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**VEGETATION AND FLORA OF THE SOUTHERN  
DRAKENSBERG ESCARPMENT AND ADJACENT AREAS**

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**VEGETATION AND FLORA OF THE SOUTHERN DRAKENSBERG  
ESCARPMENT AND ADJACENT AREAS**

by

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*It is the responsibility of all who are alive today  
to accept the trusteeship of wildlife  
and to hand on the posterity,  
as a source of wonder and interest,  
knowledge and enjoyment,  
the entire wealth of diverse animals and plants.  
This generation has no right by selfishness,  
wanton or unintentional destruction,  
or neglect,  
to rob the future generations of this great heritage.  
Extermination of other creatures  
is a disgrace to mankind.*

*— The World Wildlife Charter, 1962*

This work is dedicated to Yolande, my family, and everybody who made its completion possible.

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## CHAPTER 1

### INTRODUCTION

In the central part of the northern border of the Eastern Cape Province, previously known as the north-eastern Cape, lies an area where the beauty of nature in all its diversity and intricacy can be experienced and studied. This area comprises the southern-most extension of the Drakensberg Mountains and its adjacent foothills.

The north-eastern regions of the Eastern Cape are likely to be one of the last areas of fairly undisturbed natural grassland in South Africa, destined for commercial afforestation. This provides an excellent opportunity to research and monitor an array of effects of forestry on the environment. Forestry in the Maclear-Elliot districts commenced in 1988. North East Cape Forests (NECF) is currently planning to create 58 000 ha of new plantations, principally pine. NECF has also promoted the concept of private farmers afforesting portions of their land, which, to the extent that it is successful, will add to total afforestation in the region. The total planted area could eventually be as much as 80 000 ha (Scott 1992), but this figure only covers planted areas and does not necessarily account for the total area of pristine grassland that will be destroyed. NECF afforestation will probably also be extended eastwards and northwards into areas of the former Transkei.

Afforestation, which commenced without any environmental impact studies. This is a severe threat to the region's flora, which is floristically virtually unexplored. Plant specimens collected up to date are very few in number and collections have mostly been concentrated along the main roads (e.g. Barkly Pass and Naude's Neck Pass). The area that could potentially be destroyed by afforestation, could well represent the most extensive destruction of South African flora, and especially of high-altitude grasslands, in recent years.

The establishment of NECF (managed under the auspices of Mondi Paper Company) in the Maclear-Elliot districts with their afforestation objectives (Scott 1992) necessitated the then Cape Nature Conservation to survey the area's vegetation in order to determine which

endemic and rare plant taxa are present as well as to determine whether these would be endangered by current afforestation activities.

The Kwazulu-Natal and Mphumalanga part of the Drakensberg is well-known for having many rare and endemic species (Hilliard & Burt 1987 and Matthews, Van Wyk & Bredenkamp 1993). Areas of the Eastern Cape Drakensberg and foothills that have been demarcated for afforestation may also have rare and endemic species which will be lost forever due to ignorance about their distribution. This area is the only part of the Eastern Cape Province containing Afro-alpine vegetation, which is in urgent need of conservation. It is thus ironic that recent impact studies done in the area (GIS Forestek Jonkershoek) did not include any floristic/vegetational surveys or data. It is also tragic that so much natural veld should be destroyed without any records of the vegetation and flora present before the destruction.

Most of the study area falls within the magisterial districts of Maclear and Elliot. The conservation and environmental management of an area can only be efficient if the vegetation and ecology of that area exist and are well documented and understood (Bredenkamp & Theron 1978, 1980). In this sense it is particularly important to know which plant communities and plant species are found in a particular area, which specific habitats they occupy and what the conservation status of these communities and species is. This study, therefore, is primarily aimed at obtaining a minimal knowledge on the vegetation of the area. With this as a basis, management and conservation strategies may be implemented to help in the assessment of potential environmental management and conservation of the greater region.

The main aim of this project is to provide the basic and necessary floristic/ecological information that can be used for proposals on realistic conservation and land use in this area. As a result of forestry activities in the area, the natural vegetation is being permanently destroyed. This necessitates the inventory of plant species which would have occurred naturally in the afforested area.

Other aims of the project were:

- To produce an inventory of all plant species in the area, supported by voucher specimens deposited in official herbaria.
- To identify endemic, rare and threatened plant species, and to map their distribution in the area.
- To comment on the floristic status of the area and to identify biogeographical patterns and floristic affinities with surrounding areas (especially the KwaZulu-Natal portion of the high Drakensberg).
- To study habitat diversity — to determine especially the specific habitats of rare, threatened or endemic species in this area.
- To identify the plant communities and to describe them.
- To correlate the distribution of endemic/rare taxa with particular plant communities or environmental conditions.
- To indicate the most important environmental factors which might have an influence on vegetation and floristic diversity in the area.
- To determine and emphasize the impact of forestry on the floristic diversity of the area, and to make recommendations on sensitive areas that should be conserved in afforested areas.
- To make recommendations on vegetation management of areas not afforested, in order to maintain maximum floristic diversity in the area.
- To collect data, especially on distribution of plant species, in a format that would enable its use in a GIS system.



## **CHAPTER 2**

### **STUDY AREA**

The main Drakensberg Escarp forms the backdrop to the study area. Innumerable rolling hills and steep valleys lead up to the main escarpment of the Drakensberg to the west of the former Transkeian border. The structure of the Drakensberg, between Xalanga Peak (west of Elliot) and Mont aux Sources (KwaZulu-Natal), is remarkably homogeneous, and the scenery repeats itself over and over again (Killick 1963).

Climatic, topographic, edaphic and biotic factors are all potential constraints on-land-based communities, and thus most important for biogeographical and ecological studies (Schultze & McGee 1978). In this chapter a brief overview of the physical environment in the study area, and its effects on the vegetation of the region, is given. A historical review, including aspects of botanical exploration, is also given.

#### **2.1 LOCATION**

The study area is located in the Eastern Cape Province (formerly referred to as the North-Eastern Cape) in the Barkly East, Elliot and Maclear Districts (mainly the Maclear District). It is situated between 30°40' and 31°35' S, and 27°25' and 28°35' E, and covers an approximate area of 3 600 km<sup>2</sup>. (Figure 2.1). It comprises parts of the 3026 Aliwal North, 3028 Kokstad, 3126 Queenstown, and 3128 Umtata sheets of South Africa 1:250 000 topocadastral maps.

#### **2.2 PHYSICAL ENVIRONMENT**

##### **2.2.1 Physiography/Topography**

The region forms a shelf between two escarpments: a smaller one to the east and south-east which roughly forms the western border of the former Transkei, and the second major one



to the west and northwest which is the southern-most extension of the Drakensberg (Scott 1992). The elevation of the region ranges between 1 100 m at the lower parts of the plateau and 2 750 m on the western peaks of the southern Drakensberg. The terrain is fairly variable, ranging from the steep craggy slopes of the Drakensberg Escarpment and foothills in the west to gently undulating slopes of the plateau to the south and east (Scott 1992).

Following the reasoning of Killick (1963), Scheepers (1978) and Deall *et. al.* (1989) the high Drakensberg of Lesotho and KwaZulu-Natal has been divided into three broad physiographic belts or zones (Figure 2.2). These zones can also be identified in the study area, though it is not as clearly distinguishable as in the main escarpment of Kwa-Zulu-Natal. The zones identified by Killick (1963) are as follows:

1. Alpine Belt. This belt occupies a narrow strip at the edge of the Drakensberg Escarpment generally above 2 850 m. The vegetation of the alpine belt consist of climax heath communities dominated chiefly by low woody species of *Erica* and *Helichrysum* interspersed with alpine grassland dominated by by species of *Festuca*, *Merxmullera* and *Pentaschistis*. In addition there are numerous hydroseral and lithoseral communities.

2. Subalpine Belt. This belt extends from the edge of the Little berg to just below the summit of the Drakensberg, at altitudes of 1 830 m — 2 850. The vegetation consists mainly of tussock grassland, with *Themeda triandra* a prominent constituent. Also present are Temperate Grassland occurring on mesocline slopes, Tall Grassland, *Rendlia altera* Grassland and the *Danthonia macowanii* communities. Woody communities include *Cliffortia linearifolia* Scrub, *Leucosidea sericea* Scrub, *Buddleja salviifolia* Scrub, limited *Protea* Savanna and *Passerina-Philippia-Widdringtonia* Fynbos. Ecotonal areas are present in the upper and lower areas of this belt.

3. Montane Belt. This belt extends from the valley floors to the lowermost basalt cliffs at the edge of the Little Berg, i.e. 1 280 m — 1 830 m altitude. The greater part of this belt is occupied by tussock grassland, chiefly *Themeda triandra* Grassland, but also *Hyparrhenia* Grassland and *Miscanthidium-Cymbopogon* Grassland. Species of *Protea* are scattered throughout the Grassland to form *Protea* Savanna in places. The main woody

communities are Boulder-bed scrub, Steambank scrub, *Leucosidea-Buddleja* scrub *Greyia-Cussonia* communities, Cliff scrub, *Widdringtonia nodiflora* communities and *Podocarpus latifolius* forest.

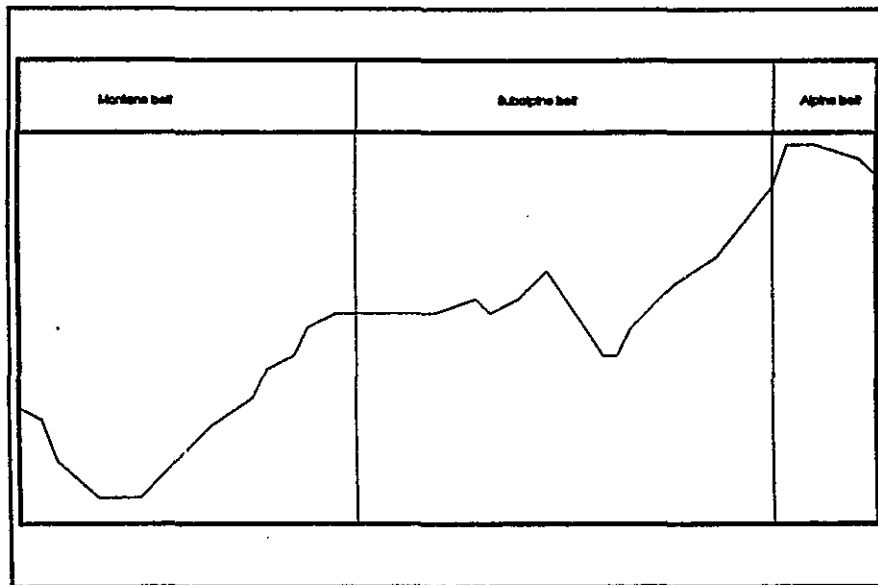


Figure 2.2 Profile of the high Drakensberg (KwaZulu-Natal) showing the main vegetation belts based on Killick (1963).

The three vegetation belts coincide with what are believed to be the three climax communities of each of these belts, i.e. (i) *Podocarpus latifolius* forest (Montane belt), (ii) *Passerina-Phillipia-Widdringtonia* fynbos (Subalpine belt) and (iii) *Erica-Helichrysum* heath (Alpine belt). The belts also coincide with the three terraces in the Drakensberg, namely the river valley system, the Little Berg and the summit area of the Drakensberg (Killick 1963). In the study area, however, the altitudinal ranges are between 1 100 m — 2 750 m, which do therefore do not include the alpine belt as defined by Killick (1963).

### 2.2.2 Drainage

The study area includes three primary catchments, those of the Mzimvubu, Mbashe and Mtata River systems (Figure 2.3). These catchments contain innumerable small streams and all the rivers in the area have their origin in the southern Drakensberg Escarpment. All the

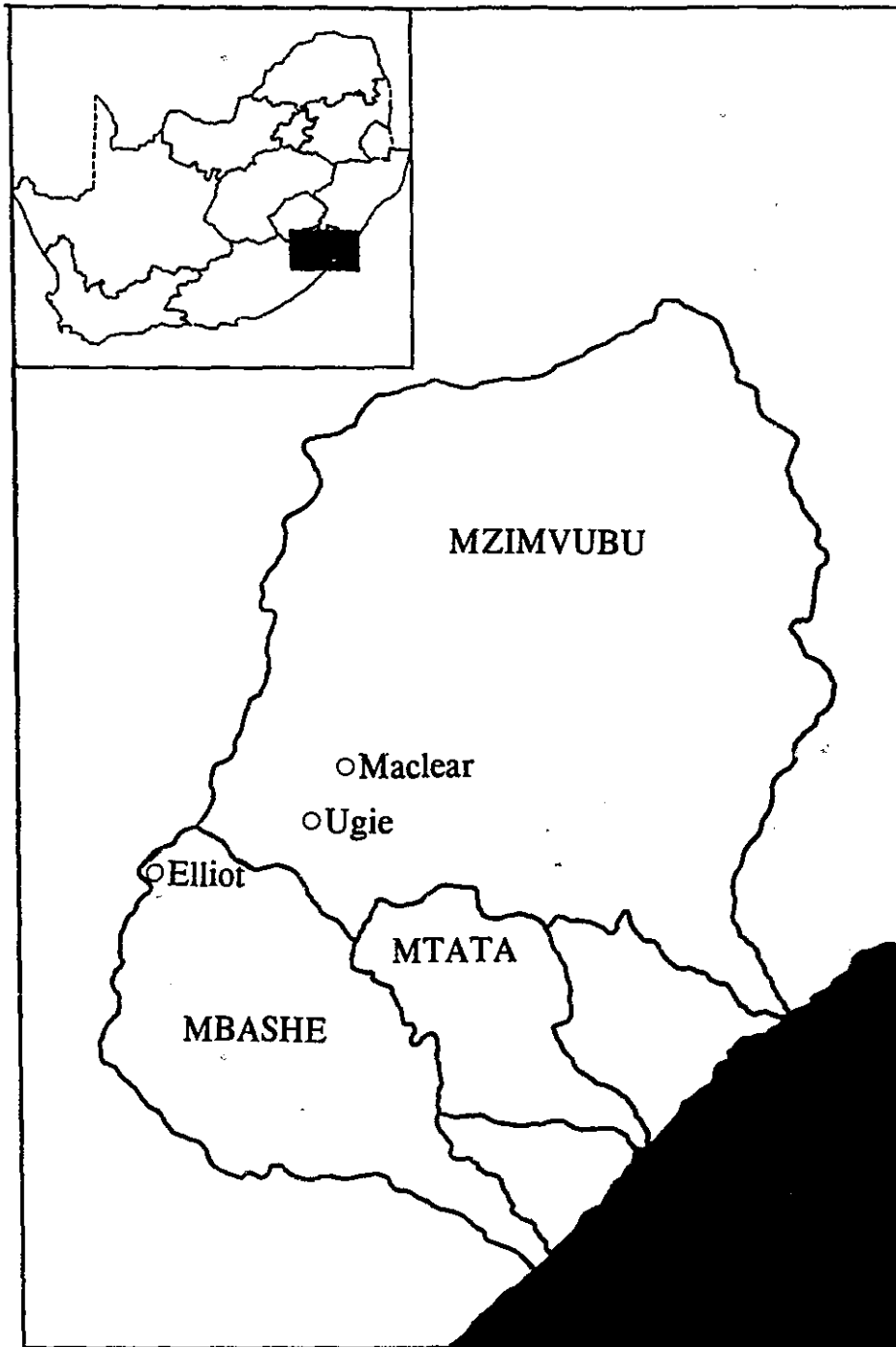


Fig. 2.3 Primary catchments in the study area.

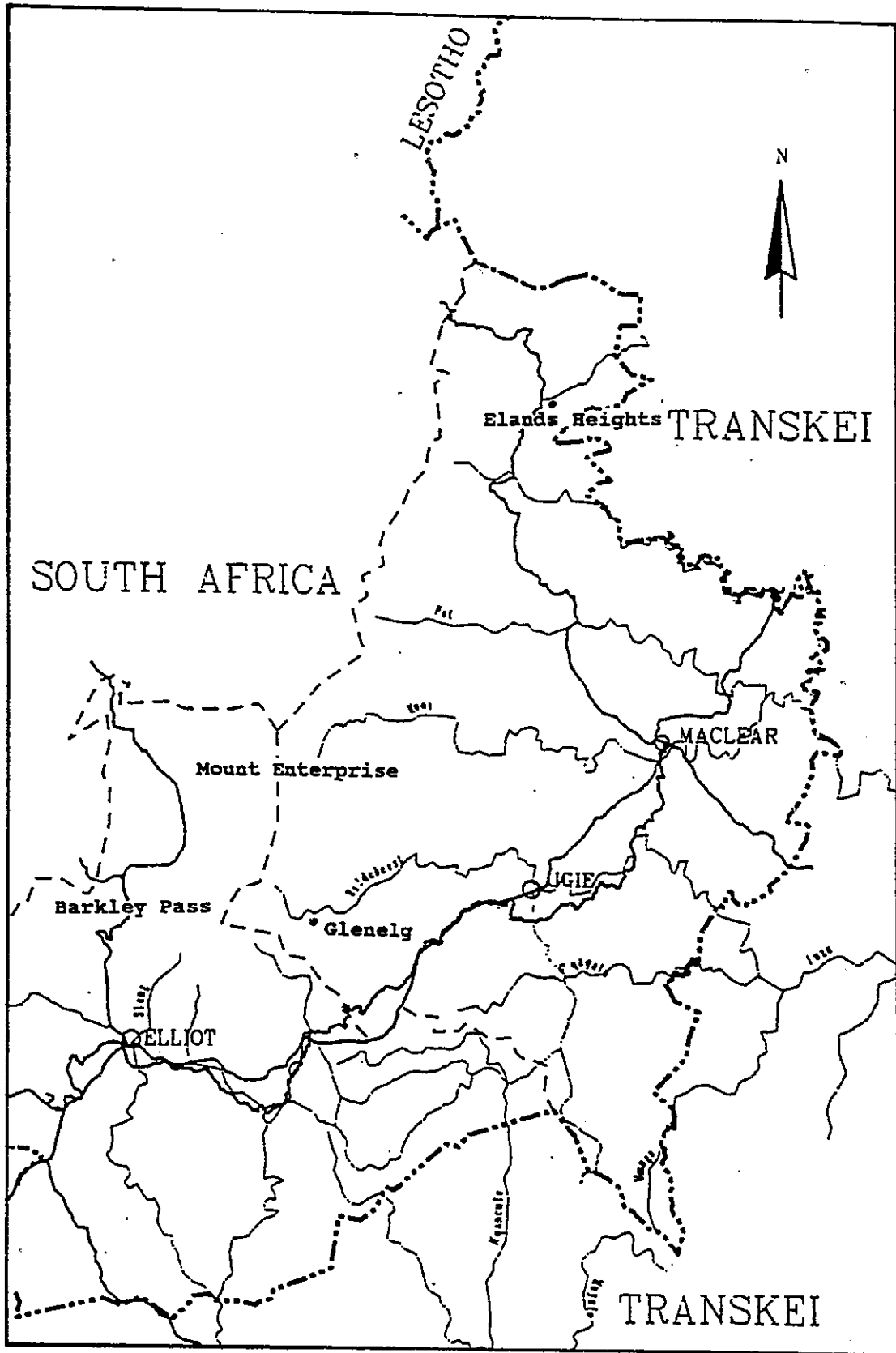


Fig. 2.4 Rivers in the study area.

rivers flow to the Indian Ocean, with some of the major ones being the Pot and Mooi River, uniting to form the Tsitsa River lower downstream; the Wildebeest and Gqaqala Rivers together forming the Inuxu River; and the Slang River together with several other streams forming the Xuka River (Figure 2.4).

Most of the rivers originate in the study area and as such are still quite small and fast running with numerous small waterfalls. The Tsitsa falls is the highest waterfall, reaching almost 20 m. Various other falls, however, plunge down from the main escarpment of the Drakensberg, but these are seasonal, flowing mainly after periods of heavy rains.

### 2.2.3 Geology

Rocks over most of the study area are mainly sedimentary, all of Triassic age and belonging to the Beaufort Group (Subgroup Tarkastad), the Molteno-, Elliot-, and Clarens Formations. The sedimentary succession is capped by the volcanic Drakensberg Formation of Jurassic age. All these units form part of the Karoo Sequence. Dolerite intrusions of Jurassic age are common throughout the area, while thin alluvial slope and valley deposits of Quaternary age blanket the older rocks in places. A simplified map of the geology of a greater part of the study area is shown in Figure 2.5.

The following discussion is mainly based on Karpeta & Johnson (1979), SACS (1980), De Decker (1981), Linström (1981), Johnson (1984), 1:250 000 geological maps and explanation booklets on the geology of Drakensberg, Umtata, Kokstad and Queenstown areas.

