The phytosociology and syntaxonomy of relatively low-altitude areas in the North-eastern Mountain Sourveld, in the eastern Transvaal escarpment region

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An analysis of the vegetation of the relatively low-altitude regions of the North-eastern Mountain Sourveld of the eastern Transvaal escarpment is presented. Relevés were compiled in 53 stratified random sample plots. A TWINSPAN-classification, refined by Braun-Blanquet procedures, revealed seven plant communities. In the hierarchical classification one class, one alliance, four associations, four subassociations and two variants are recognised. Formal syntaxonomic descriptions of the syntaxa are given. All communities are related to specific environmental conditions, of which geology, aspect, altitude and rockiness of the soil surface are the most important.

Keywords: Braun-Blanquet procedures, Grassland Biome, syntaxonomic classification, new syntaxa.

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Introduction

Along the eastern Transvaal escarpment, represented by North-eastern Mountain Sourveld (Veld Type 8) (Acocks 1988), land is in great demand for afforestation. As stated by Deall *et al.* (1989a), this is in direct conflict with the need to protect mountain catchments, to conserve natural ecosystems and to preserve scenic landscapes for the tourist industry. Rational land-use planning is required to resolve such conflict (Ferrar *et al.* 1988). A plant-ecological study could contribute to this land-use planning exercise, as the relationship between plant-ecological studies and land-use planning and management has often been demonstrated (Bayer 1970; Walker 1976; Van Rooyen *et al.* 1981; Moore & Chapman 1986).

Furthermore, Mentis & Huntley (1982) stated the necessity to identify, describe and determine the location of the major vegetation types and subtypes within the Grassland Biome. This was also emphasised by Scheepers (1986). One of the goals of the former Vegetation Ecology Division of the Botanical Research Institute (now part of the Roodeplaat Grassland Institute of the Agricultural Research Council), is the production of a vegetation classification on a national basis (Scheepers 1986). A vegetation classification of the North-eastern Mountain Sourveld would contribute to this national goal.

Within this area Deall (1985) and Deall *et al.* (1989b) described the vegetation of a narrow transect of the escarpment in the Sabie area, while Scheepers (1978) investigated the vegetation of the Westfalia Estate. Matthews *et al.* (1991a, 1991b, 1992) described the communities associated with Black Reef quartzite rock outcrops, the relatively drier dolomitic regions and those of the high altitudes of the escarpment. In this paper the vegetation of the relatively low altitudes is

