group C), *Cyperus angolensis* (Species Group E), *Hibiscus praeteritus*, *Acanthospermum* species, *Tephrosia purpurea*, *Evolvulus alsinoides*, *Waltheria indica*, *Leucas sexdentata* and *Bulbostylis hispidula* subsp. *pyriformis* (Species Group F).

1.3 *Terminalia prunioides–Sclerocarya birrea subsp. caffra* community

The diagnostic species for the *Terminalia prunioides–Sclerocarya birrea* subsp. *caffra* community are presented in species group D (Table 2). Diagnostic woody species include *Lannea schweinfurthii* var. *stuhlmannii*, *Terminalia prunioides*, *Commiphora schimperi* and *Combretum* species. Prominent herbaceous species include *Melhania rehmannii*, *Limeum viscosum*, *Ocimum gratissimum* subsp. *gratissimum*, *Hermannia glanduligera*, *Blepharis subvolubilis*, *Phyllanthus* species, *Hirpicium* species and *Alyssum* species.

Dominant woody species recorded for the *Terminalia prunioides–Sclerocarya birrea* subsp. *caffra* community include *Lannea schweinfurthii* var. *stuhlmannii*, *Terminalia prunioides*, *Commiphora schimperi* (Species Group D), *Grewia bicolor* var. *bicolor* (Species Group E), *Dichrostachys cinerea* subsp. *africana*, *Commiphora mollis*, *Grewia flavescens* var. *flavescens* and *Markhamia zanzibarica* (Species Group F). Dominant grass species include *Aristida congesta* subsp. *congesta*, *Urochloa mosambicensis*, *Eragrostis rigidior* (Species Group E), *Eragrostis lehmanniana* var. *lehmanniana*, *Enneapogon cenchroides* and *Grewia monticola* (Species Group F). Dominant herbaceous species include *Melhania rehmannii*, *Limeum viscosum*, *Ocimum gratissimum* subsp. *gratissimum*, *Hermannia glanduligera*, *Blepharis subvolubilis* (Species Group D), *Cyperus angolensis* (Species Group E), *Hibiscus praeteritus*, *Acanthospermum* species, *Tephrosia purpurea*, *Evolvulus alsinoides*, *Waltheria indica* and *Limeum fenestratum* (Species Group F).

2. *Euclea divinorum–Acacia tortilis* BNR Southern Plains Bushveld Major Vegetation Type

The *Euclea divinorum–Acacia tortilis* BNR Southern Plains Bushveld Major Vegetation Type is located along the plains and foot slopes south of the Blouberg within the BNR. The generally flat is predominantly associated with the Hutton Soil Form (MacVicar *et al.* 1991), derived from alluvium on sandstone of the Ae Land Type from the Wyllies Poort Geological Formation (Botha 2004a; Patterson & Ross 2004a). Other Soil Forms associated with this Major Vegetation Type are of less importance.

The diagnostic species for this group are presented in species group B (Table 1, Chapter 4). The diagnostic woody species characterizing the communities of this Major Vegetation Type are *Combretum imberbe, Rhus leptodictya* and *Schotia brachypetala*. Diagnostic grass species include *Enteropogon macrostachyus* and *Aristida congesta* subsp. *barbicollis*. Diagnostic herbaceous species within this group are *Lepidagathis scabra, Rhinacanthus xerophilus, Melhania prostrata* and *Corbichonia decumbens*.

Dominant woody species of this Major Vegetation Type include *Acacia tortilis* subsp. *heteracantha*, *Lantana rugosa*, *Rhus leptodictya* (Species Group C), *Grewia flavescens* var. *flavescens* (Species Group F), *Combretum apiculatum* subsp. *apiculatum*, *Grewia bicolor* var. *bicolor* (Species Group H), *Acacia nilotica*, *Euclea divinorum* (Species Group K), *Acacia nigrescens*, *Dichrostachys cinerea* subsp. *africana*, *Ehretia rigida*, *Eragrostis rigidior* (Species Group L), *Ziziphus mucronata* (Species Group P). Dominant grass species include *Enteropogon macrostachyus* (Species Group B), *Aristida congesta* subsp. *congesta*, *Aristida adscensionis* (Species Group C), *Aristida* species (Species Group D), *Eragrostis rigidior*, *Urochloa mosambicensis* (Species Group L), *Enneapogon cenchroides* and *Panicum maximum* (Species Group P). Prominent forbs include *Hibiscus praeteritus*, *Sida ovata*, *Blepharis integrifolia* (Species Group C), *Tephrosia purpurea* (Species Group E), *Cyperus angolensis* (Species Group F) and *Solanum panduriforme* (Species Group L).