The geology of the region is relatively simple, being simply a series of near horizontal sedimentary layers of the Karoo sequence. The lowest and oldest deposits are those of the Beaufort Group, overlain by Molteno Formation sandstones and shales, Elliot Formation mudstones and shales, followed by the Clarence Formation sandstones and shales, which form the characteristic pale sandstone scarp faces of the Drakensberg foothills. Capping the highest peaks of the Drakensberg mountains in the west are volcanic basalts of the



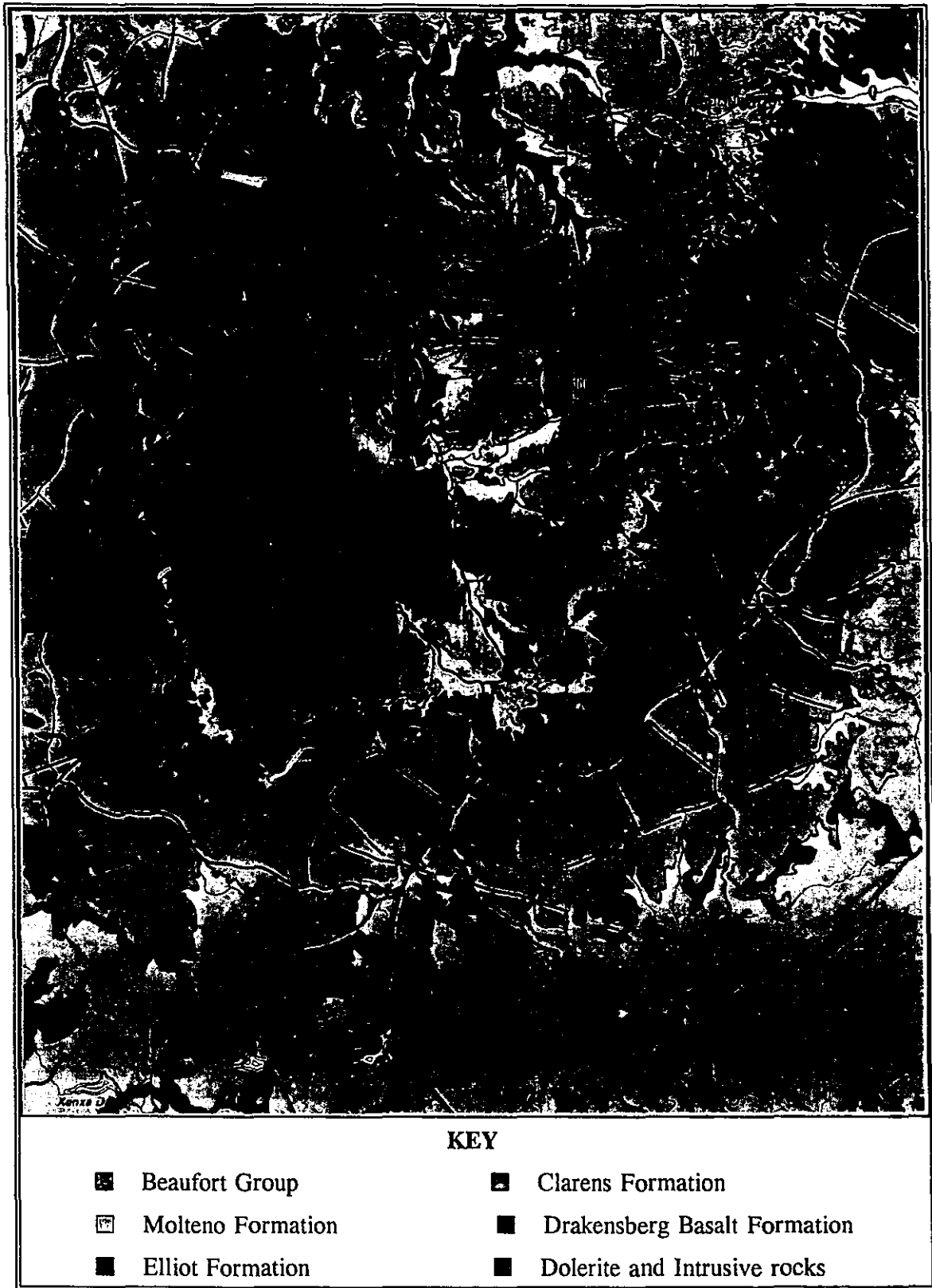


Fig. 2.5 Geology of the study area.



## Drakensberg Formation.

The time scales and ages of the various geological formations are reflected in table 2.1.

Table 2.1 Time scale of the principal geological formations in the study area (Compare Figure 2.5)

Age in millions of years	Era	Period	Epoch	System	Group	Formation	
2	CAINOZOIC	Quaternary	Holocene				
			Pleistocene				
15		Tertiary	Palaeogene				Pliocene
25							Miocene
36							Oligocene
58							Eocene
	Palaeocene						
65	MESOZOIC	Cretaceous		K A R O O	Stormberg	Drakensberg Basalt	
135	Jurassic		Clarens				
195	Triassic		Elliot				
225			Molteno				
				Beaufort	Katberg Burgersdorp		

### 2.2.3.1 BEAUFORT GROUP.

Two formations belonging to the Beaufort Group are present in the area, namely the Katberg

and Burgersdorp Formations, which together constitute the Tarkastad Subgroup. The Beaufort Group represents sediments which were deposited in river channels, river floodplains, swamps and lakes. The channel areas are mainly represented by sandstones and the other areas by mudstones (Rust 1988).

**2.2.3.1.1 Tarkastad Subgroup.** The Subgroup Tarkastad follows upon the Subgroup Adelaide and is distinguished by a considerable increase of sandstone especially in the lower parts. This Subgroup is divided into the lower sandy Katberg Formation with the Burgersdorp Formation (shale) on top. In the study area very small area is occupied by rocks of this Subgroup.

**2.2.3.1.1.1 Katberg Formation.** This formation consists of thick zones of sandstone (up to 20 m or more), with thin irregular mudstone layers and lenses. The mudstone zones contain minor interbedded sandstone and siltstone beds and lenses. The sandstone is fine-grained and well sorted. Mudstones are greyish red or greenish grey and are structurally massive. Vertebrate remains are present as fossils.

**2.2.3.1.1.2 Burgersdorp Formation.** This formation consists of alternating fine-grained lithofeldspathic sandstone and grey-red and green-grey mudstones lithosomes, forming the relatively mudstone-rich upper part of the Tarkastad Subgroup. Sandstone forms 20—30% of this formation and is more abundant in the base and top of the formation. Contact with the overlying Molteno Formation is defined as the base of marked upward increase in the sandstone-shale ratio, with the disappearance of red mudstone. The average Burgersdorp Formation sandstone is moderately sorted, fine grained and lithic. Reptile fossils are fairly common in the mudstones of the Burgersdorp Formation. The sandstones are clearly channel deposits and the mudstones overbank floodplain deposits. The high mudstone-sandstone ratio suggests meandering rather than braided streams.

### **2.2.3.2 STORMBERG SERIES.**

In this series the strata are sub-horizontal and faulting is uncommon. Vertebrate fossils are present in the Elliot Formation, while plant fossils are fairly common in the Molteno

Formation (Johnson 1984).

**2.2.3.2.1 Molteno formation.** The Molteno Formation consists of alternating pale, glittering, fine- to coarse grained sandstone and pale grey shales. The mudstone often grades into dark shale, while occasionally conglomerate and coal layers are also present. A number of subdivisions are present in the Molteno Formation, and the assigned age differs according to different authors (Du Toit 1954, Plumstead 1969, Keyser 1973, Anderson 1974). The Tarkastad Formations are overlaid by the Molteno Formation, which in turn is overlaid by the Elliot Formation. Characteristic primary structures in the sandstones and plant remains in the shale point to deposition in a fluvial environment. The absence of red colouration in the mudrocks, as well as the presence of plant remains rather than reptile remains indicates that wetter, reducing conditions characterized the floodplains. A characteristic plant assemblage consisting of mainly ferns, sedges and trees occurs in this formation (Rust 1988). The average sandstone of the Molteno Formation is fine to coarse-grained, moderately to well sorted and quartzose.

**2.2.3.2.2 Elliot Formation.** No distinct subdivision has been recognized within the Elliot Formation and a Triassic age is generally assigned to this formation. The Elliot Formation consists of alternating fine-grained sandstone and predominantly greyish-red mudstone lithosomes. The boundary between the Elliot Formation and the overlying Clarens Sandstone Formation may be sharp, gradational or intertongued, and a precise definition of this boundary seems to be very difficult. In practice most definitions attempt to locate the boundary at the base of a formation which is largely or almost entirely composed of aeolian sandstone or coarse siltstone. Thickness of the Elliot Formation ranges from 100 to 500 m. Calcareous concretions are common, particularly toward the top of the formation. The average sandstone of the Elliot Formation is moderately sorted, fine grained, sublithic to lithic/lithofeldspathic. It is assumed that the Elliot Formation was formed in a meandering-river regime (as the Burgersdorp Formation was). The red colour suggests oxidizing associated with sub-aerial exposure and hence a return to drier conditions than those prevailing during the deposition of the Molteno Formation. Fossils are rare, but dinosaur remains are known.

**2.2.3.2.3 Clarens Formation.** The Clarens Sandstone Formation consists of a distinctive, massive, fine- to very fine-grained feldspathic sandstone or coarse siltstone and minor mudstone intercalations in places. Topographically this unit forms the impressive cliffs which are often undercut at the base and hollowed out to form shallow caves. Thickness generally varies between 20 to 80 m, but may be up to 300 m and more, to the north of Elliot. Beukes (1969) suggests that three distinct subdivisions can be made.

The Clarens Formation is of Late Triassic age. The upper boundary with the basalt of the overlying Drakensberg Formation is generally either sharp or intertongued with a transition zone of up to 30 m or more. In places the contact is uneven with sometimes deeply eroded surfaces. It represents an aeolian deposit of which the material was transported by winds blowing from the west and was formed at the conclusion of a period of semi-aridity and drying up of the Karoo swamps.

**2.2.3.2.4 Drakensberg Basalt Formation.** The Drakensberg Formation in this area consists of dark-grey basaltic lavas with subordinate tuff and sandstone intercalations in its lower part. The Karoo Sequence is capped by the Basaltic Drakensberg Formation, which is about 750 m thick along the eastern edge of the area at Ben Dearg. Both the massive, coarsely crystalline and easier-weathering vesicular varieties are encountered. The alternation of harder and softer layers often produces distinct terracing and gives the basalt a stratified appearance. Individual flows average about 3 to 5 m in thickness. In the basal part of the Drakensberg Formation layers of tuff, agglomerate and ash as well as sandstone similar to the Clarens Sandstone are frequently present. These layers range up to a few tens of metres in thickness and may be quite extensive laterally.

**Volcanic Pipes.** Scattered pyroclastic-filled volcanic pipes associated with the Drakensberg volcanicity are present in the outcrop area of the Elliot and Clarens Formations. While few pipes are plugged with lava, the majority are filled with pyroclastic material containing fragments of sedimentary rock and lava. The pipes appear to have formed immediately prior to or during the earliest phase of lava extrusion and are apparently of shallow origin. The majority became extinct without ever having poured lava. During their existence, which was largely characterized by explosive activity, the aeolian Clarens Sandstone was still being

deposited, allowing the wind-blown sand and dust to mingle with the products of explosion or even to fill up the open throat of the volcano.

**2.2.3.3 Dolerite and related intrusive rocks.** Subsequent to the extrusions of the lavas the sedimentary strata were intruded by numerous dolerite sills and dykes. Emplacements took place during the Jurassic, largely subsequent to the extrusion of the Drakensberg lavas. The dolerite sheets and sills become less abundant on going upwards in the stratigraphic succession, with the intrusions in the Drakensberg Formation consisting almost entirely of narrow vertical dykes.

**2.2.3.4 Alluvium.** Alluvium represents the only Quaternary material and includes both alluvial slope (sheet-wash) and alluvial valley (channel-transported) deposits. Since it is usually difficult to draw a definite line between these two kinds of alluvium, they have been combined for mapping purposes.

#### **2.2.4 Soil**

The classification of soil types in the Drakensberg reveals a very heterogeneous pattern, indicating that the soils have been formed under continually changing conditions. The well-drained upland soils are ferrallitic (having a high iron content) and heavily leached, with generally low availability of phosphates. The soils, particularly those derived from basalt, are very acidic. The basalt soils are highly structured and being volcanic in origin have a high mineral content (Irwin & Irwin 1992). Due to the relatively high rainfall in the mountain region, the sedimentary soils are mostly leached and are therefore strongly acidic (Van der Eyk 1967) or dystrophic (Schulze 1982), and are referred to as ferrallitic soils (Van der Eyk 1967; Harmse 1978 in Werger 1978).

#### **2.2.5 Climate**

Climatic conditions play a major role in determining whether a particular plant can or cannot

exist in a specific area (Shultze & McGee 1978). The climatic factors of greatest importance in vegetation development are light, temperature and moisture, all of which vary subcontinentally as well as on a meso- and micro-scale (Shultze & McGee 1978).

The mountainous and escarpment zone have temperatures modified by altitude. The presence of local winds, which blow from the south-east each afternoon, especially in summer, tend to drop the average daily temperatures (Kopke 1988). The north winds during January to March are associated with a high incidence of thunderstorms in summer.

The climate of the study area is typical of the high elevation summer rainfall areas of eastern South Africa. Winters are cold and dry with frequent frosts and snow on the mountains. Summers are warm, with regular thunderstorms bringing most of the high annual rainfall (Scott 1992).

#### **2.2.6 Temperature**

Temperature alone may not be a significant factor in determining major regional vegetation formations but it does play a part in the determination of floristic variations on a meso- and micro scale (Shultz & McGee 1978). Within plant communities or associations the direct influence of temperature affects rates of growth, plant stature, seed germination, time of flowering etc. (Schultz & McGee 1978). According to Scheepers (1978) and Schultze & McGee (1978) it is not the average annual temperature that has the greatest effect on vegetation, but the extremes of temperature that can have a limiting effect on the plants and their distribution.

Available temperature data for weather stations in the area are given in Table 2.2 (The mean monthly maximum and minimum temperatures (°C) for relevant weather stations in the study area). Temperature data for the study area are scarce and statistics for only three stations can be quoted.

## 2.2.7 Precipitation

Soil moisture is derived from precipitation mainly in the forms of rain, mist and snow, hail, dew, fog and frost.

**Table 2.2** Absolute Maximum and Minimum temperatures for available weather stations in the area.

	Maclear 0151604		Rhodes 0177828		Sheeprun 0178689	
	Max.	Min.	Max.	Min.	Max.	Min.
Jan.	25.2	13.9	26.3	9.90	26.7	14.5
Feb.	24.4	13.8	24.9	9.50	26.1	14.2
Mar.	23.9	12.3	23.4	6.50	25.0	12.7
Apr.	23.0	10.1	20.7	2.70	22.3	8.70
May	20.8	7.00	17.7	-1.00	20.2	4.50
Jun.	17.8	3.50	13.8	-3.60	18.1	1.00
Jul.	18.7	3.90	14.9	-4.90	18.6	1.00
Aug.	19.8	5.90	16.1	-2.90	19.9	3.10
Sep.	21.6	7.90	21.1	1.30	22.1	7.20
Oct.	21.1	9.40	21.4	4.90	23.2	9.50
Nov.	23.2	11.3	23.2	6.50	24.2	11.4
Dec.	24.2	12.9	25.6	8.60	26.4	13.3

**2.2.7.1** Fog is an important contributor to precipitation. For central KwaZulu-Natal fog occurs on some 10 days per month in summer, while Schultze (Matthews *et.al.* 1993) calculated at Kranskop, in the so-called misbelt, an average of 4 days of fog per month (between November to January). In the higher lying areas in the foothills of the KwaZulu-Natal Drakensberg the orographic fog contribution at 1800 m altitude is an additional 403 mm per annum — one third of the mean annual precipitation (Matthews *et. al.* 1993). This stresses the importance of fog in southern Africa as an ecological agent, indicating that

considerable amounts of moisture not recorded conventionally may in fact be intercepted (and utilized) by vegetation cover (Shultze & McGee 1978). In the study area no data on fog are available, but fog is present many days in the year (pers. observation). The fog is carried in from the escarpment from the Transkei towards the main escarpment of the Drakensberg.

**2.2.7.2 Snow** occurs sporadically, mainly on the higher mountain ranges. The ecological effects of snow in southern Africa are generally thought to be minimal (Shultze & McGee 1978). In the study area, however, snow is common during winter at altitudes above 1 800 m. On the main escarpment snow can be present until the first weeks in September, and has an especially great impact on vegetation in the steep drainage lines. On the plateau above the escarpment, snowfalls are not uncommon. Galpin (1909) mentioned that snow was found in the Rhodes area for about six months of the year. In recent years snow is found for less than three months a year.

**2.2.7.3 Rainfall:** There are rainfall records available from 34 stations in the broad vicinity of the catchments to be afforested. Mean annual precipitation for the general area ranges between 529 mm at Greyling AC near Elliot and 1 150 mm at Langeni Forest Station on the Transkei escarpment. On the plateau, where the new afforested land is situated, the highest mean annual rainfall (MAR), 1 062 mm, is at Cransmoor in the north and closer to the Drakensberg. Within the study area the rainfall is fairly variable, both between nearby stations and at the northern and southern extremities. The rainfall record is clearly not particularly reliable, as only a few weather stations have long records and many records are not complete. A comprehensive rainfall record is available from at least 16 of these stations. The nearest autographic rain gauge is situated at Umtata (roughly 100 km away). The rainfall information is adequate for general descriptive and general planning purposes, but is not at all sufficient as a basis for research work (Scott 1992).

Rainfall data for available weather stations from the study area are summarized in Table 2.3 according to Scott (1992).



Table 2.3 Rainfall of available weather station in the area based on Scott (1992).

Name	No.	n	Mean	Std Div	Median	Range
Sassun	150444	21	546.00	142.7	532.00	327-1148
Paxton W C	150466	31	760.90	179.2	711.70	336-1148
Granard	150511	8	559.00	120.5	549.50	387-781
Barkly Pass	150581	23	722.80	124.0	721.90	476-1049
Glen Hope	150595	41	771.20	162.9	746.60	499-1180
Elliot	150620	83	685.10	214.0	684.30	271-1075
Lisburn	150635	42	576.60	120.6	564.10	366-950
Taynult	150779	22	545.00	197.5	628.20	401-963
Greyling AC	150863	20	528.80	130.8	656.50	380-852
XukaDRift	151019	15	685.20	246.0	738.60	120-1125
Ronan	151080	19	751.40	147.9	766.30	543-1203
Gubenxa	151231	22	698.50	331.1	643.20	539-1784
The Home	151290	14	667.40	168.9	664.90	359-1022+
Ugie	151463	10	841.70	212.3	815.80	461-1199
Maclear(Mag)	151604	99	716.40	212.2	749.10	370-1151
Maclear(Mun)	151604b	23	802.30	149.5	772.40	497-1108
Hopefield	151623	41	637.30	149.7	621.50	330-964
Langeni	151839	38	152.90	1.600	141.60	765-1779
KelvinGrove	177441	40	648.50	146.3	663.40	321-877
Giddy	177442	36	683.60	145.4	669.50	454-976
Clontarf	177622	14	676.90	142.4	657.60	487-975
Rhodes	177828	20	657.40	181.6	673.70	467-920
Malpas	177885	42	683.10	143.3	676.30	412-104
Cransmoor	178320	11	1062.0	200.3	1070.4	729-1335
Kilmenny	178321	16	1026.0	188.3	1022.5	747-1318
Antelope park	178349	17	978.10	159.5	955.60	665-1379
ElandsHeights	178378	19	977.70	197.0	1011.9	587-1388
New Lynndale	178564	13	878.90	164.0	905.20	439-1095
Bloegomhof	178585	36	685.60	173.2	681.00	283-1046
Delvillebos	178615	32	840.10	134.6	822.00	607-1228
Sheeprun	178689	12	56.100	202.3	78.700	243-996
Stockenstrom	178689w	29	774.00	218.6	780.40	527-1150
Kromhoek	178807	24	718.40	137.1	714.80	495-1006

## 2.3 HISTORIC REVIEW

Where authors are not indicated, information in this section comes from Nel (1988).

### 2.3.1 Pre-colonial

Mazel (1982) indicates that there was a perceptible but probably ephemeral pre-Later Stone Age occupation of people of the KwaZulu-Natal Drakensberg. In discussing the Middle Stone Age site distribution in Eastern Lesotho and the Drakensberg, Carter (1976) suggests that it is highly likely that the major factor governing site distribution is the amount and duration of snow. Galpin (1909) noted that, at the beginning of this century snow might have covered the mountains in some places for as much as six months of the year. The question thus arises whether any Stone Age people (or even Pre- Stone Age) could have survived in this area.