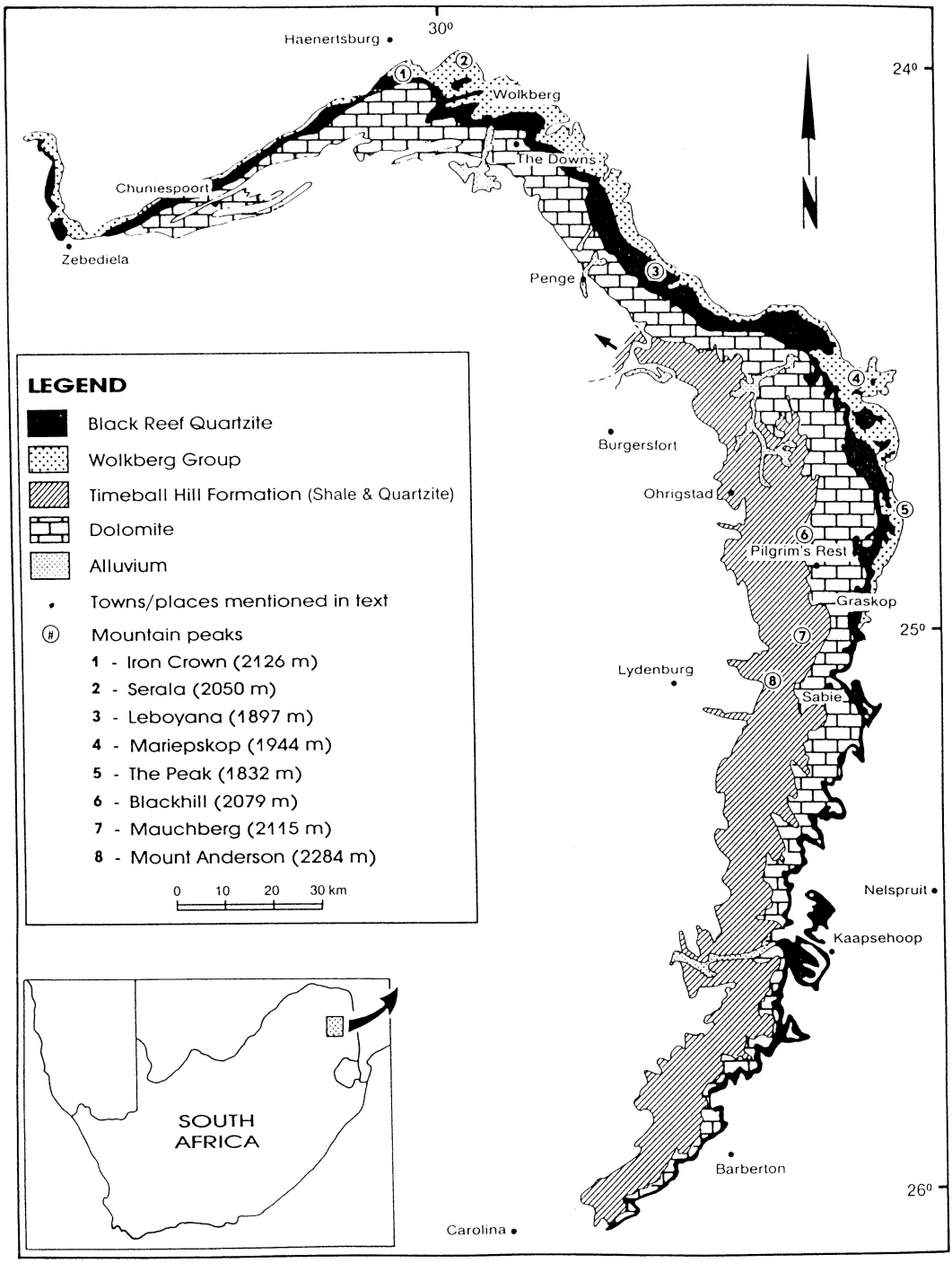

Fig. 1. Map showing the locality of the study area, simplified geology and position of major mountain peaks (After Geological Survey 1984).

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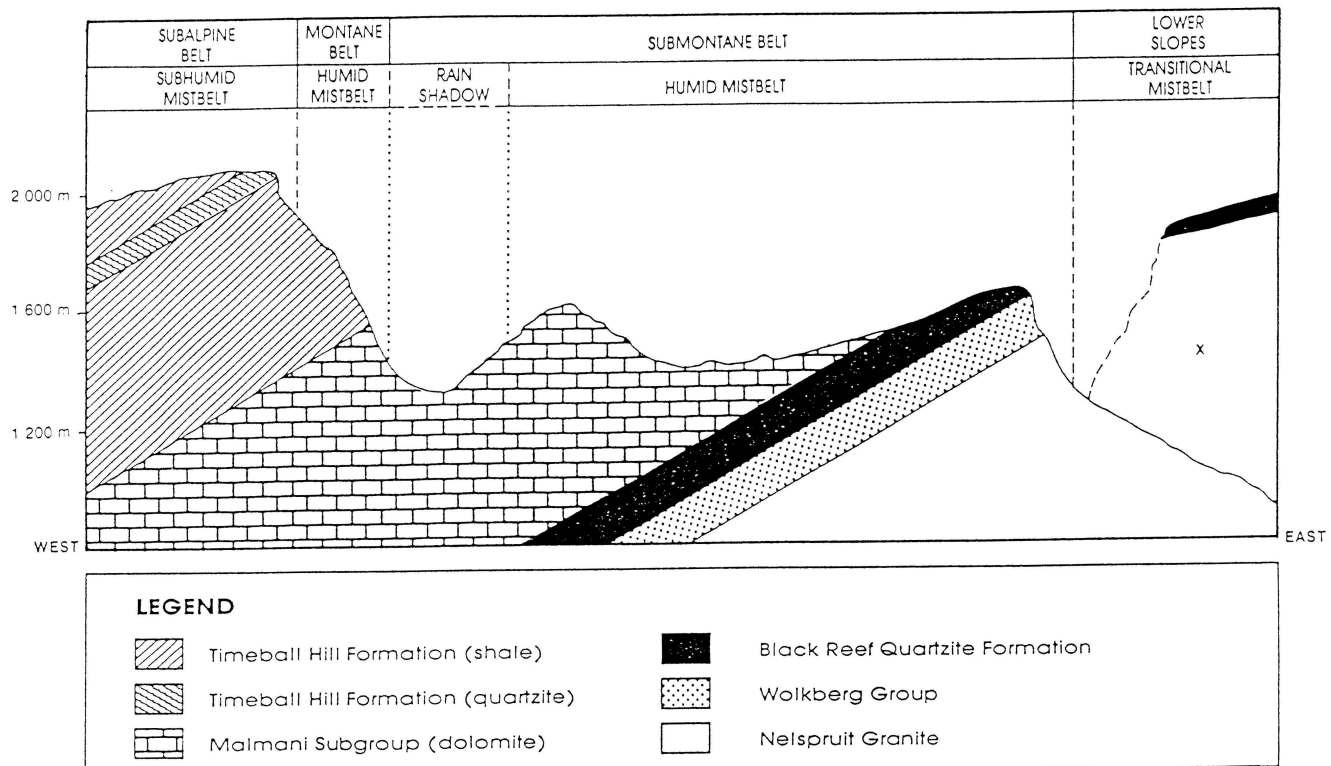

Fig. 2. A schematic representation of the profile of the central sections of the study area of the Transvaal escarpment, to show positions of physiographic and mist belts. Note: the dip of the geological layers is exaggerated (actual dip is approximately 7°). x - Free standing area.