The *Euclea divinorum–Acacia tortilis* BNR Southern Plains Bushveld Major Vegetation Type may be regarded as a partof the *Rhus leptodictya–Acacia tortilis* Bushveld of the *Acacietalia rehmannianae–tortilis* of the *Acacienea nilotico–tortilis* of the *Panico maximi–Acacietea tortilis* described by Winterbach (1998) and Winterbach *et al*. (2000) for the north-western savanna of South Africa. Acocks (1953) describe similar vegetation as the Knoppiesdoring Veld (13b) of the Other Turf Thornveld (13). It also compares floristically with the *Acacia tortilis–Panicum maximum–Ziziphus mucronata* major plant community of the Waterberg (Henning 2002). These communities are generally not geographically restricted to a certain part of South Africa, but occur in a patchy distribution where conditions are favourable. Important taxa shared among these communities are *Acacia tortilis* subsp. *heteracantha, Rhus leptodictya, Grewia* species, *Acacia nilotica, Euclea divinorum*,

Acacia nigrescens, *Dichrostachys cinerea* subsp. *africana, Ehretia rigida, Eragrostis rigidior, Ziziphus mucronata, Aristida* species *Eragrostis rigidior, Urochloa mosambicensis* and *Panicum maximum*.

Plant communities of the *Euclea divinorum–Acacia tortilis* BNR Southern Plains Bushveld Major Vegetation Type are presented in Table 3. This Major Vegetation Type is relatively homogeneous and plant communities share most of their dominant and prominent species. Diagnostic species groups of the various communities are generally based on differentiating species from the field layer. In years of drought the field layer may become very sparse. In the relative absence of the field layer, the homogeneous woody layer of these three plant communities will cause them to flow into one another, becoming one plant community. The diagnostic species groups recorded for these three plant communities are therefore not very robust, but in dynamic flux with ecosystem driving events such as droughts. Such dynamic diagnostic species groups provide relatively poor predictive value in terms of the identification of plant communities in times of low rainfall. Depending on the state of the field layer at the time of data gathering, these communities may be viewed as either distinctly unique communities, with distinctly different grazing capacities, or may be viewed as one homogeneous landscape, with very little variation in browsing potential.

A Detrended Correspondence Analysis ordination by DECORANA (Hill 1979b) produced no distinct clustering of relevés within the *Euclea divinorum–Acacia tortilis* BNR Southern Plains Bushveld Major Vegetation Type (Figure 7, Chapter 4). This lack of groupings further emphasizes the homogeneous nature of the vegetation of the BNR Northern Plains. No trends in environmental gradients could be inferred from the relevés associated with the three different plant communities identified from the TWINSPAN (Hill 1979a) classification. For this reason, these three plant communities are only described floristically, without detailed ecological interpretation of their potential environmental driving factors.

2.1 *Acacia nilotica–Acacia tortilis* community

The diagnostic species for the *Acacia nilotica–Acacia tortilis* community are presented in species group A (Table 3). Diagnostic woody species include *Acacia*

nilotica, *Acacia karroo*, *Combretum imberbe*, *Ximenia americana* var. *microphylla*, *Schotia brachypetala* and *Grewia flava*. Diagnostic grass species include *Eragrostis rigidior*, *Aristida congesta* subsp. *congesta* and *Urochloa mosambicensis*. Diagnostic herbaceous species include *Evolvulus alsinoides*, *Melhania forbesii*, *Blepharis integrifolia*, *Sida ovata* and *Abutilon austro-africanum*.

Dominant woody species recorded for the *Acacia nilotica–Acacia tortilis* community include *Acacia nilotica*, Acacia *karroo* (Species Group A), *Acacia nigrescens*, *Lantana rugosa* (Species Group C), *Grewia monticola*, *Dichrostachys cinerea* subsp. *africana*, *Grewia flavescens* var. *flavescens*, *Ehretia rigida*, *Euclea divinorum*, *Ziziphus mucronata* subsp. *mucronata*, *Acacia tortilis* subsp. *heteracantha* and *Grewia bicolor* (Species Group E). Dominant grass species recorded include *Eragrostis rigidior*, *Aristida congesta* subsp. *congesta*, *Urochloa mosambicensis* (Species Group A), *Enneapogon cenchroides* (Species Group C), *Panicum maximum* (Species Group E). Dominant herbaceous species recorded include *Evolvulus alsinoides*, *Melhania forbesii* (Species Group A), *Hibiscus praeteritus* (Species Group C), *Hibiscus calyphyllus* and *Lepidagathis scariosa* (Species Group E).