The Bushmen (San) were the first of modern men to live in the Drakensberg (Hilliard & Burt 1987) They were restricted to the mountainous parts by the encroachment of African tribes and later by white farmers, into their traditional hunting grounds. Bushmen numbers were always small, and they could have made only very little impact on the vegetation, though they are known to have practised veld burning to attract game. The high, cold plateau of the modern Underberg and Matatiele areas seem to have been left unoccupied while land was available in the warmer, low-lying region. There can be little doubt that, at one time, the Bushmen were the sole occupants of the entire country. We not only have traditions in support of this, but positive proof of their occupation, in their paintings, their sculptures or chippings and stone implements (Stow 1905). The Bushmen were hunter-gatherers, and kept themselves busy with rock paintings of which remnants can still be found

Traditionally it is believed that black tribes started their occupation of the area in about 1602. At this stage the Bushmen were already confined to the mountainous areas. The amaPondo, Xesibe and Pandomise tribes came from Central and East Africa and successively occupied the area, before moving to a warmer climate and better soils at the coast.

For the next 200 years the area at the foot of the Drakensberg were virtually desolate, except for some relict Bushmen who hunted on the flats.

Early in the nineteenth century the amaFingo fled from KwaZulu-Natal and settled in small groups in the present Mt. Fletcher, Maclear and Elliot districts. During 1826 Tsjaka (the Zulu king) invaded the area and killed most of the amaFingo. The survivors, then moved to the present Port St. Johns area.

During 1836, Ncapayi, a Bacu captain settled with his followers in the present Mt. Fletcher area. In 1843 they were also attacked by the Zulu, and were driven out of the area. The name "Kapaailand", frequently used for the region, was derived from the term "Ncapayi's land".

When Sir Peregrine Maitland made a treaty with Faku in 1884, the "Pandomise" chief described his land as lying between the Umtata- and Umzimvubu rivers, and stretching from the Quathlamba Mountains (Drakensberg) to the sea.

### 2.3.2 Colonial

With the European settlement in the Eastern Cape the study area became part of the so-called "no man's land". After the wars in the Free State between the Boers and black tribes in 1858, plans were made to settle the migratory black tribes in this "no man's land". George, a son of Mosjesj, had already gone over the Drakensberg with his followers and settled at the origin of the Umzimvubu river (today's Matatiele District).

The Cape Government, under leadership of George Grey, dispossessed the Bantu-speaking tribes and settled the Griquas from Phillipolis (under leadership of their leader Adam Kok) in this "no man's land".

In 1862 the main Griqua trek came through Lesotho and over the Drakensberg via Ongeluksnek near Matatiele. A smaller group went through the Barkly East District, over the farms Monzie, Glenelg and Mt. Enterprise, down the Drakensberg Escarpment to the Maclear District. The route they took over the mountain is today known as the "Bastervoetpad". This smaller group settled in the vicinity of the farm Roseg and slowly dispersed through the whole Maclear-Ugie area.

In 1872 the Griquas requested the Cape Government to send a magistrate to the area in order to protect them from the black tribes living there.

In 1873 Joseph Orpen was sent by the Cape Government to claim the area known as "no man's land" officially for the British Empire.

On 12 June 1876, the area was lawfully proclaimed as part of the Cape Colony and divided into ten magisterial areas. The southernmost one was known as Gatberg and included the present districts of Mt. Fletcher, Maclear and Gubenxa.

On 25 December 1878 the Griqua changed the name from "no man's land" to Griqualand-East.

From 1882 a steady stream of white farmers came to the area, mainly from the Eastern Cape and Orange Free State. The development of the Maclear District is loosely connected with that of Barkly-East and the "migratory farming" practised between these two districts. Old footpaths used by the black tribes became trek-paths for farmers with cattle and sheep. These include the Saalboom-footpath (Later Otto du Plessis Pass), Tembu Pass, Bastervoetpad, Thompson's footpath, Pondo Pass, Pondo Gates, Foxly's footpath, Tsitsa footpath (later Pot River Pass) and Lehana's Nek that later became Naude's Nek Pass.

### 2.3.3 The present century

The first white farmers in the area soon realized that this area was not as favourable for farming as it initially appeared. Grasses are mostly sour providing little nourishment in winter, and becoming too tall for sheep to graze early on in the season. After the first frosts in winter, the veld fires came and in summer, weeks of mist rain and no sun made farming with livestock and crops very difficult.

Since European occupation of the area, alien plants such as *Cirsium vulgare*, *Tagetes*

*minuta*, *Acacia dealbata* and *Acacia mearnsi* have increasingly invaded the natural vegetation.

In 1911 a fence bordering on the Tsolo District in Transkei was erected to prevent the spread of East Coast fever. Since the early settlement of white farmers, varieties of crop and livestock have been much improved and are now adapted to conditions in this area. Potatoes, cabbage and other vegetables are now successfully grown and maize harvests compare well with those produced elsewhere in the country.

Prior to the current afforestation drive the principle land-use in the region has been the extensive grazing of both cattle and sheep. There are also considerable areas under dryland cultivation, minor areas of irrigated cropland and dispersed, though limited, forestry on a woodlot scale. There is evidence of overgrazing, especially in the steep catchment areas and of resultant erosion of the relatively shallow soils.

## 2.4 BOTANICAL EXPLORATION

According to the collections of the National Herbarium, Pretoria, T.M. Young made the first collection of a plant specimen in the study area, in 1891. Other collectors during the last decade of the previous century were F.R.R. Schlechter (1895—1898), H.G. Fourcade (1896), H. Bolus (1896), H.G. Flanagan (1896), T.R. Sim (1897) and E.E. Galpin (1889—1906). Of these early collectors, H.G. Flanagan and E.E. Galpin were certainly the most prolific.

Henry George Flanagan (1861—1919) was a farmer and amateur botanist from the Komgha District. He collected actively in many parts of South Africa.

Ernest Edward Galpin (1858—1941) was born in Grahamstown and was a banker and amateur botanist. During successive appointments in Middelburg, Grahamstown and Johannesburg he began to collect plants (Stephens 1942). Before he was transferred to Johannesburg early in 1889, he made many collections in the Eastern Cape. Certainly his biggest expedition was in March 1904 to the high mountains at the junction of the Witteberg and the Drakensberg, on the Lesotho border. A species list and observations were published as "A contribution to the knowledge of the flora of the Drakensberg" in *Rep. S. Ass. Adv. Sci.* 6: 209—229 (1909) (Gunn & Codd 1981). A revised list of these species, with updated names, were published by Hilliard & Burt (1987).

Hilliard & Burt collected in the Drakensberg since the early 1960s and intensively for about ten years before producing their book, *The Botany of the Southern Natal Drakensberg* (Hilliard & Burt 1987) (Map 2.1).

Up until 1993, about 1 900 specimens had been collected in the study area by approximately 104 collectors. Almost none of these collections, however, were part of a systematic survey of the flora of this area. The exception is the collection by O.M. Hilliard and B.L. Burt, who visited the study area during their project on the botany of the southern KwaZulu-Natal Drakensberg. Despite rather limited collecting by them in the study area, much of their work also applies to this southern part of the Drakensberg.

The present collection of plants by S.P. Bester is mainly from the Maclear District and parts of the Elliot and Barkly East Districts. The collection, to date, numbers more than 3 600.

The principal collectors in the study area up to the present, number of specimens collected and dates are available on a database of collected species in the area.





## CHAPTER 3

### MATERIALS AND METHODS

#### 3.1 Terrain reconnoitring

All published environmental information and vegetation data relevant to the study area were obtained. This enabled a sound stratification of the area to be made as well as allowing efficient sampling of the representative vegetation types. The specific locality of the study area was demarcated of the specific locality of the study area on a 1:250 000 scale topographic base map. Information concerning geology was obtained from 1:250 000 geological survey maps (Geological survey). Presently no completed Land Type maps for the area are available. The study area was further investigated by transversing the area to form a basic idea of the topography, land use, conservational potential, vegetation variation as well as the accessibility of the mountain areas to be surveyed. Using mainly geology, land form (topography), physiognomy and dominant species as major stratification attributes, 310 sample plots were distributed throughout the study area.

The "study area" is defined as the Eastern Cape Drakensberg, facing east-south-east in the Maclear district, and south-, south-east in the Elliot district. When referring to the southern and northern Drakensberg (located in KwaZulu-Natal), the definition of Hilliard & Burt (1987) for those regions is followed.

## 3.2 Sampling method

The Braun-Blanquet sampling technique was used, as it is considered to be a standardised method for phytosociological surveys in South Africa (Bredenkamp 1982). A comprehensive floristic and habitat survey was done in each of the sample plots. The size of each sample plot was approximately 10m x 10m, but varied in size and shape according to the unit being sampled. Sample plots were, as far as possible, distributed evenly in stratification units.

### 3.2.1 Floristic analysis

The floristic survey included a listing of all plant species present in a sample plot as well as a cover-abundance value for each of these species, according to the Braun-Blanquet cover-abundance scale (Mueller-Dombois & Ellenberg 1974):

- r one or a few individuals (rare) with less than 1% cover of total area of the sample plot;
- + infrequent with less than 1% cover of total sample plot area;
- 1 frequent with low cover, or infrequent but with higher cover; 1—5% cover of total sample plot area;
- 2 abundant with between 5—25% cover of total sample plot area:
  - A: >5—12%
  - B: >12—25%
- 3 >25—50% cover of total sample plot area, irrespective of the number of individuals.
- 4 >50—75% cover of total sample plot area, irrespective of the number of individuals.
- 5 >75% cover of total sample plot area, irrespective of the number of individuals.

### **3.2.2 Habitat analysis**

According to Daubenmire (1968) the distribution of plant communities is mainly determined by environmental factors. The physical environment plays an important role in the ecological interpretation of floristic data (Bezuidenhout 1988). Detailed habitat information is recommended by Morris (1973) and employed by Bredekamp (1982). The physical habitat or environment is made up of a complex of many interacting factors which result in the plant communities' distributions (Bredekamp 1985). The following habitat factors were investigated:

#### **3.2.2.1 Geology:**

The geological descriptions found in to the 1:250 000 geological survey maps (Geological Survey: Karpeta & Johnson 1979, De Decker 1981, Linström 1981 and Johnson 1984) of the study area were used as a guideline for the identification of the geological types. These were supplemented by personal, field observations, of local, smaller scale geological features.

The following geological types were identified:

1. Drakensberg basalt Formation
2. Clarens sandstone Formation (Cave sandstone)
3. Elliot Formation (Redbeds)
4. Molteno Formations
5. Alluvium deposits
6. Dolerite outcrops

### 3.2.2.2 Rock cover:

The percentage of the sample plot area covered by surface rock (rockiness) was estimated, as well as the size of the surface rocks. The size in diameter of the surface rocks was:

Boulders: > 1 000 mm diameter

Rocks: > 300—1 000 mm diameter

Small rocks: > 50—300 mm diameter

Stones or gravel: < 50 mm diameter

### 3.2.2.3 Topography:

The following criteria was used to describe the topographical position of each sample plot:

1. The altitude of the plot was read from 1:50 000 topographical maps, or alternatively read from a global positioning system (GPS) instrument.
2. Topographical position was based on terrain types, namely:
  - (1) crests
  - (2) scarp
  - (3) midslope
  - (4) footslope
  - (5) valley bottom or floodplain
3. The slope was given by means of estimation.
4. The aspect was given by means of GPS positioning on 1:50 000 topographical maps.

### 3.2.2.4 General observations and notes:

General observations included the degree of exposure, grazing, as well as

signs of fire.

1. Exposure was evaluated as; exposed to sun, wind and mist and expressed as sheltered, partly sheltered or exposed.
2. Notes on when the area was last burnt were obtained from the local authorities and farmers.

### **3.2.3 Data processing.**

A relevé was compiled for each sample plot. A relevé is a list of all the observations made in a sample plot (Coetzee 1972). Two-way indicator species analysis (TWINSPAN) (Hill 1979) was applied to the basic floristic data set in order to derive a first approximation of the possible plant communities. Refinement of this classification was made by applying Braun-Blanquet procedures (Behr & Bredenkamp 1988; Bredenkamp *et al.* 1989). This was done using the computer programme BBNEW which was available at the Botany Department of the University of Pretoria.

After an ecological interpretation of the major vegetation classes distinguished by the first approximation, the main data set was subdivided into four smaller data sets. These data sets were then processed separately by Braun-Blanquet procedures. This procedure has proved successful in the analysis of the Western Transvaal, North-western Orange Free State, and Eastern Transvaal Escarpment (Bezuidenhout & Bredenkamp 1990; Bredenkamp & Bezuidenhout 1990; Kooij *et al.* 1990 and Matthews *et al.* 1993). The plant communities recognised were described and interpreted ecologically by means of the habitat data.

### 3.2.4 Data collecting and analysis for endemic species.

Data on the distribution on plant taxa were obtained from PRECIS (Pretoria National Herbarium Computerised Information System). This information was verified and supplemented by a study of herbarium specimens in the H.G.W.J.Schweickerdt Herbarium (PRU) (University of Pretoria), Herbarium of the University of Natal (NU), published lists of specimens from the Killick Herbarium (CPF) and botanical literature.

Extensive fieldwork was conducted, including the phytosociological survey and collection of herbarium specimens. Distributional data were correlated with 1:250 000 scale geological maps (Geological Survey: Karpeta & Johnson 1979, De Decker 1981, Linström 1981 and Johnson 1984) as well as with descriptions on herbarium sheets.

In the account of the flora of the study area all taxon names follow Arnold & De Wet (1993). The check list is arranged alphabetically according to families of bryophytes; pteridiophytes, gymnosperms and angiosperms. Under each family the genera and species are also arranged alphabetically.

### 3.2.5 GIS information and database

A database was compiled containing all relevant information obtained from herbarium specimens collected in the study area. This was done using the *Paradox* (version 1.0 for Windows) programme. Appendix 6 contains a printout as an example of the information listed in the database. The localities of collected specimens were also linked with *Idrisi* (Version 4.1)(GIS system), to produce distribution maps for the Drakensberg endemics.

## CHAPTER 4

### BIOGEOGRAPHY

#### 4.1 Historical background

Unless stated otherwise, this section is largely based on Hilliard & Burtt (1987).

Drège (1843) and Meyer (1835, 1875) were the first botanists to describe the vegetation of South Africa, but they knew nothing about the Drakensberg's flora. In 1886 Bolus divided the country into six regions, but even with the revision of this work in 1905 the flora of the Drakensberg and the mountains of Lesotho remained poorly known, and was included as part of the Kalahari region. In 1904 Galpin made a botanical collecting trip to the Eastern Cape Drakensberg near its junction with the Witteberg. During those days only routine naming was done and in later years many of these first specimens were identified as new species. Galpin (1909) later suggested that this higher mountainous region required separation as a distinct botanical region. Phillips (1917) recognized the Eastern Mountain Region, which he defined as comprising the highlands of Lesotho together with the face of the Drakensberg escarpment down to 1 525 m. Pole-Evans (1918) and Hutchinson (1946) did not recognize the Eastern Mountain Region, but Killick (1963) gave it brief recognition.

##### 4.1.1 The Afro-alpine Region in the Drakensberg

The uppermost vegetation zones of the central and east African mountains were classified by Hauman (1933) as the Afro-alpine Region. At first Hedberg (1957) did not recognize this Region south of Tanzania, but he later reported Afro-alpine species extending to South Africa

(Hedberg 1961). Killick (1978b) applied the Afro-alpine classification to the high-level vegetation of the Drakensberg. The major portion of this Region lies in the mountainous area of Lesotho. It is bound to the east and south by the Drakensberg escarpment with its spurs in South Africa, (mainly in KwaZulu-Natal and the former Transkei), with outliers to the north and south of the main escarpment (Killick 1994). This area has been variously termed the Eastern Mountain Region (Phillips 1917), the Austro-afro-alpine Region (Van Zinderen Bakken and Werger 1974), the Afro-alpine Region (Killick 1978c), the Austral Domain of the Afro-alpine Region (Werger in Werger 1978), the Altimontane vegetation (in part) (White 1983) and the Southern Eastern Mountain Region Mosaic (Hilliard and Burt 1987). It is treated here as the Drakensberg Alpine Region (DAR) to distinguish it from the Afro-alpine Region of East and North-east Africa.

The vegetation is divided into Alpine (2 850 m and higher) and Sub-alpine (1 830 — 2 830 m) (Killick 1963, 1978). According to White (1978) the Afro-alpine Region is only feebly distinct from the Afromontane. He argues that as the flora of the Afro-alpine Region is small in number and few species are not shared with the Afromontane Region, it is best regarded as a floristically impoverished version. It has no endemic genera. White (in Werger 1978) therefore considers the Afromontane and Afro-alpine Regions together, although he claims that the Afro-alpine Region is different from most of the Afromontane Region in its ecology.

#### **4.1.2. The Afromontane Region in the Drakensberg**

According to White (1978), the vegetation of the highest mountains in tropical Africa is so different from that of the surrounding 'lowlands' that it has attracted much attention and has



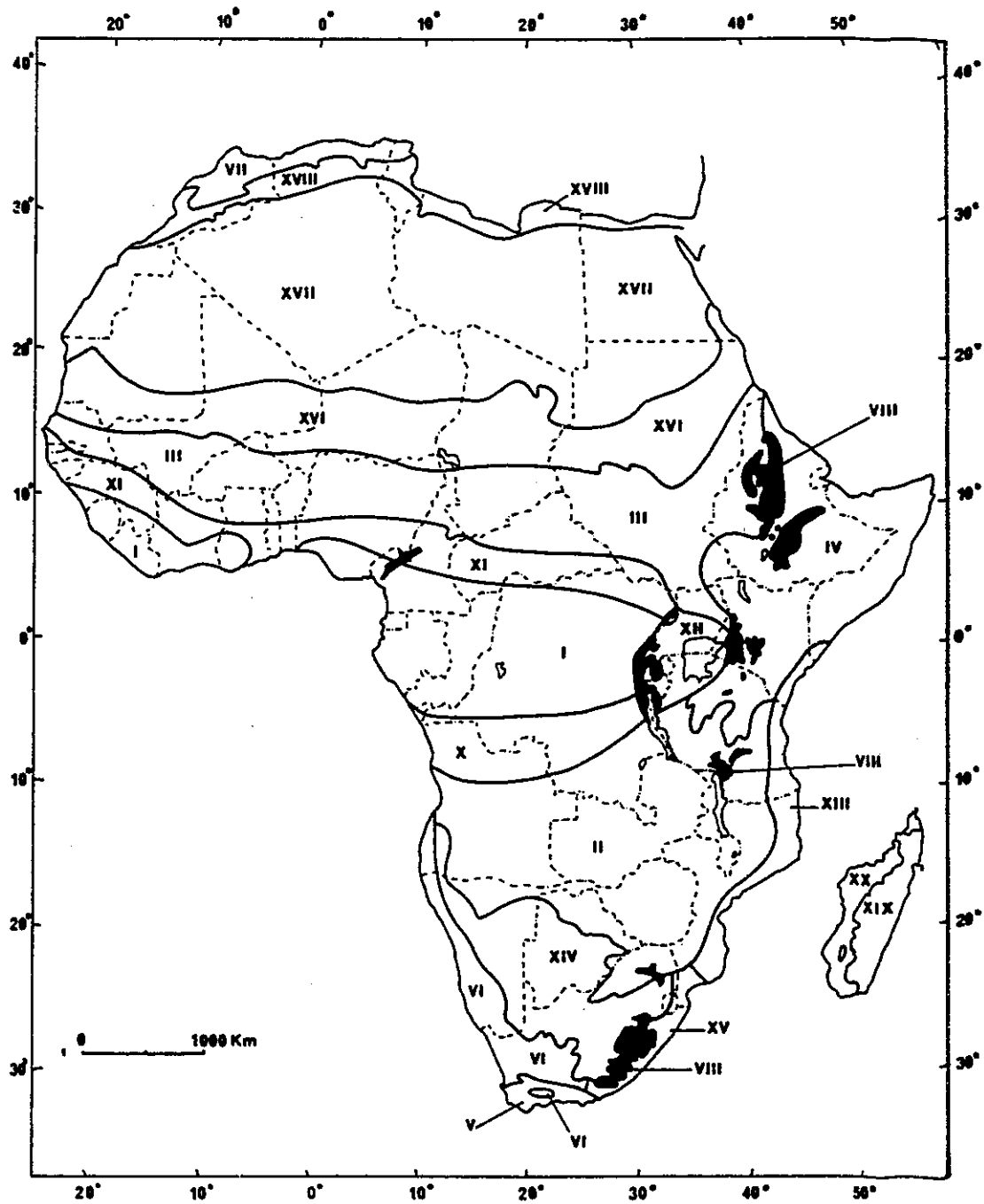


Fig. 4.1 The major phytogeographical regions of Africa (White 1983). VIII indicates the Afromontane Region.

therefore been regarded as a distinct Region. White (1965) tentatively proposed the recognition of an archipelago-like Afromontane Region scattered throughout the African continent, but was undecided whether the KwaZulu-Natal Drakensberg should belong to it. In a later publication (Capman & White 1970), it was concluded that the Afromontane Region extended at least as far as the Knysna forests in the Cape Province of South Africa.