Table 1

Mean annual and absolute maximum and minimum rainfall for relevant weather stations of the eastern Transvaal escarpment (Erasmus 1987)

Stations (F S = Forest Station)	Grid	Alt. (m)	Period (Yrs)	Annual Rainfall (mm)		
				Min	Max	Mean
1. Lisbon F S	24°53′S; 30°51′E	1402	21	1000	2354	1579
2. Mac Mac F S	24°59′S; 30°49′E	1360	59	814	2331	1515
3. Graskop	24°56′S; 30°51′E	1487	24	708	1821	1321
4. Blyde F S	24°50′S; 30°50′E	1433	49	314	1931	1130
5. The Downs	24°08′S; 30°11′E	1350	56	524	1701	948
6. Clewer House	24°54′S; 30°41′E	1750	21	543	1379	943
7. Pilgrim's Rest	24°55′S; 30°46′E	1240	56	526	1502	938
8. Morgezon F S	24°53′S; 30°43′E	1630	27	384	1162	800
9. Frankfort	24°49′S; 30°45′E	1300	28	537	1094	777

described. The above studies together with other studies in the Grassland Biome, e.g. Deall (1985), Bezuidenhout (1988), Bloem (1988), Bredenkamp *et al.* (1989), Turner (1989), Shackleton (1989), Bezuidenhout & Bredenkamp (1990, 1991), Kooij (1990) and Du Preez & Bredenkamp (1991) should provide adequate knowledge of the grassland vegetation to eventually compile a formal syntaxonomy of the plant communities identified in this study.

The study area

The location of the study area is shown in Fig. 1. This part of the Transvaal is mountainous and much of it is undeveloped. The developed areas (mainly forestry) are found around Sabie, Pilgrim's Rest and Graskop. The terrain is mostly inaccessible to conventional vehicles and many parts can only be reached on foot or by the use of specialised vehicles. The lack of data on rainfall and temperature is due to the absence of weather stations.

A detailed description of the physical environment of the area is given by Matthews (1991). The main rock types found in the study area are quartzite, dolomite and shales. The area considered here encompasses the low-lying zones of the study area (below 1 600 m). It includes most of the geological formations (Fig. 2).

Soils of these areas are varied as a result of the varied geology and topography, but are mostly of the shallow Hutton form, found on the plateaux and the valley sides. The rock outcrops and many of the valley sides have shallow lithosols, with the dominant soil forms being Mispah and Glenrosa (Land Type Survey Staff 1989).

The climate of the eastern Transvaal escarpment can be described as seasonally arid, subtropical, with hot, wet summers and cool dry winters (Fabricius 1988). Rainfall data for specific stations relevant to the habitats discussed in this paper are given in Table 1. Most areas are wet with a mean annual rain-

fall of >800 mm (compare Table 1). Characteristic of the escarpment is the occurrence of mist in the mistbelt zones (Fig. 2).

Methods

Two hundred 100 m^2 sample plots (10 m x 10 m) were distributed in a stratified, random manner throughout the entire study area. The plots were equally distributed in different physiographical-physiognomically homogeneous units, distinguished on the basis of physiognomy, dominant species composition, and abundance. This resulted in 53 sample plots being placed in the broad unit described as relatively low-altitude vegetation. Sampling was carried out from January to May 1990. Taxon names conform to those of Arnold & De Wet (1993).

The total floristic composition, as well as cover-abundance values for each species, was recorded in each sample plot by using the Braun-Blanquet cover-abundance scale as described by Mueller-Dombois & Ellenberg (1974). Environmental data recorded (Matthews *et al.* 1991a) include altitude, gradient, aspect, rock cover, size of rocks, topographical position and land type (Land Type Survey Staff 1989), and geology (Geological Survey 1986).

Two-way indicator species analysis (TWINSPAN) (Hill 1979) was applied to the floristic data set in order to derive a first approximation of the plant communities. Refinement of this classification was done by the application of Braun-Blanquet procedures (Behr & Bredenkamp 1988; Bredenkamp *et al.* 1989).