2.2 *Combretum apiculatum–Acacia tortilis* community

The diagnostic species for the *Combretum apiculatum–Acacia tortilis* community are presented in species group B (Table 3). Diagnostic woody species include *Combretum apiculatum* subsp. *apiculatum*, *Ormocarpum trichocarpum*, *Albizia harveyi* and *Pristimera* longipitiolata. Diagnostic grass species include *Aristida* species, *Heteropogon contortus*, *Cymbopogon pospischilii*, *Themeda triandra*. Diagnostic herbaceous species include *Ocimum gratissimum* subsp. *gratissimum*, *Cheilanthes involuta*, *Acalypha indica*, *Rhynchosia vendae*, *Berkheya mackenii* and *Psiadia punctulata*.

Dominant woody species recorded for the *Combretum apiculatum–Acacia tortilis* community include *Combretum apiculatum* subsp. *apiculatum* (Species Group B), *Acacia nigrescens*, *Lantana rugosa*, *Boscia albitrunca* var. *albitrunca*, *Commiphora mollis* (Species Group C), *Grewia monticola*, *Dichrostachys cinerea* subsp. *africana*, *Grewia flavescens* var. *flavescens* (Species Group E). Dominant grass species include *Aristida* species, *Heteropogon contortus* (Species Group B), *Enneapogon*

cenchroides, *Aristida adscensionis*, *Enteropogon macrostachyus* (Species Group C), *Panicum maximum* (Species Group E). Dominant herbaceous species include *Ocimum gratissimum* subsp. *gratissimum* (Species Group B), *Hibiscus praeteritus*, *Tephrosia purpurea* (Species Group C), *Hibiscus calyphyllus* and *Lepidagathis scariosa* (Species Group E).

2.3 *Rhus leptodictya–Acacia tortilis* community

This plant community seems to represent some isolated azonal tall thickets along very sheltered southern slopes of the BNR. The diagnostic species for the *Rhus leptodictya–Acacia tortilis* community are presented in species group D (Table 3). Diagnostic woody species include *Acacia ataxacantha* and *Senna petersiana*. None of the other species recorded are regarded as diagnostic for this community.

Dominant woody species recorded for the *Rhus leptodictya–Acacia tortilis* community include *Acacia ataxacantha*, *Senna petersiana* (Species Group D), *Grewia monticola*, *Dichrostachys cinerea* subsp. *africana*, *Grewia flavescens* var. *flavescens*, *Acacia tortilis* subsp. *heteracantha*, *Rhus leptodictya*, *Cissus cornifolia* and *Philenoptera violacea* (Species Group E). The grass species *Panicum maximum* was recorded as a prominent species.

3. *Englerophytum magalismontanum–Combretum molle* BNR Mountain Bushveld Major Vegetation Type

The *Englerophytum magalismontanum–Combretum molle* BNR Mountain Bushveld Major Vegetation Type is restricted to the higher lying mountainous terrain of the BNR, ranging from 975–1465 m above sea level. It encorporates the lower lying north-eastern parts of the Blouberg. West of the BNR the Blouberg rises to 2051 m above sea level, where more temperate vegetation types occur (Van Jaarsveld & Hardy 1991).

Slope ranges from moderate to very steep with northern, southern and eastern aspects. Soils are generally shallow or skeletal (<100 mm), and associated with Mispah and Glenrosa Soil Forms (MacVicar *et al.* 1991) of the Fa Land Type (Botha 2004a; Patterson & Ross 2004a). The underlying geology is dominated by pink quartzite and

minor conglomerate of the Wyllies Poort Geological Formation of the Soutpansberg Group.

The diagnostic species for this group are presented in species group D (Table 1, Chapter 4). Diagnostic woody species include *Combretum zeyheri* and an *Elephantorrhiza* species. The diagnostic grass species include *Loudetia filifolia, Trichoneura grandiglumis* and *Aristida* species. Diagnostic herbaceous species include *Rhynchosia vendae,* a *Dalechampia* species and *Tricliceras schinzii*.