The classification of the Drakensberg forests as Afromontane is based on the fact that most of the tree species and herbaceous plants encountered there are also found in Afromontane areas throughout tropical Africa.

Much of the montane vegetation of Africa, especially in the southern part of its distribution (the southern Afromontane region), is characterized by a mosaic of forest "islands" in a "sea" of grassland, with or without heathland elements (Meadows & Linder 1993). It is also argued by Meadows and Linder (1993) that the southern Afromontane grasslands are themselves relict from a time when the climatic conditions were more suited to these formations than to forest.

The Afromontane vegetation may thus be described as a dynamic mosaic of forest and grassland, with forest more widespread in mountains where precipitation is higher, the dry season shorter and fires less frequent or intense.

#### **4.1.3 The South-Eastern Mountain Region Mosaic.**

White (1978) has grouped the islands of the Afromontane archipelago into seven regional mountain systems of which the southern-most is the Drakensberg system. This Eastern

Mountain Region is a regional mosaic of elevated mountainous areas with distinguishable units within this mosaic. Hilliard & Burt (1987) proposed its recognition as the *South-eastern Mountain Region Mosaic*. The Afro-alpine Region of Killick (1978) is thus not recognized.

#### **4.1.4 The Drakensberg Alpine Region**

This area has been variously termed the Eastern Mountain Region (Phillips 1917), the Austro-afro-alpine Region (Van Zinderen Bakker and Werger 1974), the Afro-alpine Region (Killick 1978), the Austral Domain of the Afro-alpine Region (Werger 1978), Altimontane vegetation (in part) (White 1983) and the South-eastern Mountain Region Mosaic (Hilliard & Burt 1987). Killick (1994) has treated it as the Drakensberg Alpine Region to distinguish it from the Afro-alpine Region of East and North-east Africa.

#### **4.1.5 Maputaland-Pondoland Region**

This region as proposed by Van Wyk (1994), roughly resemble the Tongaland-Pondoland Regional Mosaic of White (1983), but excludes the Albany Centre. The western border has been extended into KwaZulu-Natal, the former Transkei and the Eastern Cape Province to include those parts of White's (1983) Afromontane Region lying below the great Escarpment. The Maputaland-Pondoland Region is floristically very diverse and complex, with endemic plants not always concentrated in particular regions. Two clear centres of high endemism are distinguished, namely the Maputaland Centre and the Pondoland Centre (neither of which fall within the study area).

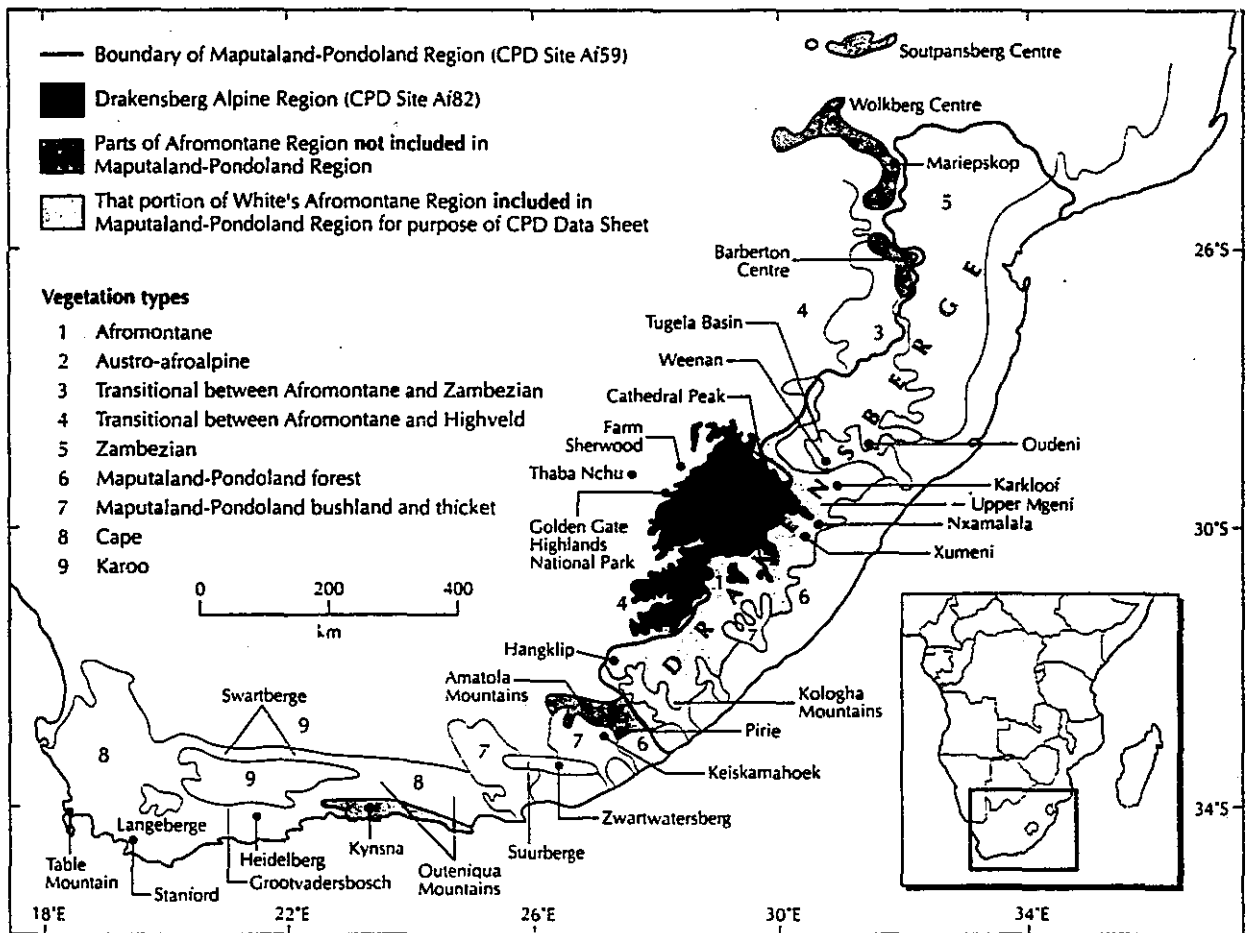
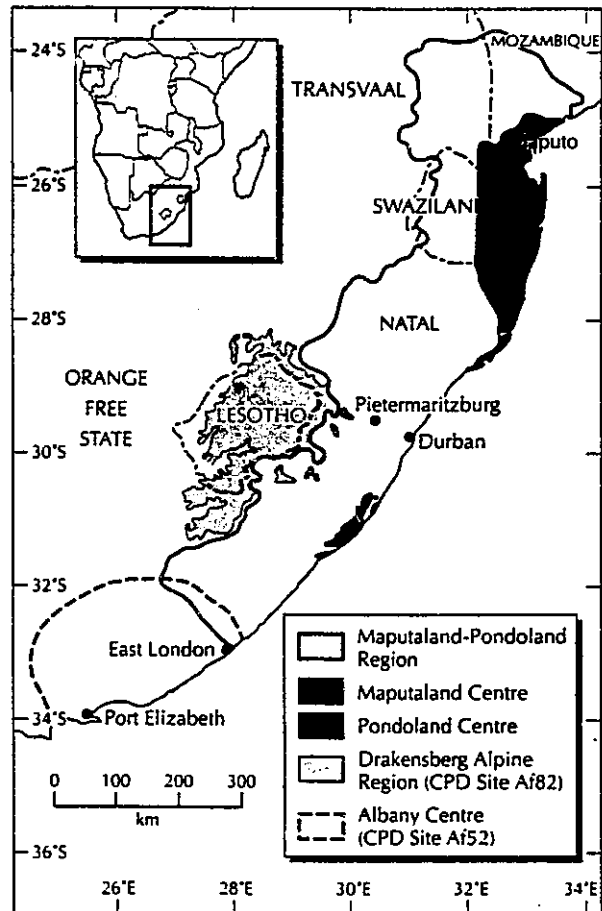


Fig. 4.2 Relation of the Drakensberg Alpine Region to the Maputaland-Pondoland Region (WWF & IUCN 1994). In the study area there are no sharp divisions, rather, a gradual transition occurs.



**Fig. 4.3** Relation of the Drakensberg Alpine Region to the Maputaland-Pondoland Region (WWF & IUCN 1994). In the study area there are no sharp division, but rather a gradual transition occurs.

The Maputaland-Pondoland Region forms part of the lower altitudes in the study area, notably the deep valleys incised into the Drakensberg foothills, which form an ecotonal transition to the Afromontane Region on the higher altitudes.

#### **4.2 Approach followed in study area**

For the purpose of the present study both the Drakensberg Alpine Region (DAR) (Killick 1994) and the Maputaland-Pondoland Region (MPR) (Van Wyk 1994) are recognized. The study area is seen as a transition between the DAR and MPR, with the MPR mainly below 1 800 m and the areas above 1 800 m forming part of the DAR. Afromontane vegetation dominates the transition zone between the DAR and MPR with small forest patches that are confined to sheltered valleys.

Only a few endemic species are found exclusively in the study area (See Appendix 1). It is clear that the study area cannot be identified as a centre of endemism as such, but rather as an extension of the DAR. Within the Drakensberg the northern Berg (Killick 1963) and southern Berg (Hilliard & Burt 1987) represent distinct centres of endemism within the DAR. It is the writer's opinion that the study area is best seen as an extension of the southern KwaZulu-Natal Drakensberg within the larger framework of the DAR.

## CHAPTER 5

### VEGETATION

The entire study area falls within the Grassland Biome (Rutherford & Westfall 1986), which includes the following Acocks veld types (Acocks 1988); (i) *44a Highland Sourveld*, (ii) *44b Dohne Sourveld*, and (iii) *58 Themeda-Festuca Alpine veld* (Map 5.1). According to Low & Rebelo (1996) in their new classification of the vegetation of South Africa, Lesotho and Swaziland, the vegetation types that occur within the study area are as follows: Afromontane forest (2), Moist Upland Grassland (42), South Eastern Mountain Grassland (44), Afromontane Grassland (45) and Alti Mountain Grassland (46).

In the study area the mean annual rainfall is above 625 mm per annum (moist) and sour grasses predominate. Soils are shallow, especially in the weathered basaltic areas, and are easily leached.

From the TWINSpan analysis of the floristic data four main vegetation types were identified, each consisting of their own unique communities. The vegetation types identified are a) Woodland and Forest communities, b) Wetland and Seepage communities, c) Sub-Alpine/Alpine Grassland communities and d) Afro-Montane Grassland communities.

#### 5.1 Woodland and Forest communities

Although some woody plants may formerly have been more widely distributed in these areas, grassland is currently maintained by biotic factors such as persistent wood removal and the indiscriminate use of fire over the centuries. Patches of true forests are restricted to south facing slopes in deep, well protected and well-drained gullies. On the north-facing slopes woody communities are more widespread and not restricted to moist gullies. These communities are bushclumps rather than forest and are vegetation that is predominantly scattered in grassland. Patches of woody vegetation are also found along rocky ridges. The forest is comprised of High Mountain Forests in the ravines of the Drakensberg range and Mountain Plateau Forests along the escarpment, in valleys and on mountain slopes of the

On slopes or plateaux above the forests, the only woody species found are *Protea roupelliae*, *P. subvestita* and *P. caffra* on sandstone, with *Buddleja loricata*, mostly in shrubby form, at the foot of the Main Escarpment.

At the foothills of the Drakensberg patches or "islands" (White 1978) of Afromontane forests are found. The Afromontane forests found in the Dohne Sourveld (Acocks 1988) differ from those found in the Highland Sourveld in floristic composition, especially in the creepers and climbers which are much more abundant here than in the Highland Sourveld Forests. Above the Afromontane forests, on zones which usually coincide with the Clarens Sandstone, the only trees that occur in open grassland are species of *Protea* and *Buddleja* (Johnson & Cawe 1987). The remaining woody communities in the sub-alpine belt (above the Clarens sandstone) include *Cliffortia linearifolia* scrub, *Leucosidea* scrub and *Buddleja* scrub within wet areas in steep gullies. *Erica-Passerina* fynbos is found at the foot of the basalt cliffs and on the plateaux above the escarpment.

#### 5.1.1 Classification of the communities.

The analysis of the Woodland and Forest communities revealed four sub-communities which are represented in a phytosociological table (Table 5.1). The hierarchical classification of these communities is as follows:

##### *Maytenus undata* - *Rhus dentata* woodland and forest communities

1. *Trimeria trinervia* - *Ficus ingens* woodland
  - 1.1 *Ficus ingens* - *Aristida junciformis* woodland
  - 1.2 *Ficus ingens* - *Rhus krebsiana* woodland
  - 1.3 *Acacia karoo* - *Aloe ferox* woodland
2. *Scolopia mundii* - *Podocarpus latifolius* forest
  - 2.1 *Artemisia afra* - *Podocarpus latifolius* forest
  - 2.2 *Rapanea melanophloeos* - *Podocarpus latifolius* forest
3. *Rhus discolor* - *Canthium ciliatum* woodland



#### 4. *Brachypodium flexum* - *Rhus pyroides* woodland

##### 5.1.2 Description of the communities (Table 5.1)

###### 1. *Trimeria trinervia* - *Ficus ingens* woodland

This vegetation unit is characterized by species group D (Table 5.1). *Trimeria trinervia*, *Ficus ingens*, *Rhus lucida*, *Ziziphus mucronata*, *Heteromorpha arborescens* and *Maytenus acuminata* are diagnostic woody species of this community. Most of the remaining species of species group D are often found throughout the study area, but within the Woodland and Forest communities they are differential species. The number of species recorded per sample plot ranges from a minimum of 16 to a maximum of 97 with an average of 51 per sample plot (Table 5.1, Species group D).

These communities were restricted to the Molteno and Tarkastad geological Formations, which form the lower altitudes of the study area, ranging between 1 000 m to 1 400 m. This conforms with the drier and warmer parts of the study area. Frost is not common, except for the coldest winter months. In these areas mist occurs frequently. These communities are mostly restricted to deep valley bottoms, mid-slopes and crests. The aspect and steepness of the area are very variable. Some of the rare species of the area that occur within this community include the tree and shrub species *Rhus krebsiana*, *Carissa bispinosa*, *Osyris lanceolata*, *Hippobromus pauciflorum*, *Schotia latifolia*, *Dovyalis zeyheri*, *Prunus africana* and *Clusia nana*. Succulents include *Kalanchoe thyrsiflora* and *Gasteria polyphylla*. The grass *Miscanthus capensis*, the sedge *Schoenoxiphium* sp. and the geophyte *Dietes iridifolia* also occur in these communities. Common species in this community include the trees and shrubs *Rhus dentata*, *Myrsine africana*, *Rubus rigidus* and *Diospyros lycioides*,; the fern *Mohria caffrorum*, and others in species group K (Table 5.1).

Within this community three sub-communities were identified, namely *Ficus ingens* - *Aristida junciformis* woodland (Table 5.1, Species group A), *Ficus ingens* - *Rhus krebsiana* woodland (Table 5.1, Species group B) and *Acacia karoo* - *Aloe ferox* woodland (Table 5.1, Species group C).

The *Ficus ingens* - *Aristida junciformis* woodland is usually associated with northerly slopes at altitudes of 1 290 m to 1 380 m in Highland Sourveld.

The *Ficus ingens* - *Rhus krebsiana* woodland is usually associated with Dohne Sourveld on southern aspects of moderate steepness, at altitudes of 1 140 m to 1 540 m. These communities are restricted to the Molteno geological Formation.

The *Acacia karoo* - *Aloe ferox* woodland is found exclusively on Dohne Sourveld and the Tarkastad geological Formation at altitudes of 1 020 m and lower. These communities are found on very steep slopes on the lower escarpment in the study area.

## 2. *Scolopia mundii* - *Podocarpus latifolius* forest

This community is characterized by species group E (Table 5.1). This is the typical Afro-Montane forest community that occurs in sheltered valleys, mostly on the southern aspects. These forests are usually found at the foot of sandstone cliffs or in incised valleys. They occur at an altitude of 1 000 m to not higher than 1 700 m in the study area. Forest patches are relative small and represent the higher altitudinal limits for the occurrence of Afromontane Forests. Towards Engcobo to the south, Kokstad and Matatiele to the north, and Tsolo to the east and the Upper Transkei Plateau, forest patches are much larger. Rainfall is much higher along the Transkei Escarpment (Table 2.3: Langeni up to 1 780mm per annum), and the more frequent occurrence of mist makes these parts more suitable for the development of Afromontane forests. Two distinct sub-communities were identified within the *Scolopia mundii* - *Podocarpus latifolius* forest community, namely *Artemisia afra* - *Podocarpus latifolius* forest (Table 5.1, Species group F) and *Rapanea melanophloeos* - *Podocarpus latifolius* forest (Table 5.1, Species group G). The diagnostic species of these forest communities are the following trees (Species group E): *Podocarpus latifolius*, *Leucosidea sericea*, *Scolopia zeyheri*, *Diospyros simii* and *Pavetta inandensis*.

The number of species recorded per sample plot ranges from a minimum of 28 to a maximum of 49, with an average of 40 per sample plot (Table 5.1, Species group E). Common species in this community include *Rhus dentata*, *Myrsine africana*, *Rubus rigidus*, *Mohria caffrorum*, *Diospyros lycioides*, and others in species group L (Table 5.1).

### 3. *Rhus discolor* - *Canthium ciliatum* woodland

Only two sample plots represent this community (Table 5.1, Species group H), making it a rather indistinct community. Diagnostic species include *Rhus discolor*, *Grewia occidentalis*, and *Carissa haematocarpa*. *Rhus dentata*, *Rubus rigidus* and *Diospyros lycioides* are trees and *Berkheya sphaerocephala* and *Leonotis ocyimifolia* are herbs frequently found in this community. The community is found on medium to steep slopes at an altitude of between 1 200 m and 1 300 m. Affinities to other communities are uncertain. Common species include *Rhus dentata*, *Myrsine africana*, *Rubus rigidus*, *Mohria caffrorum*, *Diospyros lycioides*, and others in species group L (Table 5.1).

### 4. *Brachypodium flexum* - *Rhus pyroides* woodland

Species group K (Table 5.1) is diagnostic of this woodland. The number of species recorded per sample plot ranges from a minimum of 19 to a maximum of 28, with an average of 23 per sample plot.

This community is found exclusively in the Highland Sourveld veldtype of Acocks (1988). The altitude ranges between 1 400 m to 1 800 m and the community is restricted to the Molteno, Elliot and Drakensberg Geological Formations. The identified community forms part of the mid-slope, scarp and crest topographical positions. This is a relatively dry, exposed habitat, with shallow, nutrient-poor soils. These are, however, refuge sites against fire because of the rockiness and low biomass. Common species to this community include *Rhus dentata*, *Myrsine africana*, *Rubus rigidus*, *Mohria caffrorum*, *Diospyros lycioides* and others in species group L (Table 5.1).

## 5.2 Hygrophilous communities

These communities are restricted to stream banks and seepage areas, tarns on flat ridge tops and numerous vleis at lower altitudes. Streams descending through grasslands have hygrophilous plants like *Merxmuellera macowanii*, *Geranium pulchrum*, *Peucedanum thodei*, and, at lower altitudes, *Cyathea dregei*.

### 5.2.1 Classification of the communities

#### *Harpechloa falx* - *Pycneus cooperi* hygrophilous communities

1. *Kniphofia linearifolia* - *Berkheya sphaerocephala* seepage communities
2. *Bromus speciosus* - *Festuca elatior* vlei communities
3. *Pennisetum thunbergii* - *Bothriochloa insculpta* seepage communities
  - 3.1 *Ranunculus multifidus* - *Tritonia lineata* vlei and pan communities
  - 3.2 *Stiburus alopecuroides* - *Vernonia capensis* vlei communities
4. *Cyperus cooperi* - *Eliocharis palustre* vlei communities

### 5.2.2 Description of the communities (Table 5.2)

#### 1. *Kniphofia linearifolia* - *Berkheya sphaerocephala* seepage communities

This vegetation unit is characterized by species group A (Table 5.2). This is not a strongly defined community, but the diagnostic species are *Kniphofia linearifolia*, *Berkheya sphaerocephala* and *Rubus rigidus*. Other species that feature in this community, (although they are also found in many other communities), are *Poa annua* and *Arudinella nepalensis* (Species group D). The number of species recorded per sample plot ranged between a minimum of 4 and a maximum of 15 with an average of 9 species per sample plot.