Results and discussion

Classification

The results are presented in a phytosociological table (Table 2). In general the vegetation of this area can be described as grassland found predominantly at altitudes below 1 600 metres, except for the hotter northern por-

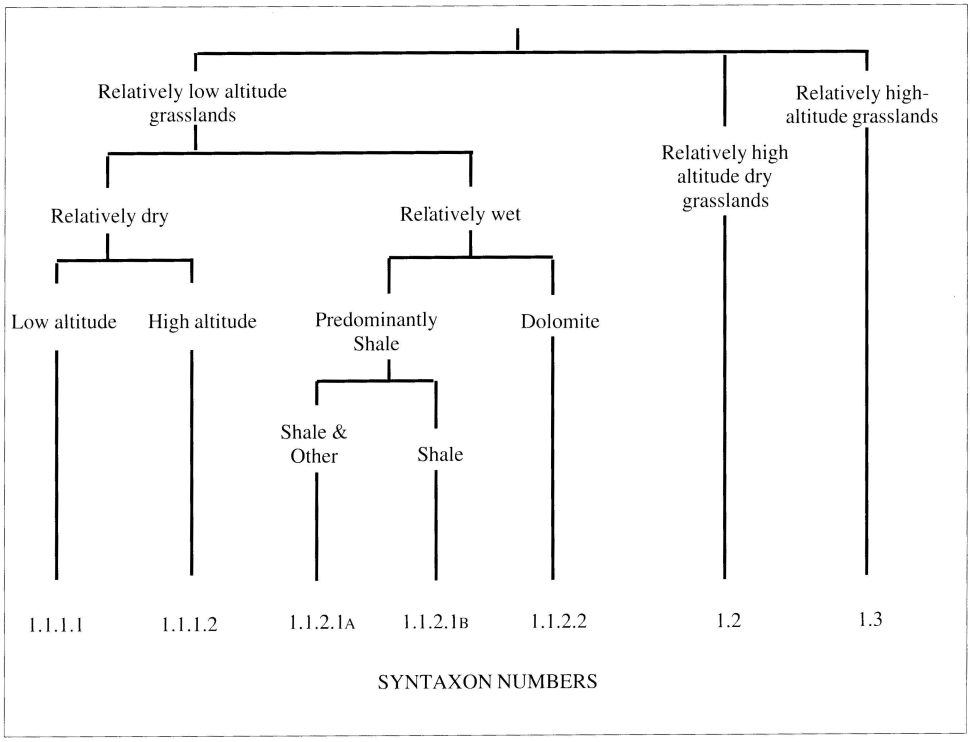

Fig. 3. Dendrogram to illustrate the habitat relationships of the syntaxa. (See text for explanation of the syntaxa).

tions of the study area, where this vegetation type may also occur at cooler, higher altitudes.

The grass species *Eragrostis racemosa*, *Monocymbium ceresiiforme*, *Rendlia altera*, *Trachypogon spicatus* and *Diheteropogon filifolius* are prominent and the forbs *Aeschynomene nodulosa*, *Commelina africana*, *Haplocarpha scaposa*, *Helichrysum oreophilum*, *Dicoma anomala*, *Senecio coronatus* and *Hypoxis galpinii* are constantly present throughout this grassland (species group L, Table 2). The number of species recorded per sample plot ranges from a minimum of 17 to a maximum of 46 with an average of 26 species per plot (Table 2).

Owing to the complex and heterogeneous topography and the resultant climatic differences within this grassland, great variation in habitat exists, resulting in the presence of many different syntaxa. The analysis resulted in the identification of seven plant communities. In a hierarchical classification these communities are arranged into one class, one alliance, four associations, four subassociations and two variants. The first major plant community of the low-altitude areas is the *Loudetio simplicis - Alloteropsidetea semialatae* (species group J, Table 2). The hierarchical classification of the vegetation also indicates a broad association between plant communities and habitat (Figure 3). The plant communities recognised in the study area are classified as follows:

1. *Loudetio simplicis - Alloteropsidetea semialatae*, representing the vegetation of the relatively low-altitude areas of the North-eastern Mountain Sourveld.

1.1 *Indigofero sanguineae - Panicion natalensis*, a grassland of relatively low-altitudeareas.

1.1.1 *Diheteropogono amplectentis - Proteetum gaguedi*, a grassland of dry, rocky areas.

1.1.1.1 *Diheteropogono amplectentis - Proteetum gaguedi - hemizygietosum transvaalensis*, a grassland of relatively lower-altitude areas.

1.1.1.2 *Diheteropogono amplectentis - Proteetum gaguedi - fadogietosum tetraquetra*, a grassland of somewhat higher-altitude areas.

1.1.2 *Panico natalensis - Andropogonetum schirensis*, a grassland of wet areas.

1.1.2.1 *Panico natalensis - Andropogonetum schirensis - bulbostyletosum oritrephes*, a grassland of wet, predominantly shale areas.

1.1.2.1.a *Tetraselago wilmsii* variant.

1.1.2.1.b *Eriosema ellipticifolium* variant.

1.1.2.2 *Panico natalensis - Andropogonetum schirensis - hypoxidetosum filiformis*, a grassland of wet, predominantly dolomite areas.

1.2 *Eragrostido scleranthae-Monocymbietum ceresiiformis*, a grassland community of flat, not rocky, relatively high altitudes on Black Reef Quartzites.

1.3 *Diheteropogono filifolii - Scilletum nervosae*, a grassland community of relatively high altitudes on Timeball Hill Quartzites.

Description of the plant communities

1. *Loudetio simplicis -Alloteropsidetea semialatae* class nov.