Dominant woody species of the *Englerophytum magalismontanum–Combretum molle* BNR Mountain Bushveld include *Combretum zeyheri*, *Elephantorrhiza* species (Species Group D), *Commiphora* species (Species Group F), *Burkea africana*, *Pseudolachnostylis maprouneifolia* (Species Group O), *Strychnos madagascariensis* (Species Group P), *Combretum molle*, *Englerophytum magalismontanum*, *Hyperacanthus amoenus*, *Mimusops zeyheri*, *Rhus magalismontanum* subsp. *coddii*, *Vangueria infausta* subsp. *infausta* and *Vitex rehmannii* (Species Group U). Dominant grass species include *Aristida* species, *Loudetia filifolia*, *Trichoneura grandiglumis* (Species Group D), *Digitaria eriantha*, *Enneapogon cenchroides*, *Panicum maximum* and *Schmidtia pappophoroides* (Species Group P). Prominent herbaceous species include *Rhynchosia vendae* (Species Group D), *Cheilanthes involuta*, *Tephrosia purpurea* (Species Group E), *Cyperus angolensis* (Species Group F) and *Waltheria indica* (Species Group P).

The *Englerophytum magalismontanum–Combretum molle* BNR Mountain Bushveld Major Vegetation Type shares floristic elements with the *Englerophyto magalismontani–Acacietea caffrae* of the Waterberg and Magaliesberg described by Winterbach *et al*. (2000). It shares many of the relatively drought tolerant species associated with the *Rhus rigida* var. *rigida–Rhus magalismontanum* subsp. *coddii* Soutpansberg Cool Mistbelt Major Vegetation Type, lacking some of the more mesic species recorded within the mistbelt of the SC. The central variation of the Bankenveld (Acocks 1953) and the Rocky Highveld Grassland of the Grassland Biome (Bredenkamp & Van Rooyen 1996) share limited floristic and structural elements with the *Rhynchosia vendae–Englerophytum magalismontanum* Blouberg Moist Mountain Bushveld Major Vegetation Type. Although the vegetation structure

of the *Diplorhynchus condylocarpon–Englerophytum magalismontanum* Rocky Slope community of the Waterberg Biosphere (Henning 2002) is very similar to that of the BNR Mountain Bushveld, the floristic composition differs considerably.

The plant communities of the *Englerophytum magalismontanum–Combretum molle* BNR Mountain Bushveld Major Vegetation Type are presented in Table 4. This Major Vegetation Type can be divided into two relatively distinct plant communities based on the diagnostic and dominant species presented in Table 4. However, a Detrended Correspondence Analysis ordination by DECORANA (Hill 1979b) produced no distinct clustering of relevés within the *Englerophytum magalismontanum–Combretum molle* BNR Mountain Bushveld Major Vegetation Type (Figure 7, Chapter 4).

3.1 *Pseudolachnostylis maprouneifolia–Combretum molle* community

The diagnostic species recorded for the *Pseudolachnostylis maprouneifolia–Combretum molle* community are presented in species group A (Table 4). Diagnostic woody species include *Strychnos madagascariensis*, *Pseudolachnostylis maprouneifolia*, *Elephantorrhiza* species and *Burkea africana*. Diagnostic grass species recorded include *Schmidtia pappophoroides*, *Trichoneura grandiglumis* and *Enneapogon cenchroides*. Diagnostic species herbaceous include *Cyperus angolensis*, *Cheilanthes involuta* and *Waltheria indica*.

Dominant woody species recorded within the *Pseudolachnostylis maprouneifolia–Combretum molle* community include *Strychnos madagascariensis*, *Pseudolachnostylis maprouneifolia*, *Elephantorrhiza* species, *Burkea africana*, *Terminalia sericea* (Species Group A), *Combretum molle*, *Vitex rehmannii*, *Englerophytum magalismontanum*, *Commiphora* species, *Vangueria infausta* (Species Group C). Dominant grass species include *Schmidtia pappophoroides*, *Trichoneura grandiglumis*, *Enneapogon cenchroides* (Species Group A), *Panicum maximum*, *Digitaria eriantha*, *Loudetia filifolia*, *Aristida* species (Species Group C). Prominent herbaceous species include *Cyperus angolensis*, *Cheilanthes involuta*, *Waltheria indica* (Species Group A), *Tephrosia purpurea* and *Rhynchosia vendae* (Species Group C).