These communities were restricted to the Molteno geological Formation at altitudes of 1 400 m. They are usually found at the crests of rocky outcrops, in drainage lines that forms seepage areas on the top of these outcrops. The aspect is usually northerly, with a level to gentle slope. This vegetation is usually associated with drainage lines that run into vlei areas. Common species to this communities are included in species group D.

#### 2. *Bromus speciosus* - *Festuca elatior* vlei communities

This community is characterised by species group B (Table 5.2). Diagnostic species include *Bromus speciosus*, *Eulophia ovalis*, *Ledebouria cooperi*, *Gnidia polyantha* and many more listed in species group B. More common species found in the area that are also diagnostic

include *Kohautia amatymbica*, *Euphorbia striata*, *Pentanisia prullenoides* and *Hypoxis rigidiscuila*. The number of species found per sample plot ranged between 25 and 48 with an average of 34. This community is found on the Molteno Formations at altitudes ranging between 1 200 to 1 350 m, mainly in vlei areas. Locally rare species include *Eulophia ovalis*. Common species in this community are included in species groups C, D, H and K.

### 3. *Pennisetum thunbergii* - *Bothriochloa insculpta* seepage communities

This community is characterised by species group E (Table 5.2) and includes two sub-communities, the *Ranunculus multifidus* - *Tritonia lineata* vlei and pan community (Species group F) and the *Stiburus alopecuroides* - *Vernonia capensis* vlei community (Species group G). These sub-communities are mainly distinguished on the basis of moisture, with the *Ranunculus multifidus* - *Tritonia lineata* vlei and pan community drier than the moister *Stiburus alopecuroides* - *Vernonia capensis* vlei community.

Diagnostic species include *Pennisetum thunbergii*, *Bothriochloa insculpta* and *Kniphofia brachystachya*. These communities are mainly found in Highland Sourveld at altitudes between 1 320 m and 1 950 m in alluvial and dolerite areas, as well as in the Molteno and Elliot geological Formations. The number of species per sample plot ranged between 17 and 50 with an average of 24. *Kniphofia brachystachya* and *Disa cooperi* are locally rare species and *Erica cooperi* var. *missionis* a local endemic. Common species in these communities are included in species groups D, H and K.

### 4. *Cyperus cooperi* - *Eliocharis palustre* vlei community

This community is characterised by species group I (Table 5.2). Diagnostic species include *Cyperus cooperi*, *Pycneus macranthus*, *Carex zuluensis* and *Eliocharis palustris*. The community is mainly found on Highland Sourveld areas on Clarens and Basalt Formations on seepage areas and pans at altitudes between 1 650 m and 1 850 m. The number of species per sample plot ranges between 7 and 41, with an average of 17 species. *Berkheya* sp. nov. is a local endemic associated with this community. Common species in this community are included in species groups I and K.

### 5.3 High altitude grassland communities

Temperate grasslands occupy the highest and coldest parts of the study area at elevations of 1 500 m up to 3 000 m. Rainfall ranges from 300 mm in the west to 1 000 in the extreme north-east. Moist subtropical grassland occurs on the cool and wet south and south-eastern slopes of the Drakensberg, at elevations of 600 m to 2 000 m. Rainfall ranges from 500 mm to 1 700 mm. Pockets of Afromontane forests occur at favourable localities. (Henderson 1992).

The grassland communities of higher altitudes comprise the Highland Sourveld veldtype (Acocks veldtype 44a) and Festuca-Themedra Alpine veld (Acocks veldtype 58). Within the range of the Highland Sourveld (between 1 850 m and 2 150 m) Acocks (1988) recognized a second veld type, i.e. *Themeda triandra* - *Festuca* Alpine veld. This is a short dense grassland, dominated by *Themeda triandra* and other species common to Highland Sourveld, as well as a high proportion of temperate grasses, particularly on the cool southern aspects and at higher altitudes (Edwards 1969). Common species are *Festuca costata*, *Merxmuellera disticha*, *Koeleria capensis*, *Pentaschistis tysonii* and *Poa binnata* (Edwards 1961).

The Highland Sourveld (Acocks veldtype 44a) can easily be converted to *Eragrostis plana* dominated grassland when overgrazed and trampled by cattle, or to *Acalypha schinzii* dominated grassland by sheep (Acocks 1988).

The sub-alpine belt consist of mainly fire-maintained tussock grassland, chiefly *Themeda triandra* (Killick 1963). Tall grassland, *Rendlia altera* grassland and *Merxmuellera macowanii* also occur on mesocline slopes (Killick 1963).

#### 5.3.1 Classification of the communities

*Themeda triandra* - *Alloteropsis semialata* Highland grassland major community

1. *Aristida junciformis* - *Eragrostis racemosa* grassland

- 1.1 *Setaria pallide-fusca* - *Rhus dentata* grassland community
- 1.2 *Carex zuluensis* - *Myrsine africana* stony grassland community
- 1.3 *Pellaea calomelanos* - *Rumex acetocella* grassland community
- 1.4 *Festuca costata* - *Erica cooperi* higher altitude open grassland community
  - 1.4.1 *Gladiolus crassifolius* - *Panicum natalensis* grassland community
  - 1.4.2 *Scabiosa columbaria* - *Bothriochloa insculpta* grassland community
2. *Cheilanthes quadripinnata* - *Chrysocoma ciliata* grassland major community
  - 2.1 *Pelargonium alchemilla* - *Lasiospermum papillosum* stream bank community
  - 2.2 *Euryops tysonii* - *Cotula socialis* scrub community
  - 2.3 *Erica schlechteri* - *Cyrtanthus breviflorus* hygrophilous community

### 5.3.2 Description of the communities (Table 5.3)

1. *Aristida junciformis* - *Eragrostis racemosa* grassland

This community is characterised by species group P (Table 5.3). Diagnostic species for this community include the grasses *Aristida junciformis*, *Eragrostis curvula*, *E. piana*, *E. racemosa*, *Monocymbium ceresiiformis*, *Diheteropogon amplexans*, *Elionurus muticus*, and herbs that include *Helichrysum miconiifolius*, *Senecio glaberrimus*, *Richardia brasiliensis*, *Gnidia kraussiana*, *Conyza scabrida* and *Commelina africana*. The common species are listed in species group AB (Table 5.3).

This community is subdivided into four sub-communities: *Setaria pallide-fusca* - *Rhus dentata* grassland communities, *Carex zuluensis* - *Myrsine africana* stony grassland communities, *Pellaea calomelanos* - *Rumex acetocella* grassland communities and *Festuca costata* - *Erica cooperi* higher altitude open grassland communities.



1.1 *Setaria pallide-fusca* - *Rhus dentata* grassland is characterised by species group A (Table 5.3). Diagnostic species include the herbs *Gnaphalium pensylvanicum*, *Monopsis decipiens*, *Eriosema salignum*, *Stachys obtusifolia* and the grass *Setaria pallide-fusca*. The slope is gentle to level, mainly with a southern aspect. This community is found mainly on alluvial deposits, but also on the Elliot and Molteno Formation at altitudes between 1 280 m and 1 620 m. It is restricted to Highland Sourveld grasslands. The number of species per sample plot ranged between 16 and 52, with an average of 35. No rare and endemic species are associated with this community.

1.2 *Carex zuluensis* - *Myrsine africana* stony grassland is characterised by species group B (Table 5.3). Diagnostic species include *Carex zuluensis*, *Anthericum rangei*, *Crassula lanceolata*, and *Opuntia* sp. This community is confined to the Highland Sourveld at altitudes ranging from 1 360 m to 1 380 m. It is restricted to the Molteno geological Formation on gentle slopes, mainly on crests and at the base of cliffs on south-western aspects. This community is diverse in species composition and the number of species ranged from 46 to 65 with an average of 54. Common species found within this community include the grasses *Sporobolus africana*, *Eragrostis racemosa*, *Aristida junciformis*, *Eragrostis plana*, *Elionurus muticus*, the herbs *Richardia brasiliensis*, *Centella asiatica*, *Felicia filifolia*, *Crassula pelucida*, *Aristea cognata*, *Cyanotis speciosa*, *Senecio glaberrimus*, *Lobelia flaccida*, *Delosperma* sp. and the trees *Rhus dentata* and *Diospyros lycioides*. Local rare species associated with this community include *Satyrium longicauda*.

1.3 *Pellaea calomelanos* - *Rumex acetocella* grassland is characterised by species group D (Table 5.3). Diagnostic species include *Pellaea calomelanos*, *Rumex acetocella*, *Ficus ingens* and *Chloris guyana*. This community is generally associated with gentle slopes of mainly Highland Sourveld grasslands, but also occurs in Dohne Sourveld grasslands at altitudes ranging from 1 020 m to 1 880 m. It are found on mainly Elliot and Molteno geological Formations, but also occurs on the Tarkastad and Clarens Formations. The number of species per sample plot ranged from 14 to 66 with an average of 37. Some of the more general species in this community include the grasses *Digitaria monodactyla*, *Panicum natalensis*. Herbs include *Dicoma anomala* and those species of species groups P, R, U, V and AB (Table 5.3). *Watsonia gladioloides* and *Erica cooperi* are the local endemic species



found in this community.

A variant of this community can be identified by species group C (Table 5.3), found at altitudes ranging between 1 410 m and 1 550 m and restricted on north-northwestern slopes. Diagnostic species of this community include *Aristida junciformis* subsp. *galpinii*, *Lotononis arida*, *Canthium ciliatum*, *Aloe maculata*, *Pavetta capensis*, *Leonotis ocymifolia* and *Coryledon orbiculata*. Other common species associated with this community include those of species groups D, F, H, K, P, U, V, X and AB (Table 5.3). Rare and endemic species associated with this variant include *Watsonia gladioloides*, *Cineraria albicans* and *Haemanthus humilis*.

1.4 *Festuca costata* - *Erica cooperi* grassland is characterised by species group O (Table 5.3). Diagnostic species include *Festuca costata*, *Erica cooperi*, *Erica w...*, *Cephalaria oblongifolia*, *Helichrysum cephaloideum*, *H. herbaceum*, *H. lingulatum*, *H. spiralepis*, *Disa versicolor* and *Crassula vaginata*. These communities are found on both Highland Sourveld and Themeda-Festuca Alpine veld at altitudes ranging from 1 300 m to 2 500 m on the Elliot, Clarens and Basalt Formations. The slope and aspect vary greatly. Local rare and endemic species in this community include *Erica cooperi*, *Satyrium neglectum*, *Helichrysum palustre*, *Brownleea recurvata* and *Schizochilus zeyheri*. The following two sub communities may be recognised within this community: *Gladiolus crassifolius* - *Panicum natalensis* grassland and *Scabiosa columbaria* - *Bothriochloa insculpta* grassland.

The *Gladiolus crassifolius* - *Panicum natalensis* grassland has diagnostic species represented by species group E (Table 5.3). This community is restricted to Highland Sourveld grassland at altitudes ranging from 1 300 m — 1 960 m. The number of species per sample plot ranged from 33 to 68 with an average of 46. Common species in this community include those of species groups F, G, O and P (Table 5.3).

The *Scabiosa columbaria* - *Bothriochloa insculpta* grassland, which is characterised by species group N (Table 5.3), consists of two variants, *Helichrysum auriceps* - *Berkheya setifera* grassland (Species group I, Table 5.3) and *Brownleea recurvata* - *Senecio subcoriaceus* grassland (Species group M, Table 5.3). Both of these variants are found on

Highland Sourveld grassland and *Themeda-Festuca* grassland. Habitat differentiation is determined by steepness of the slope, with *Helichrysum auriceps* - *Berkheya setifera* being found on gentle slopes and *Brownleea recurvata* - *Senecio subcoriaceus* occurring on very steep slopes.

2. *Cheilanthes quadripinnata* - *Chrysocoma ciliata* communities are characterised by species group AA (Table 5.3). Diagnostic species include *Cheilanthes quadripinnata* and *Chrysocoma ciliata*. These communities are mainly found in *Themeda-Festuca* Alpine veld and Highland Sourveld. Rare and endemic species in this community include *Berkheya multijuga*, *Berkheya purpurea* and *Thamnocalamus tessellatus*. Common species in this community include those listed in species groups AB (Table 5.3). This community can be divided into three sub-communities:

2.1 *Pelargonium alchemilla* - *Lasiospermum papillosum* stream bank communities are characterised by species group Q (Table 5.3). Diagnostic species include *Euphorbia natalensis*, *Lasiospermum papillosum*, *Urginea macrocentras*, *Rhodohypoxis baurii*, *Festuca caprina*, *Tulbaghia leucantha*, *Nemesia caerulea* and *Pelargonium alchemilloides*. These communities are found on steep foot slopes, mid slopes and crests, with altitudes ranging between 1 380 m and 2 040 m.

2.2 *Euryops tysonii* - *Cotula socialis* scrub communities are characterised by species group W (Table 5.3). Diagnostic species include *Helichrysum splendidum*, *Conium fontanum* var. *alticola*, *Anemone fanninia*, *Polemannia montana*, *Euryops montana* and *Cotula socialis*. These communities are confined to Drakensberg Basalt on steep slopes at altitudes between 1 840 and 1 980 m.

2.3 *Erica schlechteri* - *Cyrtanthus breviflorus* hygrophilous communities are characterised by species group Y (Table 5.3). Diagnostic species include *Ranunculus multifidus*, *Alepidea woodii*, *Cyrtanthus breviflorus*, *Nierembergia hippomanica*, *Ranunculus baurii*, *Kniphofia northiae*, *Merxmullera drakensbergensis*, *Euryops* sp., *Phygellus capensis*, *Erica schlechteri*, *E. leucopelta* and *Clutia katherinae*. These communities are confined to the northern and north-eastern slopes on moderate slopes between 1 770 and 2 010 m.

## 5.4 Relative lower altitude Afro-Montane Grassland communities

The dominant grassland represents Highland Sourveld (Acocks 1988). This comprises the vegetation of the eastern slopes and foothills of the Drakensberg between 1 350 m and 2 150 m. It is essentially a short sour grassland (Edwards 1961) dominated by *Themeda triandra*, *Tristachya leucothrix*, *Rendlia altera* and *Alloteropsis semialata*.

Species generally found in the *Alloteropsis semialata* - *Rendlia altera* grassland are listed in species group T (Table 5.4). Table 5.4 clearly illustrates the great variation in species composition. The following classification was derived from the analysis.

### 5.4.1 Classification of the communities

*Alloteropsis semialata* - *Rendlia altera* Afromontane major grassland community

1. *Eulalia villosa* - *Graderia scabra* moist grassland community
  - 1.1 *Chamaecrista capensis* - *Vernonia capensis* grassland community
  - 1.2 *Poa annua* - *Rumex acetocella* moist grassland community
    - 1.2.1 *Arudinella nepalensis* - *Polygala ohlendoriana* wet grassland community
    - 1.2.2 *Kyllingia alata* - *Alchemilla woodii* wet grassland community
  - 1.3 *Chloris guyana* - *Polygala confusa* moist grassland community
  - 1.4 *Gladiolus crassifolius* - *Berkheya setifera* community
2. *Peucedanum caffrum* - *Ipomoea crassipes* grassland community
3. *Senecio macrocephalus* - *Festuca caprina* grassland community
  - 3.1 *Pseudognaphalium luteum* - *Lotononis pulchra* moist grassland community
  - 3.2 *Gladiolus longicollis* - *Heliophila brassicifolia* grassland community
4. *Pellaea calomelanos* - *Eulophia clavicornis* grassland community
  - 4.1 *Vernonia natalensis* - *Acalypha punctata* moist grassland community
  - 4.2 *Aristida junciformis* - *Aspalathus chortophila* rocky grassland community

#### 5.4.2 Description of the *Alloteropsis semialata* - *Rendlia altera* Afrikanian grassland communities (Table 5.4)

1. *Eulalia vilosa* - *Graderia scabra* moist grassland is characterised by species group H (Table 5.4). Within this grassland community four sub-communities were identified. Common species in this unit include those listed in species groups O and T. All these communities were confined to the Highland Sourveld (Acocks 44a). The aspects where they are found vary greatly, but are mainly northerly and southerly. The communities are generally found on the Elliot and Molteno geological Formations, between altitudes of 1 140 m and 1 860 m, with a few exceptions occurring on Alluvium and Clarens Formation.

1.1 *Chamaecrista capensis* - *Vernonia capensis* grassland is characterised by species group A (Table 5.4). Diagnostic species include *Chamaecrista capensis*, *Vernonia capensis*, *Acalypha angustata*, *Satyrium longicauda* and *Asclepias macropus*. The number of species per sample plot ranged from 17 to 37 with an average of 25. This community is found on the Molteno Geological Formation in mainly Dohne Sourveld on level to moderate slopes.

1.2 *Poa annua* - *Rumex acetocella* moist grassland is characterised by species group C (Table 5.4). Diagnostic species include *Poa annua*, *Rumex acetocella*, *Schizoglossum nitidula*, *Commelina africana* and *Stiburus alopecurus*. This community is confined to Highland Sourveld at altitudes ranging from 1 300 m to 1 860 m. Two variants are distinguished, namely *Arudinella nepalensis* - *Polygala ohlendorffiana* wet grassland (Species group B, Table 5.4) and *Kyllingia alata* - *Alchemilla woodii* wet grassland (Species group D, Table 5.4). These variants are mainly distinguished by their position in the landscape, with the first occurring mainly on the foot slopes and the second mainly on the steeper mid-slopes and upper slopes. Local rare species found associated with this community include *Cyrtanthus mackeni*, *C. breviflorus*, *Watsonia gladioloides* and *Aloe ecklonis*.

1.3 *Chloris gayana* - *Polygala confusa* moist grassland is characterised by species group E (Table 5.4). Diagnostic species include *Chloris gayana*, *Helichrysum cephaloideum*, *Helictotrichon turgidulum*, *Polygala confusa* and *Helichrysum lingulatum*. The number of species per sample plot ranged from 17 to 44 with an average of 29. Other common species

within this community include *Phacelurus frankisiae*, *Liphocarpa rehmanii*, *Festuca costata*, *Diheteropogon amplexans*, *Hermannia woodii*, *Tolpis capensis*, *Euphorbia striata*, *Hypoxis filiformis*, *Festuca elatior*, *Tristachya leucotrix*, *Aster bakerianus*, *Themeda triandra* and *Eragrostis capensis*.

1.4 *Gladiolus crassifolius* - *Berkheya setifera* is characterised by species group G (Table 5.4). Diagnostic species to this community include *Gladiolus crassifolius*, *Berkheya setifera*, *Helichrysum rugulosum*, *Schizoglossum hilliardiae*, *Schizoglossum linifolium*, *Lactuca capensis*, *Cyperus obtusiflorus* var. *obtusiflorus*, *Wahlenbergia krebsiana* and *Cyperus rupestris*. This community is found on Molteno and Elliot geological Formations as well as on alluvium deposits at altitudes ranging from 1 220 m to 1 470 m. The number of species ranged from 25 to 61 with an average of 44 per sample plot. Common species found in this community that are also found in other communities include *Graderia scabra*, *Helichrysum inornatum*, *Oxalis smithiana*, *Hermannia woodii*, *Tolpis capensis*, *Euphorbia striata*, *Alloteropsis semialata*, *Kohautia amatymbica*, *Panicum natalensis*, *Pentanisia prullenoides*, *Themeda triandra*, *Helichrysum pilosellum* and *Eragrostis capensis*.

2. *Peucedanum caffrum* - *Ipomoea crassipes* grassland is characterised by species group I (Table 5.4). Diagnostic species of this community include *Peucedanum caffrum*, *Ipomoea crassipes*, *Vigna vexillata* var. *vexillata*, *Walafrida* sp., *Digitaria setifolia*, *D. tricholaenoides*, *Chaetacanthus setiger*, *Helichrysum aureum*, *Schizoglossum* sp. and *Helichrysum mixtum*. This community is restricted to the Molteno geological Formation at altitudes of 1 290 m to 1 410 m. The community is restricted to gentle northern slopes mainly in Dohne Sourveld. The number of species per sample plot ranged from 30 to 51 with an average of 39. Species common to this community, but also found in other communities include *Tolpis capensis*, *Moraea modesta*, *Acalypha schinzii*, *Alloteropsis semialata*, *Cyperus obtusiflorus*, *Gnidia kraussiana*, *Kohautia amatymbica*, *Tristachya leucothrix*, *Aster bakerianus*, *Pentanisia prullenoides*, *Themeda triandra* and *Bulbostylis schoenoides*.