Nomenclatural Type : 149

These are grasslands found predominantly at altitudes between 1 250 m and 1 600 m on the various geological formations in the study area. Included here are also the somewhat higher (predominantly over 1 600 m) altitude,

dry grassland. Mean annual rainfall ranges from 777 mm to over 1 000 mm (Table 1).

This class is large and heterogeneous and is characterised by species group J (Table 2). The diagnostic species are the grasses *Loudetia simplex* which is often dominant, *Alloteropsis semialata* and *Stiburus alopecuroides*, the sedge *Bulbostylis burchellii*, the forbs *Vernonia natalensis*, *Helichrysum pilosellum*, *Clutia monticola*, *Helichrysum aureonitens*, *Helichrysum acutatum*, *Acalypha angustata* var. *glabra* and the semi-woody forb *Rhus discolor*. An average of 27 species was recorded per relevé (Table 2).

1.1 *Indigofero sanguineae - Panicion natalensis* all. nov.

Nomenclatural type: relevé 149

These are relatively lower altitude grasslands found predominantly at altitudes between 1 250 m and 1 600 m on the various geological formations. Mean annual rainfall ranges from 777 mm to over 1 000 mm (Table 1).

This alliance is characterised by species group H (Table 2). The diagnostic species are the grass species *Themeda triandra*, *Panicum natalense*, *Eulalia villosa* and the forbs *Indigofera sanguinea*, *Inezia integrifolia*, *Lopholaena disticha*, *Pearsonia sessilifolia* subsp. *sessilifolia* and *Alepidea gracilis* var. *major*. An average of 27 species was recorded per relevé (Table 2).

Within this alliance two associations (1.1.1 and 1.1.2), each with two subassociations, one having two variants, were identified.

1.1.1 *Diheteropogono amplectentis - Proteetum gaguedi* ass. nov.

Nomenclatural Type: relevé 105

This association is restricted to dry areas (Table 1, Frankfort weather station), found at altitudes between 1 250 m and 1 600 m. These dry areas occur on rocky (10 - 50% rock cover) slopes on most geological formations of the study area, but not on dolomite.

The association is characterised by species group C (Table 2). The diagnostic species are the grass species *Diheteropogon amplectens*, *Bewsia biflora*, *Tristachya leucothrix*, the dwarf shrub *Protea gaguedi* and the forbs *Pentanisia angustifolia*, *Helichrysum miconiifolium*, *Parinari capensis* and *Berkheya insignis*. An average of 28 species was recorded per relevé (Table 2).

This syntaxon shows affinities with the dry communities described from the dolomite area (Matthews *et. al.* 1991b) of the study area for example the *Hemizygio tranvaalensis - Loudetietum simplicis*, a grassland of dolomite valley sides and slopes.

1.1.1.1 *Diheteropogono amplectentis - Proteetum gaguedi - hemizygietosum transvaalensis* subass. nov.

Nomenclatural Type: relevé 105

This is the typical subassociation of the dry grasslands (Table 1, Frankfort weather station), found on rocky slopes at low altitudes (1 250 m).

This subassociation is characterised by species group A (Table 2). The diagnostic species are the grass species *Cymbopogon validus*, *Hyparrhenia filipendula* var. *pilosa*, *Melinis repens* subsp. *repens*, *Setaria sphacelata* var. *torta* and the woody forbs *Hemizygia transvaalensis*, *Hermannia staurostemon*, *Geigeria elongata*, *Triumfetta welwitschii* var. *welwitschii*, the forbs *Thesium costatum* var. *costatum*, *Anthospermum pumilum* subsp. *pumilum*, *Zornia capensis*, *Senecio microglossum*, *Pygmaeothamnus zeyheri*, the ground creeper *Turbina oblongata* and the geophyte *Hypoxis rigidula* var. *rigidula*. An average of 28 species was recorded per relevé (Table 2).

Table 2

A phytosociological table of the relatively low-altitude regions of the North-eastern Mountain Sourveld of the eastern Transvaal escarpment