The *Pseudolachnostylis maprouneifolia–Combretum molle* community share numerous species with the *Burkeo africanae–Pseudolachnostylietum maprouneifoliae* and the *Terminalio sericea–Burkeetum africanae* of the *Diplorhynchus condylocarpon–Burkea africana* Soutpansberg Leached Sandveld Major Vegetation Type described in Chapter 8. These plant communities are associated with highly leached sandy soils. Soil depth varies from very deep to very shallow. The *Pseudolachnostylis maprouneifolia–Combretum molle* community of the BNR seems to represent the transition between the gentle slopes and shallow soils of the *Burkeo africanae–Pseudolachnostylietum maprouneifoliae* and the deep sandy terraces of the *Terminalio sericea–Burkeetum africanae* of the SC. Despite these similarities, a Detrended Correspondence Analysis ordination and a hierarchical classification of the BNR and SC floristic data sets, revealed distinct separation between the sandveld communities of the SC and the *Pseudolachnostylis maprouneifolia–Combretum molle* community of the BNR.

3.2 *Hyperacanthus amoenus–Combretum molle* community

The diagnostic species recorded for the *Hyperacanthus amoenus–Combretum molle* community are presented in species group B (Table 4). Diagnostic woody species include *Hyperacanthus amoenus*, *Mimusops zeyheri*, *Diospyros lycioides*, *Olinia emarginata* and *Rhus magalismontanum* subsp. *coddii*. Diagnostic grass species include *Themeda triandra* and *Perotis patens*. Diagnostic herbaceous species include *Tricliceras schinzii*, *Crassula swaziensis*, *Leucadadendron spissifolium* subsp. *spissifolium*, *Cotyledon barbeyi*, *Cryptolepis cryptolepioides*, *Dichapetalum cymosum*, *Dicoma anomala*, *Cyperus* species and *Rhynchosia monophylla*.

Dominant woody species recorded within the *Hyperacanthus amoenus–Combretum molle* community include *Hyperacanthus amoenus*, *Mimusops zeyheri*, *Diospyros lycioides*, *Rhus magalismontanum* subsp. *coddii* (Species Group B), *Combretum molle*, *Vitex rehmannii*, *Englerophytum magalismontanum* and *Commiphora* species (Species Group C). Dominant grass species include *Panicum maximum* and *Loudetia filifolia* (Species Group C). Prominent herbaceous species include *Cotyledon barbeyi* and *Cryptolepis cryptolepioides* (Species Group B).

The *Hyperacanthus amoenus–Combretum molle* community share some of the relatively drought tolerant species associated with the *Rhus rigida* var. *rigida–Rhus magalismontanum* subsp. *coddii* Soutpansberg Cool Mistbelt Major Vegetation Type, lacking some of the more mesic species recorded within the mistbelt of the SC. The lack of a regular mistbelt along the relatively low altitude of the *Hyperacanthus amoenus–Combretum molle* community may well be the reason for this phenomenon. Some of the relatively drought resistant species associated with the *Burkeo africanae–Pseudolachnostylietum maprouneifoliae* of the SC Sandveld are also shared by the *Hyperacanthus amoenus–Combretum molle* community of the BNR. These species may be associated with localised patches and micro-habitats of deeper sandy soils almong the generally rocky slopes and skeletal soils of the *Hyperacanthus amoenus–Combretum molle* community.

Conclusion

The vegetation of the BNR contains some unique species complexes within each of the three distinctly different Major Vegetation Types identified. Despite the unique species composition of these Major Vegetation Types, the share some of the more general and prominent species recorded from the SC. The *Eragrostis lehmanniana* var. *lehmanniana–Sclerocarya birrea* subsp. *caffra* BNR Northern Plains Bushveld Major Vegetation Type and the *Euclea divinorum–Acacia tortilis* BNR Southern Plains Bushveld Major Vegetation Type share numerous arid savanna species with the *Adansonia digitata–Acacia nigrescens* Soutpansberg Arid Northern Bushveld Major Vegetation Type. The *Englerophytum magalismontanum–Combretum molle* BNR Mountain Bushveld Major Vegetation Type share sandveld species with the *Diplorhynchus condylocarpon–Burkea africana* Soutpansberg Leached Sandveld Major Vegetation Type, and share some of the more temperate species with the *Rhus rigida* var. *rigida–Rhus magalismontanum* subsp. *coddii* Soutpansberg Cool Mistbelt Major Vegetation Type. The species complexes of the BNR generally contain more drought-tolerant species than those of the SC. This emphasises the relatively drier conditions prevailing within the BNR as a result of the lack of orographic rain and mist at these altitudes of the Blouberg.

Vegetation within each of these Major Vegetation Types is relatively homogeneous. Some variations were identified and described as communities. Due to the lack of

prominent diagnostic species groups of within the vegetation classification tables and the lack of distinct relevé clusters within the ordination scatter plot, the hierarchical syntaxonomic status of the described plant communities are likely to be very low. It is proposed that the described BNR plant communities be regarded as variations or sub-associations.