3. *Senecio macrocephalus* - *Festuca caprina* grassland is characterised by species group L (Table 5.4). Diagnostic species of this community include *Senecio macrocephalus*,

*Berk rhapontica* subsp. *platyptera*, *Festuca caprina*, *Diheteropogon amplexans*, *Gladiolus permeabilis*, *Helichrysum appendiculatum* and *Senecio scitus*. This community is found mainly on Highland Sourveld, but also Dohne Sourveld and Themeda-Festuca veld. The geological formations are also varied. This community is found at altitudes between 1 360 m and 2 070 m. Within this community two variants are recognised, namely *Pseudognaphalium luteum* - *Lotononis pulchra* moist grassland and *Gladiolus longicollis* - *Heliophila brassicifolia* grassland.

The *Pseudognaphalium luteum* - *Lotononis pulchra* moist grassland is characterised by species group J (Table 5.4). The diagnostic species of this variant include *Lotononis pulchra*, *Polygala uncinata*, *Pseudognaphalium luteum*, *Ursinia tenuiloba*, *Dierama robustum* and *Metalasia densa*. It is found at lower altitudes from 1 360 m to 1 560 m.

The *Gladiolus longicollis* - *Heliophila brassicifolia* grassland variant is characterised by species group K (Table 5.4). Diagnostic species in this community include *Gladiolus longicollis*, *Heliophila brassicifolia*, *Watsonia pilansii*, *Eulophia aculeata* and *Rumex woodii*. This variant is found at higher altitudes from 1 350 m to 2 070 m.

4. *Pellaea calomelanos* - *Eulophia clavicornis* grassland is characterised by species group R (Table 5.4). Diagnostic species of this community include *Pellaea calomelanos*, *Hyparrhenia hirta*, *Eulophia clavariodes*, *Monocymbium ceresiiformis*, *Centella glabrata* and *Rhus pyroides*. This community is mainly found on northern slopes. Within this community two sub-communities were identified, namely *Vernonia natalensis* - *Acalypha punctata* moist grassland and *Aristida junciformis* - *Aspalathus chortophila* rocky grassland. The *Vernonia natalensis* - *Acalypha punctata* moist grassland is characterised by species group M (Table 5.4). Diagnostic species in this community include *Vernonia natalensis*, *Bulbostylis cleropus*, *Watsonia densiflora*, *Hermannia parviflora* and *Acalypha punctata*. This community is mainly found on eastern to northern slopes at altitudes ranging from 1 290 m to 1 830 m. The number of species ranged from 22 to 77 with an average of 50. Species that are frequently found in this community, but also in other communities, include *Gerbera viridiflora*, *Tolpis capensis*, *Pellaea calomelanos*, *Hyparrhenia hirta*, *Graderia scabrida*, *Hypoxis costata* and other species of species group T (Table 5.4).

The *Aristida junciformis* - *Aspalathus chortophila* rocky grassland community is characterised by species group Q (Table 5.4). Diagnostic species of this community include *Aristida junciformis*, *Aspalathus chortophila* and *Aristea cognata*. This community is associated with Highland Sourveld, Dohne Sourveld and Themeda-Festuca Alpine veldtypes. Within this community one variant is distinguished namely the *Relhania pungens* - *Dicoma anomala* rocky plate communities that are characterised by species group P (Table 5.4). This variant is exclusively found on moderate to steep northern slopes and only on the Elliot Geological Formation and Highland Sourveld veldtypes, whereas the *Aristida junciformis* - *Aspalathus chortophila* community is found in different veldtypes and on different geological formations.



## CHAPTER 6

### FLORA

#### 6.1 Floristic data

An analysis of the vascular flora of the north eastern part of the Eastern Cape Province shows that there are at least 61 pteridophytes, 4 gymnosperms, 613 monocotyledons and 1 313 dicotyledons, giving a total of 1 991 species belonging to 552 genera. On this basis the flora of KwaZulu-Natal, Cape and Lesotho are compared with that of the study area (Gibbs Russell 1985) (Table 6.1). Angiosperm families comprising 1 % or more of the total number of species are listed in order of numerical importance in Table 6.2. The largest genera are listed in Table 6.3.

In the enumeration of the flora (Appendix 3), families are arranged in alphabetical order, with genera and species also in alphabetical order under the respective families. Scientific names and authors citations follow Arnold & De Wet (1993), if not stated otherwise.

#### 6.2 Local endemism

In the study area 22 of the 1 991 vascular plant species are local endemic species (1.10%). All the local endemic species are listed in Appendix 1. Distribution maps of these endemic species are provided in Appendix 4. Codd (1968) recognized 49 infrageneric taxa in the genus *Kniphofia*, of which at least 16 have been recorded from the study area. A third (33%) of the *Kniphofia* taxa of South Africa is thus found in the study area, making this an important centre of diversity for the genus. The Orchidaceae is also represented by a large number of species, especially in the genera *Disa*, *Disperis*, *Eulophia* and *Satyrium*.

In total, 194 plant species endemic to the Drakensberg Alpine Region [DAR] (Killick 1994) and 86 endemic or near-endemic to the Maputaland-Pondoland Region [MPR] (Van



Wyk 1994) have been collected in the study area. All these endemic and near-endemic taxa are indicated in the checklist (Appendix 3). Distribution maps for the DAR endemic taxa are supplied in Appendix 5.

### 6.3 Rare and threatened taxa

Seventy four of the species found in the study area (Appendix 3) are listed in the Red Data List of Southern African plant species (Hilton-Taylor 1996). These species are listed in Appendix 2. Using the old IUCN Red Data categories (Davis *et.al.* 1986, Hilton-Taylor 1996) 1 species is considered Extinct (perhaps recollected during the present study), 1 Vulnerable, 17 Rare, 5 Intermediate, 12 Insufficiently Known, 37 Not threatened and 1 with No information.

### 6.4 Composition of the flora of the study area

In Tables 6.1, 6.2 and 6.3 the number of families, genera and species is compared with that of neighbouring areas that include the former Cape Province (excluding the Cape Floral Kingdom), Lesotho and KwaZulu-Natal. In all three taxon categories (family, genus and species) the flora of the study area compares favourably with that of the former Cape Province (excluding the Cape Floral Kingdom) and Lesotho, but is far less than the total for KwaZulu-Natal (including the DAR and MPR, the rich floras of which boost the figures for the region).

Families in the study area which represent more than 1% of the taxa are listed in Table 6.4 and genera consisting of ten or more species are listed in Table 6.5. In Table 6.4 and Table 6.5 the taxa are listed in order of numerical importance.

**Table 6.1** Number of vascular plant families in the study area, compared with neighbouring areas (mainly from Gibbs Russell 1985)

	Cape	Lesotho	KwaZulu-Natal	Study Area
Gymnosperms	4	0	4	2
Monocotyledons	32	17	34	22
Dicotyledons	116	78	141	94
Total Seed plants	152	95	179	118
Ferns	not available	18	not available	18
Total Vascular plants	-	113	-	136

**Table 6.2** Number of genera of vascular plants in the study area, compared with neighbouring areas (mainly from Gibbs Russell 1985)

	Cape	Lesotho	KwaZulu-Natal	Study Area
Gymnosperms	4	0	4	2
Monocotyledons	282	159	311	151
Dicotyledons	700	367	918	355
Total Seed plants	986	526	1233	508
Ferns	not available	28	not available	28
Total Vascular plants	-	554	-	536

**Table 6.3** Number of species of plants in the study area, compared with other areas (mainly from Gibbs Russell 1985)

	Cape	Lesotho	KwaZulu-Natal	Study Area
Gymnosperms	11	0	14	4
Monocotyledons	2075	485	1304	613
Dicotyledons	6418	1052	3500	1313
Total Seed plants	8504	1537	4818	1930
Ferns	c.75	54	not available	61
Total Vascular plants	8579	1591	-	1991

**Table 6.4 Families representing 1% or more of the species in the study area.**

Family	No. of Species	% of total
Asteraceae	305	15.32
Poaceae	142	7.13
Fabaceae	123	6.18
Scrophulariaceae	97	4.87
Orchidaceae	93	4.67
Iridaceae	86	4.32
Cyperaceae	84	4.22
Asclepiadaceae	63	3.16
Asphodelaceae	52	2.61
Hyacinthaceae	49	2.46
Apiaceae	43	2.16
Crassulaceae	35	1.76
Ericaceae	34	1.71
Rubiaceae	34	1.71
Euphorbiaceae	33	1.66
Geraniaceae	33	1.66
Amaryllidaceae	25	1.26
Rosaceae	25	1.26
Lamiaceae	24	1.21
Thymelacaceae	24	1.21
Hypoxidaceae	23	1.16
Gentianaceae	22	1.10
Polygalaceae	21	1.05

**Table 6.5** Genera with ten or more species in the study area

Genera	No. of species	% of total
<i>Helichrysum</i>	77	3.87
<i>Senecio</i>	62	3.11
<i>Erica</i>	34	1.71
<i>Crassula</i>	31	1.56
<i>Disa</i>	24	1.21
<i>Kniphofia</i>	20	1.00
<i>Lotononis</i>	20	1.00
<i>Sebaea</i>	20	1.00
<i>Pelargonium</i>	20	1.00
<i>Gladiolus</i>	19	0.95
<i>Rhus</i>	18	0.90
<i>Gnidia</i>	17	0.85
<i>Cyperus</i>	16	0.80
<i>Hesperantha</i>	16	0.80
<i>Hypoxis</i>	16	0.80
<i>Moraea</i>	16	0.80
<i>Polygala</i>	16	0.80
<i>Schizoglossum</i>	15	0.75
<i>Alepidea</i>	14	0.70
<i>Berkheya</i>	13	0.65
<i>Clusia</i>	14	0.70
<i>Wahlenbergia</i>	14	0.70
<i>Protasparagus</i>	13	0.65
<i>Zaluzianskya</i>	13	0.65
<i>Ornithogalum</i>	12	0.60
<i>Sutera</i>	12	0.60
<i>Thesium</i>	12	0.60
<i>Argyrolobium</i>	11	0.55
<i>Cyrtanthus</i>	11	0.55
<i>Dierama</i>	11	0.55
<i>Diospyros</i>	11	0.55
<i>Disperis</i>	11	0.55
<i>Eulophia</i>	11	0.55
<i>Euphorbia</i>	11	0.55
<i>Indigofera</i>	11	0.55
<i>Trachyandra</i>	11	0.55
<i>Satyrium</i>	11	0.55

<i>Delosperma</i>	10	0.50
<i>Eragrostis</i>	10	0.50
<i>Geranium</i>	10	0.50
<i>Stachys</i>	10	0.50
<i>Aspidoglossum</i>	10	0.50

## CHAPTER 7

### DISCUSSION

The overwhelming impression of the study area is that of grass-covered slopes, with some areas marked by the occurrence of *Protea*-savanna. Along stream banks (especially at higher altitudes) and below cliffs, the grassland is replaced by scrub vegetation dominated by *Leucosidea sericea*. On the slopes of steep valleys (1 800 m and lower), small patches of indigenous (Afromontane) forests are scattered throughout the landscape, especially on south facing slopes and in fire-protected refuges. At lower altitudes, streams are less disturbed and less invaded by exotic tree species, than are similar areas of the Drakensberg in KwaZulu-Natal and Mpumalanga.

The landscape below the main escarpment consists of rolling mountains and valleys. Some extensive vlei areas and pans occur on level floodplains, with numerous seepage areas along streamlines and mountain slopes. The general elevation of the area north of Pot River Pass is 1 600 m and higher and here the Afromontane forest patches are replaced by extensive *Leucosidea sericea*-forest/scrub. This area is known as the Elands Heights and comprises an amazingly flat plateau, formed by the Clarens Sandstone Formation, with deep incised valleys. South of Pot River Pass the general altitude varies between 1 200 and 1 500 m altitude, with the main escarpment changing from an east-northeast aspect to a southern aspect.

A striking feature, observed when descending from the main escarpment towards the lowlands, is the seemingly low human impact in the area. Except for some local patches of over-grazing and small cultivated lands, the rolling landscape is covered by relatively undisturbed grassland (Fig 7.1). The greater part of these grasslands is underlain by rocks of the Clarens Sandstone Formation, and below the main escarpment in the study area this sandstone type dominates the landscape.

Access to the high mountains in the study area is very difficult and restricted to a few mountain passes (Naude's Neck Pass, Bastervoetpad, Fetcani Pass, Barkly Pass, Foxly's trek Pass and Tembu Pass). Very few of these passes have been thoroughly explored by

botanists. This seems to be the main reason for the paucity of botanical knowledge about this floristically rich and diverse area of the Drakensberg. Many plant species not previously collected in the study area were recorded during the present study, including many species previously not listed for the former Cape Province. The present study has thus made a particular contribution to the knowledge of the distribution of endemic species of the Drakensberg Alpine Region in this southern extension of the main Drakensberg Escarpment.

*Asclepias bicuspidis* is one of many examples to illustrate that the study area is botanically very poorly explored. This is a new distribution record for a species that is listed in the Red Data List for plants of Southern Africa as extinct (Hilton-Taylor 1996).

### 7.1 Botanical diversity

The extreme diversity of landscapes in the study area is reflected in the diversity of its botanic composition. Diversity increases with altitude and is highest on the steep grassy slopes just below the main escarpment. Rocky outcrops at lower altitudes, together with the slopes below sandstone cliffs tend to have increased levels of diversity when compared to the surrounding grasslands. The diversity of the grasslands must, however, not be underestimated. Nearly all the terrestrial orchids, for example, are confined to grassy slopes and, except for a few species occurring in vleis, seepage areas and on rocky outcrops and ledges, no other habitats in the study area are more species-rich in orchids than the open grasslands.

The Afromontane forest patches (the wetter forests on southern slopes) have surprisingly low levels of diversity of tree species. Drier forest along the rivers at lower altitudes (for example the Tsitsa River), however, were much more diverse in species composition than the true Afromontane forest at higher altitudes.

The secondary Escarpment between the study area and the former Transkei and the lowlands within the study area represent a transitional zone between the Drakensberg Alpine Region and the Maputaland-Pondoland Region. The number of plant families (Table 6.1),

genera (Table 6.2) and species (Table 6.3) of the study area compares favourably with those of neighbouring areas, it compares favourably with those of the former Cape Province (excluding Cape Floral Kingdom) and Lesotho. Taxon numbers for KwaZulu-Natal are, however, much higher, but it should be remembered that this Province includes large parts of both the DAR and MPR. The fact that the study area represents ecotonal transition between the DAR and MPR boosts the diversity of the area. In total more than 1 900 vascular plant species and infraspecific taxa have been recorded for the study area, which is less than 4 400 km<sup>2</sup>.

## 7.2 Floristic endemism

Local endemism is relatively low, with most of these endemic species centred on the high Drakensberg escarpment above 1 700 m altitude. Some of the endemic species in the study area (e.g. *Crocoshia masonorum*) are also found at low altitudes on the escarpment between the study area and the former Transkei.

In the study area only 22 of the 1 991 recorded vascular plant species are locally endemic (1.10 %). These are listed in Appendix 1, together with the communities where they occur. This percentage is considerably lower than the 5.09 % endemism recorded for the southern KwaZulu-Natal main Drakensberg (Hilliard & Burt 1987). It should be noted, however, that the figure of 1.10 % includes all the species recorded in the study area above an altitude of 980 m, and not only those species found exclusively above 1 800 m (as listed by Hilliard & Burt 1987). The figure for local endemism would thus probably be much higher if only those species above 1 600 m (comparable to 1 800 m further north, considering that the latitude compensates for altitude) were taken into account. This is nonetheless still much lower than the number of local endemics found in the main Drakensberg Escarpment further north. It is therefore clear that the study area does not represent a strong centre of endemism. Affinities with the KwaZulu-Natal Drakensberg are very strong and the study area should therefore rather be seen as a southward extension of the KwaZulu-Natal Drakensberg, making up a southern Drakensberg regional sub-centre of endemism within the Drakensberg range as a whole. In total, 194 DAR endemic species



were recorded in the study area (about 49 % of the total number of DAR endemics). This clearly indicates the strong affinity of the study area with the DAR and argues against recognition of the study area as a separate, major centre of endemism.

Percentage-wise far fewer MPR endemic species were found in the study area ( 7 % of the total number of MPR endemics). This not only reflects the study area's ecotonal position between the MPR and the DAR, but also its closer floristic links with the DAR.

The likelihood that further botanical exploration in the study area may result in the identification of more species endemic to this part of the Drakensberg is very high. In the present study a few specimens have been identified as possible new species, but further research is required to confirm their status.

### 7.3 Plant communities

Plant communities in the study area are rather variable and more may be described in future studies. The principal aim in describing the various communities was to divide the study area into smaller, recognizable floristic-ecological units and to establish whether any correlations between the distribution of endemic plant species and the communities existed. Nearly all endemic species are confined to grassland communities, including both the lower altitude Afromontane grassland and the higher altitude Sub-Alpine and Alpine grassland communities. Hygrophilous and forest communities have almost no endemic species. In the study area the greatest current threat to the flora is that of afforestation with alien timber trees which destroy the floristically rich low and high altitude open grasslands, leaving the floristically poorer areas (wetland and forest) undisturbed. It is suggested that the grassland areas surrounding these floristically poorer areas be increased in size. This, together with sound management techniques such as regular burning, would help to conserve the rich grassland flora. The practise of regular burning is essential as the grassland communities have evolved with a regular fire regime. Many species are smothered, have decreased flowering and in some cases actually become moribund and die when the grassland habitats they occupy are not subjected to regular burning. Grassland in the study area shows much

greater diversity in herbaceous and geophyte species after burning than those areas left unburnt for several years.

#### 7.4 Rare and endangered taxa

The Red Data list for Southern African plants (Hilton-Taylor 1996) lists 74 species that were recorded in the study area. These species are listed in Appendix 2. Using the old IUCN Red Data categories, 1 species is considered as extinct, 1 vulnerable, 17 rare, 5 intermediate, 12 insufficiently known, 37 not threatened and 1 with no information. Of the listed 73 species, 24 may be therefore be considered as threatened with the remainder in no immediate danger. The grassland communities (both Afromontane and Sub-Alpine) contain the highest number of rare and threatened species.

#### 7.5 Floristic elements

The Afromontane Region is an archipelago-like Regional Centre of Endemism with most of its 4 000 species considered to be endemic (White 1983). In contrast to the very high degree of specific endemism, family and generic endemism are poorly developed. The following genera endemic to the Afromontane Region have the most species in South Africa: *Alepidea*, *Buchenroedera*, *Crinipes*, *Kniphofia*, *Macowania* and *Rendlia*. In the study area the largest genera include *Crassula*, *Disa*, *Erica*, *Gladiolus*, *Helichrysum*, *Kniphofia*, *Lotononis*, *Pelargonium* and *Senecio*. Many of the Afromontane endemic species are widely distributed (especially tree taxa). In contrast to the situation in tropical Africa, the greater majority of smaller plants (but not trees) which occur in the Drakensberg part of the Afromontane Region do not extend to other systems, though they may be widely distributed within it [Weimarch (1934 and 1940) on *Aristea* and *Cliffortia* respectively; Nordenstam (1968, 1969) on *Euryops*; Codd (1969) on *Kniphofia*; Hilliard & Burt (1971) in a monographic study on *Streptocarpus*; Lewis *et al.* (1972) on *Gladiolus*; and Goldblatt (1973) on *Moraea*] (Hilliard & Burt 1987). This situation also seems to be true for the genera *Alepidea*, *Berkheya*, *Buchenroedera*, *Clutia*, *Erica*, *Helichrysum*, *Zaluzianskya* and many other genera, according to Hilliard &

Burt (1987).

At least 142 grass taxa have been recorded for the study area. Most of these are tufted (Hilliard & Burt 1987), but when closely spaced give the appearance of a continuous layer. The tufted habit is, however, clearly noticeable after burning. As mentioned by Hilliard & Burt (1987), this is very important in permitting the survival of many herbaceous plants in the grass cover. If these grasslands are not burnt for several years, many of the herbs are smothered by the accumulation of grass litter and frequently fail to flower until the cover is burnt off. *Themeda triandra* is the most abundant grass in the study area, associated with other grasses such as *Heteropogon contortus*, *Alloteropsis semialata*, *Tristachya leucothrix*, *Stiburus alopecuroides*, *Sporobolus africanus*, *Rendlia altera*, *Panicum natalense* and many others. In wetter areas common grasses include *Anthoxanthum ecklonii*, *Arudinella nepalensis*, *Eulalia vilosa*, *Imperata cylindrica*, *Koeleria capensis*, *Paspalum dilatatum* (naturalized) and *Poa* species. Together with *Merxmuellera* and *Festuca*, *Pentachistis* is characteristic of high-altitude grasslands and is especially distinct during November-December when in full flower. The genus *Schoenoxiphium* is also particularly abundant in these high-altitudinal areas, with most species restricted to these high areas of the Drakensberg. Grassland on north- and south-facing slopes differs markedly in floristic composition. North-facing slopes are drier and warmer (especially in winter) and the difference is particularly marked when the first spring-growth resumes in areas burned at the end of the winter. The non-grassy herbaceous flora of the grasslands is very varied, making the grassland one of the floristically most diverse vegetational types in the sub continent.