Community number	1	1.1										1.2		1.3
	1.1.1				1.1.2									
	1.1.1.1		1.1.1.2		1.1.2.1			1.1.2.2						
					a		b							
Releve number	001111110 882402992 954355214		001101101 432535296 256475256		00010 00021 19637		00000 11000 10438	11101101111 34693435256 56244932835				11111210 88888079 26739083		111111 161600 085979
Species per releve	222222223 855897882		342132212 560912676		43333 20531		22122 63987	22221121122 75279937797				22212221 42680159		223222 460270
Species group A														
Hypoxis rigidula	+++ + ++		+ +		+									
Hemizygia transvaalensis	++ ++ +													
Turbina oblongata	+ +1 +		+											
Thesium costatum	++ +											+		+ +
Anthospermum pumilum	+ +A		1									++	+	+ +
Cymbopogon validus	+ A A+													
Zornia capensis	+ R+ +		R		+		+	+						+
Hyparrhenia filipendula	1 ++													
Senecio microglossum	++ +		+											
Melinis repens	++ +				+									
Geigeria elongata	++													
Hermannia stäurostemon	++													
Pygmaeothamnus zeyheri	+1		1										+	
Triumfetta welwitschii	++													
Faurea speciosa	1R		+		A									
Setaria sphacelata	+ +											R		
Species group B														
Fadogia tetraquetra			++ + + ++		+									
Indigofera atrata	+	+	++++ +				+	+						
Acalypha sp.	+		+ +	+	+									
Raphionacme galpinii		+	R ++											+
Gnidia kraussiana			+ +					+						
Tenrhynea phylicifolia			++											
Athrixia phylicoides			+ +				+							
Vernonia centaureoides			+ +											
Cyperus obtusiflorus			++				R	+						+
Species group C														
Diheteropogon amplectens	++1+1++		R ++++1 +		+		+							
Pentanisia angustifolia	++ ++++ +		+++++ ++		++		++				+ +	+ +		+
Bewsia biflora	1++ + +		+ R											
Tristachya leucothrix	+ 1 +		+++ +											
Protea gaguedi	A +A +		A A AA				A	+ R	+					A

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Table 2 (continued)

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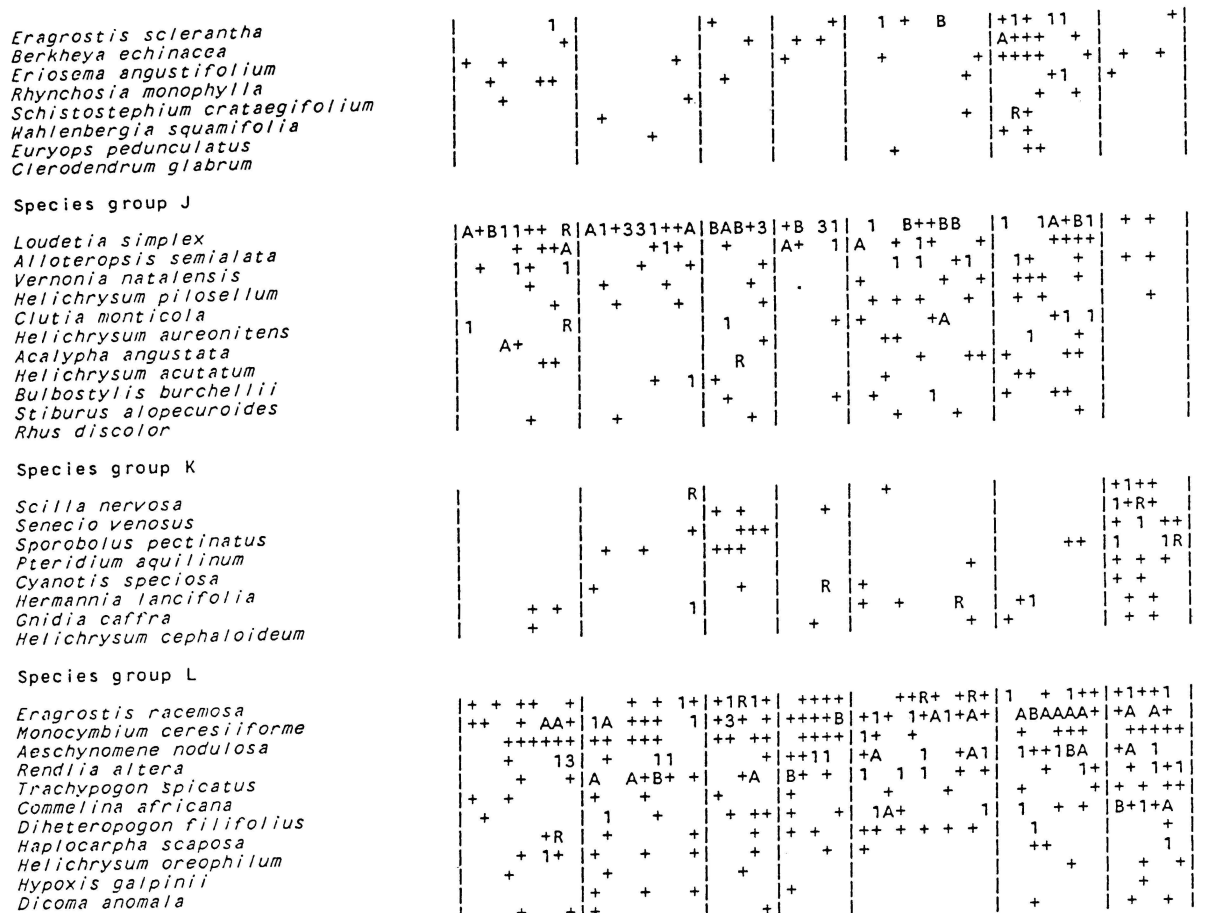

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The data indicate a possible variant, characterised by *Hermannia staurostemon*, *Geigeria elongata*, *Triumfetta welwitschii* var. *welwitschii*, and *Pygmaeothamnus zeyheri*, and represented by relevès 85 and 89.

Trees of *Faurea speciosa*, on average 2 m tall, and 1,5 m high shrubs of *Protea gaguedi* are typically found in this subassociation. The herbaceous layer is well developed, the dominant grass species include *Loudetia simplex*, *Diheteropogon amplectens*, *Bewsia biflora*, *Themeda triandra*, *Monocymbium ceresiiforme* and *Eragrostis racemosa*. Other prominent forbs are *Pentanisia angustifolia*, *Indigofera sanguinea* and *Aeschynomene nodulosa*.

1.1.1.2 *Diheteropogono amplectentis - Proteetum gaguedi - fadogietosum tetraquetra* subass. nov.

Nomenclatural Type: relevé 42

These are dry grasslands (Table 1, Morgenzon weather station), found at somewhat higher altitudes (1 600 m) than the *hemizygietosum transvaalensis* (1.1.1.1). Although this community is associated with a relatively higher altitude, this is still predominantly lower as well as drier than the high altitude communities described by Matthews *et al.* (1992). This subassociation is found on rocky (10 - 35% rock cover) slopes on the various geology formations of the study area, but not on dolomite.

This subassociation is characterised by species group B (Table 2). There are no diagnostic grass species. The diagnostic species are mostly semi-woody forbs namely *Fadogia tetraquetra*, *Indigofera atrata*, *Gnidia kraussiana* var. *kraussiana*, *Tenrhynea phylicifolia*, *Athrixia phylicoides* and *Vernonia centaureoides*, the sedge *Cyperus obtusiflorus* and the geophyte *Raphionacme galpinii*. An average of 27 species was recorded per relevé (Table 2).

There are no prominent trees besides the 1,5 m tall shrubs of *Protea gaguedi* found in this subassociation. The herbaceous layer is well developed, the dominant grass species include *Loudetia simplex*, *Diheteropogon amplectens*, *Panicum natalensis*, *Monocymbium ceresiiforme* and *Trachypogon spicatus*. Prominent forbs are *Pentanisia angustifolia*, *Indigofera sanguinea* and *Aeschynomene nodulosa*.

1.1.2 *Panico natalensis - Andropogonetum schirensis* ass. nov.

Nomenclatural Type: relevé 9

These are relatively wetter grasslands (Table 1, Lisbon weather station) found on rocky (1 - 35% rock cover) slopes on most of the geological formations of the study area, but it is scarce on the Timeball Hill Quartzites.

This association is characterised by species group G (Table 2). The diagnostic species are the grass species *Andropogon schirensis*, *Ctenium concinnum*, *Loudetia* sp. (Matthews no. 470), the forbs *Selago hyssopifolia*, *Eriosema ellipticifolium*, *Cephalaria pungens*, *Sopubia cana* and the small semi-woody shrub *Phymaspermum acerosum*. An average of 27 species was recorded per relevé (Table 2).

Two subassociations were identified:

1.1.2.1 *Panico natalensis - Andropogonetum schirensis -bulbostyletosum oritrephes* subass. nov.

Nomenclatural Type: relevé 9

This subassociation is found on predominantly flat areas, on most of the geological formations, but mostly on shale.

The vegetation is characterised by species group E (Table 2). The diagnostic species are the grass *Koeleria capensis*, the sedges *Bulbostylis oritrephes* subsp. *australis* and *Kyllinga alba*, the 1 m tall shrubby *Protea caffra*, the dwarfshrub *Erica caffrorum* var. *caffrorum*, and the forbs *Pentanisia prunelloides*, *Gnidia capitata*, *Senecio erubescens* and *Vernonia hirsuta*. An average of 30 species was recorded per relevé (Table 2).

With the exception of *Protea caffra* there are no prominent trees or shrubs. The herbaceous layer is well developed. The dominant grass species include *Andropogon schirensis*, *Loudetia* sp. (Matthews no. 470), *Ctenium concinnum*, *Loudetia simplex*, *Monocymbium ceresiiforme*, *Eragrostis racemosa*, *Trachypogon spicatus*, *Rendlia altera*, *Diheteropogon filifolius* and *Panicum natalense*. The latter species has its highest constancy in this subassociation. Other prominent species include the forbs *Eriosema ellipticifolium*, *Indigofera sanguinea* and *Aeschynomene nodulosa*.

1.1.2.1.a *Tetraselago wilmsii* variant.

This variant is found on slopes and flattish areas of predominantly shale but is also found on Black Reef quartzite and dolomite.

This community is characterised by species group D (Table 2). The diagnostic species are the grass species *Schizachyrium sanguineum*, *Melinis nerviglume*, the small semi-woody shrubs *Tetraselago wilmsii* and *Rhus tumulicola*, the forbs *Acalypha* sp., *Pearsonia obovata* and *Wahlenbergia krebsii* subsp. *krebsii*. An average of 34 species was recorded per relevé (Table 2).