Geophytes are well represented in the study area. This life form represents one of the adaptations of the vegetation to cold winters (with its associated snow cover) and fire. Geophytes include plants with bulbs, corms, tubers and rhizomes and are represented by the following genera, each with ten or more species in the study area (Table 6.5): *Cyperus*, *Dierama*, *Disa*, *Eulophia*, *Euphorbia*, *Gladiolus*, *Hesperantha*, *Hypoxis*, *Moraea*, *Ornithogalum*, *Protasparagus*, *Schizoglossum* and *Trachyandra*.

#### *Southern KwaZulu-Natal Drakensberg (Map 7.1)*

More than 1 750 vascular plant species have hitherto been recorded in the KwaZulu-Natal

Drakensberg (Hilliard & Burt 1987). These authors listed 394 out of 1 375 species as being endemic to the Eastern Mountain Region (=Afro-alpine Region of Killick 1978), giving a figure of 30% endemism. Of these 394 species, Hilliard & Burt identified 70 endemics for the Southern Drakensberg (Southern Natal - Eastern Cape Drakensberg), a figure of 5.09% endemism. According to the PRECIS database, 2 046 species have been recorded as occurring along the main Drakensberg Escarpment between Mount aux Sources in the north to Bushman's Pass in the south. This includes 1677 angiosperms, 5 gymnosperms, 72 pteridiophytes and 292 bryophytes. For the DAR as a whole the number is probably higher. The largest families are Scrophulariaceae, Iridaceae, Cyperaceae, Asclepiadaceae and Ericaceae. The largest genera are *Helichrysum*, *Senecio*, *Disa*, *Erica*, *Selago*, *Crassula*, *Argyrobium*, *Moraea*, *Thesium* and *Hypoxis* (Hilliard & Burt 1987). Most of these genera are also among the 36 largest genera recorded in the present study area, thus reflecting the close floristic affinity of the Southern KwaZulu-Natal Drakensberg with the study area.

#### *Northern KwaZulu-Natal Drakensberg (Map 7.1)*

Forest patches are larger and more numerous in the northern KwaZulu-Natal Drakensberg main escarpment than in the southern KwaZulu-Natal Drakensberg main escarpment, and there is more scrub in the north (Hilliard & Burt 1987). The difference in distribution of species such as *Widdringtonia nodifolia* and *Encephalartos ghellinckii* also indicates that the northern KwaZulu-Natal Drakensberg main escarpment is warmer as these occur at much lower altitudes south of Giant's Castle. Hilliard & Burt (1987) listed 35 out of 861 species (4.07% local endemism) as being endemic to the northern KwaZulu-Natal Drakensberg main escarpment. Many species reach their southern most distribution in the northern KwaZulu-Natal Drakensberg, and are either not found further south or are replaced by other species. The affinity of the northern KwaZulu-Natal Drakensberg main escarpment to the study area is thus much weaker than that of the southern KwaZulu-Natal Drakensberg main escarpment.

#### *Drakensberg Alpine Region (Map 7.2)*

The Afro-alpine Region of South Africa is regarded as being biogeographically separate from that of east and north-east Africa, and only 20 species of vascular plants are common to both areas. The typical tropical Alpine life-forms are absent in the DAR (WWF & IUCN 1994). According to Killick (1994) the vegetation of the area is classified into alpine (c. 2 800 —

3 500 m) and subalpine (1 800 — 2 800 m). The exact number of plant species in the DAR is unknown. Killick (1994), according to PRECIS estimated the number of plant species for the KwaZulu-Natal Drakensberg from Mount aux Sources in the north to Bushman's Pass in the south at 2 046. Phillips (1917) listed 1 551 species and Hilliard & Burt (1987) listed 1 375 species. The current study reported no less than 1 800 plant species. The number of species is certainly much higher, as little floristic data are available for vast areas of the DAR (including the plateau of the Drakensberg in the eastern Cape, the whole of Lesotho, and the main escarpment of the Drakensberg in the former Transkei).

#### *Maputaland-Pondoland Region (Map 7.3)*

According to Van Wyk (1994), 6 000 to 7 000 vascular plant species are found in the MPR. Of these species 1 222 are endemic or near-endemic to the region. Eighty-six of these endemic taxa were recorded in the study area. This accounts for 7.04% of the MPR endemic taxa recorded in foothills at lower altitudes of the study area and clearly reflects the study area's transitional status as a zone between the MPR and DAR, with its closest floristic links being with the DAR.

#### **7.6 Impact of forestry**

Both major grassland communities (Afromontane and Sub-Alpine/Alpine) display the highest number of rare and threatened species, with the highest number of endemic species restricted to the Sub-Alpine/Alpine areas. Grasslands clearly represent the most sensitive areas in the study area. Subjected to too frequent fires, overgrazing and more recently afforestation, the grasslands (especially high-altitudinal grassland) are the most threatened vegetation type in the study area. Unfortunately, to the untrained eye the lush vegetation of the forests and wetlands conceals the richer floristic diversity of the open grasslands. Because of the high altitude and the difficult accessibility of the terrain, the Sub-Alpine/Alpine grasslands are less threatened than the Afromontane grasslands of lower altitude. The co-existence of pastoral farming and the vegetation for at least the last hundred years does not seem to have had a major negative effect on the diversity of plant species. Forestry activities, however, completely and perhaps irreversibly destroy the habitat together with many of the plants that

grow there. It remains an open question to what extent these afforested areas may be rehabilitated. The destruction appears to be irreversible, at least in the shorter term.

In a report on the impact of commercial afforestation on the study area, Scott (1992) has listed possible positive and negative consequences of afforestation. Some of the positive impacts include: (i) veld recovery of farms withdrawn from grazing, (ii) clearing of the riparian zone that will reduce evapotranspiration and enhance the quality of the water, and (iii) reduction of irrigation. What is not mentioned, however, is that although the veld may recover locally from overgrazing, much larger areas will be destroyed, mainly by the plantations. More than 46 000 ha of plantations have been established in the region since 1988. Extension of afforestation into the former Transkei is also planned for the near future. Water savings brought about by the reduction in irrigation are also only temporary as much more water will be used by the growing trees. Possible negative impacts listed by Scott (1992) include: (i) consequences of ripping and ridging that will lead to reduced stream flow and soil loss, (ii) the building of roads that may increase the sediment load of rivers, (iii) soil erosion during harvesting and (iv) invasion of *Pinus patula* from plantations to the surrounding areas. Most of these possible impacts will eventually lead to the degradation of the vegetation in the area, leading to the loss of biodiversity.

## 7.7 Recommendations

Management should be proactive in its approach, especially in areas where forestry and farming have an impact on the environment. Negative aspects of farming such as trampling and erosion should be minimised and afforested areas should have a workable management plan to try and keep unplanted areas as natural and pristine as possible.

All areas at an altitude of 1 800 m and above should be regarded as "no-go" areas. These higher altitudinal areas are the most sensitive to disturbance, especially to factors enhancing erosion. Sensitive areas within this higher altitudes include rocky outcrops, stony grassland (especially ridges and crests of hills), the borders of vleis and stream banks. The

Elands Heights and Waschbank areas are good examples of higher altitudinal areas and in these cases, form a plateau between the Alpine grasslands and Afromontane grasslands at lower altitudes.

A number of endemic species are also found on the lower escarpment with the former Transkei. Most of these areas are naturally protected against afforestation by the steep slopes, but trampling by livestock remains a danger. In these areas fire plays a lesser role, as reflected by the occurrence of more woodland and even Valley Bushveld.

Non-sensitive areas within the study area include all old cultivated fields and, to a lesser extent, the open vlei areas. Vlei areas are naturally protected against afforestation by virtue of their moisture. A low number of rare and endangered species is associated with these areas, especially when compared with the numbers of the Alpine and Sub-Alpine grasslands.

Fire is a very important environmental factor in the study area. The frequency of burning, both accidental and planned, is crucial for the maintenance of the full spectrum of botanic diversity in the area. Burning in late spring and early summer often results in severe damage to the grass cover, especially *Themeda triandra* (Edwards 1961). Burning prior to the onset of the active spring-growth showed better recovery of the veld (Edwards 1961) and less loss of soil to erosion (Everson *et.al.* 1989). The number of non-grassy herbs in the grasslands tends to increase significantly 1—3 years after burning, if no grazing of the vegetation is allowed. Farmers in the study area should be educated in this respect. By burning at the correct times of the year they may not only maintain, but even increase, the botanic diversity of the grasslands on their farms.

In forestry, however, the burning of fire-breaks associated with plantation management is carried out immediately before the end of the active growing season to reduce the risk of fire in the dry season. There is thus a major conflict between the times of burning in forestry and the burning regime considered best for the natural vegetation. In addition strips of grassland remaining between plantations are often extremely narrow and are thus almost completely managed as fire breaks and not for the conservation of natural



vegetation. This conflict must be addressed, because burning at the wrong time of the year may damage the natural vegetation more than no burning at all.

Grassland communities on rocky outcrops are particularly rich in botanical diversity. Fortunately, most of these areas are left unplanted (mostly because of the thin soils). Such sites are proposed for core areas for retaining patches of unplanted grassland within plantation areas. These areas must, however, be managed properly to try and simulate natural conditions. It is therefore recommended that areas around rocky outcrops be enlarged thereby conserving a larger area of open grasslands and thus facilitating management practices, such as burning.

In the study area the open grassland communities, especially the Subalpine ones, are the areas most negatively affected by commercial afforestation. These areas are therefore the ones that have to be conserved more rigorously. Although the floristic diversity of a small piece of grassland might not be as high as that of the rocky outcrops, most of the endemic and rare and endangered species have been recorded in these grasslands. This is the most important reason why as much as possible of these grasslands be left unplanted.

It is further suggested that thorough environmental and vegetation assessments be done in areas consisting of large tracts of open grassland before the commencement of forestry activities. The best time of the year for such assessments (especially those concerning the floristic status of the vegetation) should be in spring and summer between September and March, depending on how cold the winter has been and on the time of the first good spring rains. This is the active growing time of most herbaceous and geophyte plants in the area and it is at this time of the year (more particularly between November to January) that the full floristic diversity of the grasslands of the Drakensberg and neighbouring regions may be assessed most reliably.

In South Africa very few nature reserves are dedicated solely to the protection of flora. Currently, North East Cape Forests have two Natural Heritage sites in the area (Prentjiesberg and Rush Valley Pan). Yet for the whole Eastern Cape region of the Drakensberg and adjacent foothills, no national conservation sites have been proclaimed. As



so many threatened species are found here and in view of the rich floristic diversity of the region, it is strongly recommended that serious consideration be given to the establishment of a Provincial or National Park in this part of the country.

## CHAPTER 8

### CONCLUSIONS

#### General conclusions

- The topography of the study area can be divided into five major areas: (i) the plateaux above the main escarpment, (ii) the main escarpment, (iii) the slopes between the main escarpment and the lower escarpment, (iv) the lower escarpment (border with the former Transkei) and (v) the areas below the lower escarpment.
- The geology of the area includes the Beaufort Series, Stormberg Series (Molteno Formation, Elliot Formation, Clarens Formation and Drakensberg Basalt), Dolerite intrusions and Alluvium deposits.
- The major vegetation types include Afromontane forest, Afromontane grassland and Alpine and Sub-Alpine grasslands.
- Total number of species and infraspecific taxa collected and listed for the area is 1 991.
- The ten largest families in the area are, in decending order, Asteraceae, Poaceae, Fabaceae, Scrophulariaceae, Orchidaceae, Iridaceae, Cyperaceae, Asclepiadaceae, Asphodelaceae and Hyacinthaceae.
- The ten largest genera in the study area are, in decending order, *Helichrysum*, *Senecio*, *Erica*, *Crassula*, *Disa*, *Kniphofia*, *Lotononis*, *Sebaea*, *Pelargonium* and *Gladiolus*.
- The genus *Kniphofia* is particularly well represented, with 20 species, or about 30% of the species found in South Africa occuring in the study area.
- The Orchidaceae, a family of which all the species are protected, are represented by 93 species in 18 genera.

- The Poaceae family are represented by 142 species in 58 genera, making it one of the most diverse families in the study area.
- In the study area 22 local endemic species were identified. As this is a relatively low number, the study area is not considered a major regional centre of endemism but the Drakensberg portion of the study area may qualify as a local centre of endemism within the Drakensberg Alpine Region (DAR). All of these species are restricted to grassland, occurring mainly at altitudes above 1 500 m.
- In total, 194 Drakensberg Alpine Region (DAR) endemic species and 86 Maputaland-Pondoland Region (MPR) endemic species were recorded. The percentage of the DAR found in the study area is much higher than that of the MPR. The floristic affinities of the study area therefore lie with the DAR, and especially the Southern Drakensberg Regional centre.
- The largest number of endemic species is located either on the high escarpment of the Drakensberg or at the lower (secondary) escarpment on the border of the former Transkei.
- Most of the rare and threatened species are restricted to open grassland, both the Afromontane and Sub-Alpine variations.
- No local endemic and rare plant species were recorded in the wetland and forest areas. Currently, these are the areas mainly conserved by afforestation practices, despite the fact that they are the areas of lowest floristic diversity and, perhaps, of least botanical interest.
- The active growing and flowering season of plants in the area is from September to March. Surveys to establish the floristic diversity of the area should therefore be done during this time of the year.
- Due to the variable topography of the study area the various plant communities form

an intricate mosaic, thus making it extremely difficult to draw up a vegetation map on a regional scale.

- Botanical diversity and endemism are highest above 1 700 m and just below the main escarpment. Most of these areas will probably not be destroyed by afforestation.
- Vleis and seepage areas are amongst the areas with the lowest levels of botanic diversity in this grassland dominated landscape.
- Four main associations were identified. These include the Afromontane forests (4 communities and 5 sub-communities), low-altitude grasslands (4 communities and 11 sub-communities), high-altitude grasslands (2 communities and 6 sub-communities) and hygrophilous communities (4 communities and 2 sub-communities).
- Habitats considered the most sensitive include the steeper slopes of areas above 1 700 m that consist of thin humic-rich soils (weathered basalt). Grasslands in these-high-altitude areas are very sensitive to grazing and forestry activities.
- All the specimen-data of this study, together with the data recorded from specimens that were previously collected in the area, are available on a database. This database includes more than 5 500 records of specimens collected in the study area.
- All specimens collected during this study are housed in the H.G.W.J. Schweickhardt Herbarium (PRU), University of Pretoria. Duplicates of specimens have been distributed to several other herbaria, including: E, NH, NU, PRE, RAU and STE.
- Afro-alpine grasslands cover only a small portion of the study area, thus making the conservation of this vegetation type of the utmost importance.
- Afromontane grasslands dominate the study area and, owing to their suitability for various forms of land-use, are threatened.

- No national conservation reserves have been established in the study area. The conservation of parts of the Southern Drakensberg is essential and could boost eco-tourism possibilities in the poverty-stricken Eastern Cape Province.
- The study area forms part of major catchment areas for large parts of the former Transkei.
- The northern Drakensberg in KwaZulu-Natal is basalt-dominated, whereas the southern Drakensberg in KwaZulu-Natal and Eastern Cape Provinces are sandstone-dominated.
- A large number of new distribution records (especially DAR endemic species not listed for the Cape Drakensberg) are given.

#### **Management conclusions**

- From a plant diversity point of view, the most sensitive areas are the open grasslands. These areas have to be managed with a regular fire regime to ensure the integrity and maintenance of botanical diversity.
- It has been suggested that more "solid blocks" should be afforested and not patchily, as is the case in many areas that have already been planted. In this way, larger areas may be left open for conservation and sensible management. This might have a negative influence on the water conservation of catchment areas as the total water production may be negatively affected. The cause of botanical conservation would benefit especially from this approach as larger areas are easier to manage than smaller patches.
- All grasslands above 1 600 m are floristically very diverse and should be protected, especially the areas of Tentkop and Elands Heights. Soils are highly erodible and forestry and trampling in these areas should therefore be avoided at all cost.

- ❑ The higher lying grasslands and, to a lesser extent, the lower lying grasslands are sensitive areas. This is particularly so where the underlying mother rock is basalt, which produces soils that erode easily.
- ❑ All areas above at least 1 600 m should, in the writer's opinion, be "no-go" areas for afforestation. This is based on not only the number of endemic and rare species found in these areas, but also because of the floristic diversity and aesthetic value they hold for eco-tourism.
- ❑ All habitats are sensitive to some degree, but the most threatened areas are the higher lying and open grasslands.
- ❑ Non-sensitive areas are mostly those not suited for afforestation and include rocky outcrops, vleis and drainage lines and forests. Most of these areas are protected by law (albeit for reasons not including biodiversity).

## SUMMARY

**Vegetation and flora of the Southern Drakensberg Escarpment, and adjacent areas**

by

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The grasslands of South Africa, and especially the higher altitudinal grasslands, are under increasing human pressure. In this study a floristic-ecological account of the vegetation of the southernmost Drakensberg and its foothills is given. This is the first comprehensive botanical study undertaken in this floristically poorly known region. The study area is situated in the magisterial districts of Barkly-East, Elliot and Maclear between 30°40' and 31°35' S, and 27°25' and 28°35' E. In the study area afforestation is the greatest threat at lower altitudes, whereas at the higher altitudes overgrazing, trampling and invasion by exotic plant species impact negatively on the native vegetation.

A brief review of the history and previous botanical exploration of the area, as well as the physical environment are given. Four main plant communities — the *Maytenus undata* - *Rhus dentata* woodland and forests communities, *Harpechloa falx* - *Pycneus cooperi* hygrophilous communities, *Themeda triandra* - *Alloteropsis semialata* high altitude communities and *Alloteropsis semialata* - *Rendlia altera* Afromontane grassland communities, with various sub-communities and variants are identified and described.

An annotated check-list of the plant species collected in the study area and distribution maps of all the Drakensberg Alpine Region and local endemic species found in the study area are given. Twenty two local endemic species and 74 rare and threatened taxa were identified.

During the study 1 991 species and infraspecific taxa of vascular plants were collected or listed. Most of the endemic species in the study area are located above 1 500 m altitude.

Due to the relatively low number of local endemic species (22) the study area can at best be considered as a weak centre of endemism. However, it is clearly linked with two other major centres of plant endemism, namely the Drakensberg Alpine Region (DAR) and Maputaland-Pondoland Region (MPR). Within the study area 194 DAR and 86 MPR endemic species were recorded. No local endemic species occur in the forest and wetland communities. Most of the rare and threatened species are found in open grassland which are the areas most suitable for afforestation. This causes a major conflict between the forestry industry and conservation agencies in the area.

All grasslands situated at an altitude of above 1 600 m are floristically very diverse and adequate representative areas should be protected, especially the areas of Tentkop and Elands Heights. Soils here are highly erodible and forestry and trampling in these areas should therefore be avoided at all costs. The higher lying grasslands and, to a lesser extent, the lower lying grasslands are ecologically sensitive areas. This is particularly so where the underlying mother rock is basalt, which weathers into highly erodible soils. It is suggested that all areas above 1 600 m be declared "no-go" areas for afforestation. This is based on not only the number of endemic and rare species found in these areas, but also because of the floristic diversity and aesthetic value they hold for eco-tourism.

All habitats are sensitive to some degree, but the most threatened areas are the higher lying and open grasslands. Areas that are generally unsuitable for afforestation include rocky outcrops, vleis, drainage lines and forests. Most of these areas are protected by law, albeit for reasons not to do with biodiversity or endangered species.



## OPSOMMING

**Plantegroei en flora van die suidelike Drakensberg-eskarp en aangrensende gebiede**

deur

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Die grasvelde van Suid-Afrika, en veral die hoërliggende grasvelde, is onder toenemende menslike druk. In hierdie ondersoek word 'n floristies-ekologiese weergawe gegee van die plantegroei van die mees suidelike Drakensberg-eskarp en voetheuwels. Hierdie is die eerste uitgebreide plantkundige ondersoek in dié gebied. Die studiegebied is geleë in die Barkly-Oos, Elliot en Maclear landdrosdistrikte tussen 30°40' en 31°35' S, en 27°25' en 28°35' O. In die studiegebied is bosbou die grootste bedreiging in laerliggende gebiede, terwyl oorbeweiding, vertrapping en indringing van uitheemse plantspesies die grootste negatiewe impak op die inheemse plantegroei van die hoërliggende gebiede het.