1.1.2.1.b *Eriosema ellipticifolium* variant.

This variant is found on flattish areas of shale. This community is characterised by the absence of species group D (Table 2). There are no diagnostic species for this variant although *Eriosema ellipticifolium* has a high constancy. An average of 25 species was recorded per relevé (Table 2).

1.1.2.2 *Panico natalensis - Andropogonetum schirensis - hypoxidetosum filiformis* subass. nov.

Nomenclatural Type: relevé 149

These are wet grasslands found on slopes and flattish areas with the low rock cover (0 - 10% rock cover), predominantly on dolomite.

This subassociation is characterised by species group F (Table 2). The diagnostic species are the grass species *Microchloa caffra*, the small woody dwarfshrub *Erica woodii*, the forbs *Oxalis obliquifolia*, *Craterocapsa tarsodes* and the small geophyte *Hypoxis filiformis*. An average of 23 species was recorded per relevé (Table 2).

There are no prominent trees or shrubs present in this subassociation. The herbaceous layer is well developed, and the dominant grass species include *Andropogon schirensis*, *Loudetia* sp., *Panicum natalense*, *Eulalia villosa*, *Alloteropsis semialata*, *Loudetia simplex*, *Monocymbium ceresiiforme*, *Eragrostis racemosa*, *Trachypogon spicatus* and *Rendlia altera*. Other prominent forbs are *Selago hyssopifolia*, *Indigofera sanguinea* and *Haplocarpha scaposa*.

1.2 *Eragrostido scleranthae - Monocymbietum ceresiiformis* ass. nov.

Nomenclatural Type: relevé 187

These are moderately wet grasslands (Table 1, Graskop weather station) being found at relatively high altitudes within the study area, between 1 500 m and 1 850 m. Although this community is associated with a relatively

higher altitude, this is still predominantly lower than the high-altitude communities described by Matthews *et al.* (1992). This association is found on flat not-rocky (1 - 10% rock cover) areas, predominantly on the Black Reef Quartzite Formation.

This association is characterised by species group I (Table 2). The diagnostic species are the grass *Eragrostis sclerantha*, the forbs *Berkheya echinacea* subsp. *echinacea*, *Eriosema angustifolium*, *Schistostephium crataegifolium*, *Clerodendrum glabrum*, *Wahlenbergia squamifolia* and *Euryops pedunculatus* and the ground creeper *Rhynchosia monophylla*. An average of 22 species was recorded per relevé (Table 2).

There are no prominent trees or shrubs present in this association. The herbaceous layer is well developed, the dominant grass species include *Loudetia simplex*, *Alloteropsis semialata*, *Eragrostis racemosa*, *Rendlia altera* and *Monocymbium ceresiiforme*. Another prominent forb is *Aeschynomene nodulosa*.

1.3 *Diheteropogono filifolii - Scilletum nervosae* ass. nov.

Nomenclatural Type: relevé 110

These are moderately wet grasslands (Table 1, Clewer House weather station), found at relatively high altitudes (1 850 m) in the southern part of the study area, although in the north they are found at lower altitudes. Although this community is associated with relatively higher altitudes, its distribution is still predominantly at lower altitudes, as well as drier habitats than those of the high altitude communities described by Matthews *et al.* (1992). This association is found on flat, rocky (0 - 20% rock cover) areas of quartzite of the Timeball Hill Formation, although in the northern areas it is found on the Wolkberg Group.

This community is characterised by species group K (Table 2). The diagnostic species are the grass *Sporobolus pectinatus*, the fern *Pteridium aquilinum*, the forbs *Senecio venosus*, *Cyanotis speciosa* and *Hermannia lancifolia* and the geophyte *Scilla nervosa*. In the northern parts of the study area *Gnidia caffra* and *Helichrysum cephaloideum* are additionally diagnostic. An average of 25 species was recorded per relevé (Table 2).

There are no prominent trees or shrubs present in this association. The herbaceous layer is well developed, the dominant grass species include *Eragrostis racemosa*, *Diheteropogon filifolius*, *Monocymbium ceresiiforme* and *Trachypogon spicatus*. Other prominent forbs are *Aeschynomene nodulosa* and *Commelina africana*.

Concluding Remarks

The aim of this study was to identify, characterize and interpret ecologically, by using habitat properties, the major vegetation units and their variations that occur in the North-eastern Mountain Sourveld of the eastern Transvaal escarpment. Since ecologically interpretable plant communities were distinguished, the general descriptions and proposed classification can be used for land-use planning and management. This is of special interest for the allocation of land for afforestation.

One class, one alliance, four associations, four subassociations and two variants are described for the first time. Related communities were recognised along the low Drakensberg in north-western Natal (Smit *et al.* 1993) and in the north-eastern Orange Free State (Eckhardt *et al.* 1993). This classification should contribute to the syntaxonomic synthesis of grassland communities along the South African eastern escarpment.

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