'n Kort historiese oorsig, die vernaamste vorige versamelaars in die gebied en 'n beskrywing van die fisiese omgewing word verskaf. Vier hoof plantgemeenskappe word onderskei — die *Maytenus undata* - *Rhus dentata* boomveld en woud gemeenskappe, *Harpechloa falx* - *Pycneus cooperi* vlei gemeenskappe, *Themeda triandra* - *Alloteropsis semialata* hoogliggende grasveld gemeenskappe en die *Alloteropsis semialata* - *Rendlia altera* Afromontaan grasveld gemeenskappe met verskeie sub-gemeenskappe en variante.

'n Spesielys van alle spesies wat tot nog toe in die studiegebied aangeteken is, asook verspreidingskaarte van alle Drakensberg Alpyne en lokale endemiese spesies wat in die studiegebied versamel is, word verskaf. Twee-en-twintig lokale endemiese spesies en 74 skaars en bedreigde spesies is vir dié gebied geïdentifiseer.

Gedurende die ondersoek is 1 991 spesies en infraspesifieke vaatplanttaksa versamel of gelys. Die meeste van die endemiese spesies in die studiegebied word hoër as 1 500 m bo seevlak aangetref. As gevolg van die relatief lae getal endemiese spesies (22) in die

studiegebied, kan hierdie streek slegs as 'n swak sentrum van endemisme beskou word. Die gebied vorm egter deel van beide die Drakensberg Alpyne Sentrum en die Maputaland-Pondoland Sentrum van endemisme. Vir die studiegebied is 194 Drakensberg Alpyne en 86 Maputaland-Pondoland endemiese spesies aangeteken. Geen lokale endemiese spesies word in die woud en vlei gemeenskappe aangetref nie. Die meeste van die skaars en bedreigde spesies is met oop grasvelde geassosieer. Laasgenoemde is ook die mees geskikte habitat vir bosbou. Dié feit is verantwoordelik vir die meeste konflik tussen die bosboubedryf en bewaringsgroepe.

Grasvelde bokant 1 600 m het 'n hoë floristiese diversiteit en daadwerklike pogings behoort aangewend te word om dit te bewaar, veral in die Tentkop en Elands Heights gebiede. Gronde in hierdie gebiede is besonder maklik erodeerbaar. Bosbou en vertrapping deur vee behoort ten alle koste vermy te word. Die hoogliggende, en tot 'n mindere mate die laagliggende grasvelde is ekologies baie sensitief. Dit is veral die geval waar die onderliggende moedermateriaal basalt is, omdat laasgenoemde gesteente tot gronde met 'n hoë erosie-potensiaal verweer. Daar word voorstel dat geen bosbou in gebiede bo 'n hoogte van 1 600 m beoefen word nie. Hierdie voorstel word nie net gemaak op grond van die aantal endemiese, skaars en bedreigde spesies nie, maar ook met die oog op die voordele wat die estetiese landskap vir ekotoerisme mag inhou.

Enige habitat is tot 'n sekere mate sensitief, maar in die studiegebied is die mees sensitiewe dele uit 'n plantkundige oogpunt is die hoërliggende oop grasvelde. Laerliggende gebiede wat nie vir bosbou geskik is nie sluit vlei gebiede, klip koppies en randjies, woude en dreinerings lyne in. Die meeste van hierdie gebiede word deur die wet beskerm, alhoewel nie noodwendig as gevolg van biodiversiteit of bedreigde spesies nie.

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## CURRICULUM VITAE

Stoffel Petrus Bester was born on 17 May 1969 in Vanderbijlpark. He matriculated from the "Hoërskool Ellisras", Ellisras, in 1987.

In 1988 he enrolled at the University of Pretoria, and in 1991 was awarded the B.Sc. degree with Botany and Zoology as majors. This was followed by a B.Sc. (Hons) *Cum Laude* in Botany in 1992 at the same university.

From 1993—1995 he conducted a vegetation and floristic study in the former north-eastern Cape that culminated in this thesis.

In 1996 he was appointed on a one year contract as lecturer in the Botany department, University of Venda. In 1997 he received a permanent appointment by the Association for Advancement of Christian Education at the Tshikevha Christian School in Thohoyandou. During 1997 he was still teaching at the University of Venda, on a part-time basis in the Biology department.

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# APPENDICES

## APPENDIX 1

### LOCAL ENDEMIC SPECIES IN THE STUDY AREA

Species more or less endemic to the study area are listed below. An indication is also given of the broad vegetation types with which a particular species is mainly associated (F=Forest; H=Hygrophilous vegetation; AI=Alpine/Sub-alpine grassland and Af=Afromontane grassland). Species are listed within families, all in alphabetical order.

FAMILY	SPECIES	F	H	AI	Af
Asclepiadaceae	<i>Schizoglossum</i> sp.nov			✓	
Asparagaceae	<i>Protasparagus stellatus</i>			✓	
Asphodelaceae	<i>Kniphofia hirsuta</i>		✓	✓	
	<i>Trachyandra smalliana</i>			✓	✓
Asteraceae	<i>Berkheya</i> sp. nov.				✓
	<i>Felicia caespitosa</i>			✓	
	<i>Cineraria albomontana</i>			✓	
Ericaceae	<i>Erica cooperi</i> var. <i>missionis</i>			✓	✓
	<i>Erica hillburtii</i>		✓	✓	
Hyacinthaceae	<i>Albuca xanthochodon</i>			✓	
	<i>Eucomis humilis</i>			✓	
Iridaceae	<i>Crocoshmia masonorum</i>				✓
	<i>Tritonia drakensbergensis</i>			✓	
	<i>Watsonia gladioloides</i>				✓
Orchidaceae	<i>Disa crassicornis</i>			✓	
	<i>Disa galpinii</i>			✓	✓
	<i>Disa oreophila</i> subsp. <i>erecta</i>			✓	✓
	<i>Huttonaea grandiflora</i>		✓	✓	
Scrophulariaceae	<i>Diascia fetcaniensis</i>			✓	✓
	<i>Diascia lilacina</i>			✓	
	<i>Diascia stachyoides</i>			✓	✓
	<i>Diascia stricta</i>			✓	
		0	3	19	9

## RED DATA SPECIES IN THE STUDY AREA

This is an extracted list of all the species found in the study area (Appendix 3) that are listed in the Red Data list of Southern African plant species (Hilton-Taylor 1996). Species are listed under their respective families, all in alphabetical order. Each taxon is followed by the proposed rarity class: Ex=Extinct; E=Endangered; V=Vulnerable; R=Rare; I=Intermediate; K=Insufficiently known; nt=Not threatened; ?=No information available. An indication is also given of the broad vegetation communities in which a particular species is mainly found (F=Forest; H=Hygrophilous; Al=Alpine/Sub-alpine grassland and Af=Afromontane grassland).

Based on Hilton-Taylor's (1996) assessment, 1 species is considered to be Extinct, 1 Vulnerable, 17 Rare, 5 Intermediate, 12 Insufficiently Known, 36 Not threatened and 1 with No information.

FAMILY	SPECIES	F	H	Al	Af
Acanthaceae	<i>Justicia minima</i> R				✓
Alliaceae	<i>Tulbaghia montana</i> I			✓	
Amaryllidaceae	<i>Cyrtanthus epiphyticus</i> nt			✓	
	<i>Cyrtanthus macowanii</i> nt			✓	✓
	<i>Cyrtanthus rectiflorus</i> K		✓		✓
	<i>Nerine bowdenii</i> K		✓		✓
Anacardiaceae	<i>Rhus krebsiana</i> nt	✓			✓
Asclepiadaceae	<i>Asclepias bicuspis</i> Ex				✓
	<i>Fanninia caloglossa</i> R				✓
	<i>Miraglossum pilosum</i> I		✓		✓
	<i>Schizoglossum bidens</i> subsp. <i>gracile</i>				✓
	<i>Xysmalobium tysonianum</i> K		✓	✓	✓
Asphodelaceae	<i>Kniphofia hirsuta</i> V		✓	✓	
	<i>Kniphofia rooperi</i> nt				✓
Asteraceae	<i>Athanasia grandiceps</i> R		✓	✓	
	<i>Helichrysum aureum</i> var. <i>argenteum</i> I				✓
	<i>Helichrysum palustre</i> R		✓	✓	✓



FAMILY	SPECIES	F	H	AI	Af
Asteraceae	<i>Osteospermum attenuatum</i> nt		✓	✓	✓
	<i>Othonna burtii</i> nt		✓	✓	
	<i>Phymaspermum erubescens</i> K				✓
Campanulaceae	<i>Wahlenbergia cuspidata</i> nt		✓	✓	✓
Celastraceae	<i>Cassine crocea</i> nt	✓			✓
Crassulaceae	<i>Cotyledon orbiculata</i> var. <i>oblonga</i> nt			✓	✓
	<i>Crassula streyi</i>	✓	✓		
Cyatheaceae	<i>Cyathea dregei</i> nt	✓	✓		✓
Cyperaceae	<i>Schoenoxiphium ecklonii</i> K		✓		✓
	<i>Schoenoxiphium lehmannii</i> nt	✓	✓		✓
	<i>Schoenoxiphium strictum</i> R		✓	✓	
Ericaceae	<i>Erica hillburtii</i> R		✓	✓	
Euphorbiaceae	<i>Euphorbia bupleurifolia</i> nt				✓
	<i>Euphorbia woodii</i> R				✓
Fabaceae	<i>Bauhinia bowkeri</i> R				✓
	<i>Lotononis minor</i> R				✓
Hyacinthaceae	<i>Eucomis autumnalis</i> subsp. <i>clavata</i> K		✓	✓	✓
	<i>Eucomis humilis</i> nt		✓	✓	
	<i>Eucomis schiffii</i> nt			✓	
	<i>Galtonia viridiflora</i> nt			✓	
	<i>Scilla natalensis</i> K			✓	✓
	<i>Urginea modesta</i> nt				✓
	<i>Bowiea volubilis</i> K			✓	
Iridaceae	<i>Crocasmia masonorum</i> R				✓
	<i>Gladiolus cruentus</i> R			✓	
	<i>Gladiolus oppositiflorus</i> subsp.	✓		✓	
	<i>Gladiolus oppositiflorus</i> subsp.			✓	✓
	<i>Hesperantha alborosea</i> R		✓	✓	
	<i>Watsonia gladioloides</i> nt				✓
Lobeliaceae	<i>Lobelia erinus</i> nt	✓	✓	✓	✓
Mesembryanthemaceae	<i>Delosperma clavipes</i> K			✓	
	<i>Delosperma subpetiolatum</i> I			✓	✓
Orchidaceae	<i>Brownleea recurvata</i> nt			✓	✓
	<i>Corycium flanaganii</i> nt			✓	
	<i>Disa galpinii</i> R			✓	✓

FAMILY	SPECIES	F	H	AI	Af
Orchidaceae	<i>Disa montana</i> I			✓	
	<i>Disa oreophila</i> subsp. <i>erecta</i> R			✓	✓
	<i>Disa rodantha</i> K				✓
	<i>Disa sankeyi</i> nt			✓	
	<i>Disa stachyoides</i> nt		✓	✓	✓
	<i>Disa thodei</i> nt			✓	
	<i>Disperis stenoplectron</i> nt			✓	
	<i>Disperis tysonii</i> nt			✓	
	<i>Disperis wealii</i> nt			✓	✓
	<i>Eulophia zeyheriana</i> nt			✓	✓
	<i>Neobolusia tysonii</i> nt			✓	✓
	<i>Schizochilus flexuosus</i> nt			✓	✓
	<i>Schizochilus zeyheri</i> nt			✓	✓
Poaceae	<i>Pentaschistis pallida</i> nt			✓	
	<i>Thamnocalamus tessellatus</i> R	✓	✓	✓	
Proteaceae	<i>Protea roupelliae</i> subsp. <i>roupelliae</i> nt	✓		✓	✓
	<i>Protea simplex</i> nt				✓
	<i>Protea subvestita</i> nt			✓	✓
Rhamnaceae	<i>Phyllica chionocephala</i> K			✓	
Rutaceae	<i>Agathosma ovata</i> nt		✓	✓	✓
Scrophulariaceae	<i>Harveya pumila</i> ?			✓	
Thymelaeaceae	<i>Englerodaphne pilosa</i> nt				✓
		9	28	47	46

### APPENDIX 3

## CHECKLIST OF THE VASCULAR FLORA OF THE NORTH-EASTERN CAPE (BARKLY-EAST, ELLIOT, MACLEAR DISTRICTS)

Scientific names of taxa are based mainly on those used by Arnold & De Wet (1993). The check list is arranged alphabetically according to families of bryophytes, pteridophytes, gymnosperms and angiosperms. Within each family the genera and species are also arranged alphabetically.

Codes preceding names indicate the degree of endemism of species, specifying whether a species is a local endemic (■), endemic to the Drakensberg Alpine Region (●) or endemic to the Maputaland-Pondoland Region (▲).

In the checklist each species is followed by a list of specimens in brackets that includes the collector and Herbarium where the specimen can be found. All of the specimens of Bester can be found in the H.G.W.J.Schweickerdt Herbarium, University of Pretoria (PRU).

Following the citation of specimens are codes. The first code, those in small case, indicates the habitat (g=grassland/montane grassland; sa=subalpine grassland; a=alpine grassland; f=afromontane forest; r=riverine; rf=riverine forest; rl=river banks/drainage lines; rs=riverine scrub; v=vlei and o=old lands). The second code, in upper case, indicates the geology (A=Alluvium; B=Basalt; C=Clarens; D=Dolerite; E=Elliot; M=Molteno and T=Tarkastad). The last code is an indication of the altitudinal range in meters. These codes only indicate data available from the specimens used to compile the checklist.

#### ACANTHACEAE

##### Chaetacanthus Nees

*Chaetacanthus burchellii* Nees (Bester 1641) g M 1300

*Chaetacanthus setiger* (Pers.) Lindl. (Bester 1227) g M 1340

##### Crabbea Harv.

*Crabbea hirsuta* Harv. (Pegler 1684[PRE])

**Hypoestes Soland. ex R.Br.**

*Hypoestes forskoolii* (Vahl.) R.Br. (Bester 472) g M 1200

**Justicia L.**

*Justicia minima* A.Meeuse (Zietsman & Zietsman 1427[PRE]) 1700

**Ruellia L.**

*Ruellia cordata* Thunb. (Bester 1207, 3151) g M-D 1140-1380

**Thunbergia Retz.**

*Thunbergia capensis* Retz. (Bester 1436; Flanagan 814[PRE]) g M 610-1300

*Thunbergia dregeana* Nees (Flanagan 1747[PRE]) 610

**ACHARIACEAE**

**Ceratosicyos Nees**

*Ceratosicyos laevis* (Thunb.) A.Meeuse (Cave 795[PRE])

**Guthriea H.Bol.**

*Guthriea capensis* Bolus (Bester 1582, 2983; Van Wyk 6711[PRU]; Van Wyk & Abbott 12128[PRE], 12133[PRE]) sa B 1341-2010

**ADIANTACEAE**

**Adiantum L.**

*Adiantum aethiopicum* L. (Bester 510) f E 1250

*Adiantum capillus-veneris* L. (McLoughlin 91[PRE], M91[PRE])

*Adiantum poiretii* Wikstr. (Bester 438; Flanagan 2780[PRE], 2838[PRE]; McLoughlin 88[PRE]) sa C 1220-1600

**Cheilanthes Swartz**

*Cheilanthes bergiana* Schldl. (Marloth CH439[PRE]; McLoughlin TM1039C[PRE], CH438[PRE]; Young TM322C)

*Cheilanthes eckloniana* (Kunze) Mett. (Bester 195, 587, 2598; Galpin 6933[PRE]; Pegler 1636[PRE]) g,sa E-B 1340-2000

*Cheilanthes hirta* Sw. var. *hirta* (Bester 2518, 2685; Gibbs Russell 4570[PRE]) g M 1340-1973

*Cheilanthes multifida* (Sw.) Sw. subsp. *multifida* (Young 186[PRE], TM186T[PRE])

*Cheilanthes quadripinnata* (Forssk.) Kuhn (Bester 53; Pegler 1634[PRE]) g E 1600

*Cheilanthes viridis* (Forssk.) Sw. var. *glauca* (Sim) Schelpe & N.C. Anthony (Bester 194, 192, 2541) g E 1340-1410

*Cheilanthes viridis* (Forssk.) Sw. var. *viridis* (Gibbs Russell 4567[PRE]; McLoughlin 84[PRE]; Strever 907[PRE]) 1973

*Cheilanthes viridis* (Forssk.) Sw. var. *macrophylla* (Kunze) Schelpe & N.C. Anthony (Bester 2532) g M 1340

**Pellaea Link**

*Pellaea calomelanos* (Sw.) Link var. *calomelanos* (Bester 193, 2547; McLoughlin M94[PRE], 94[PRE]) g E 1340-1470

**Pteris L.**

*Pteris catoptera* Kunze (Flanagan 2779[PRE]; McLoughlin CH7690[PRE], 98[PRE]) 1220

*Pteris cretica* L. (Bester 2861; Flanagan 2721[PRE]; McLoughlin M77[PRE], 77[PRE]) g E 1220-1340

*Pteris cretica* L. cf. (Bester 512) f E 1250

## AIZOACEAE

### Aizoon L.

*Aizoon rigidum* L.f. var. *angustifolium* Sond. (Bayliss 1325[PRE]) 610

### Limeum L.

*Limeum viscosum* (J. Gay) Fenzl subsp. *viscosum* var. *glomeratum* (Eckl. & Zeyh.) Friedrich (Bolus 10101[PRE]; Flanagan 2807[PRE]) 855-915

### Pharnaceum L.

*Pharnaceum alpinum* Adamson (Galpin 6632[PRE]) 2590

*Pharnaceum dichotomum* L.f. (Flanagan 2631[PRE]) 1220

### Psammotropha Eckl. & Zeyh.

*Psammotropha mucronata* (Thunb.) Fenzl var. *mucronata* (Bester 87, 1830) g M-E 1320-1340

*Psammotropha myriantha* Sond. (Bester 3352; Marais 875[PRE]; Strever 854[PRE]; Van Wyk & Abbott 12158[PRE]) g E 1350-1660

## ALLIACEAE

### Agapanthus L'Hérit

▲*Agapanthus campanulatus* Leight. subsp. *campanulatus* (Abbott 5622[PRE]; Bester 81) r E 1420-1500

*Agapanthus campanulatus* Leight. subsp. *patens* (Leight.) Leight (Bester 2329, 3517; Dyer & Colett 4718[PRE]; Zietsman & Zietsman 1415[PRE]) g B 1700-1920

### Nothoscordum Kunth

*Nothoscordum gracile* (Aiton) Stearn (Bester 1630) g M 1300

### Tulbaghia L.

*Tulbaghia acutiloba* Harv. (Bester 791, 821, 1042, 1936; O'Brien 191[PRE]) g,a-M-E-B 1230-2520

*Tulbaghia cernua* Avé-Lall. (Bester 1435, 1548, 1589, 1903, 1951, 2984) g,a,sa-M-C-B 1300-2110

*Tulbaghia leucantha* Baker (Batten 512[PRE]; Bester 135) g M 1320

*Tulbaghia montana* Vosa (Brusse 5599[PRE]; Van Wyk 6705[PRE]) 2500

## AMARANTHACEAE

### Achyranthus L.

*Achyranthus aspera* L. var. *aspera* (Bester 2321) f E 1420

### Amaranthus L.

*Amaranthus thunbergii* Moq. (Bester 2494) g M 1320

### Cyathula Blume

*Cyathula uncinulata* (Schrad.) Schinz (Bester 2517) g M 1340

## AMARYLLIDACEAE

### Apodolirion Bak.

*Apodolirion buchhananii* Baker (Bester 753, 2893) g E 1340-1530

### Boophane Herb.

*Boophane disticha* (L.f.) Herb. (Bester 3167) g M 1140

### Brunsvigia Heist.

*Brunsvigia appendiculata* Leight (Ellis 297[PRE])

*Brunsvigia grandiflora* Lindl. (Bester 80; Galpin 6863[PRE]; Marais 1406[PRE];

Plowes 2410[PRE]; Zietsman & Zietsman 1424[PRE])r E 1290-1770

**Cyrtanthus L.f.**

*Cyrtanthus breviflorus* Harv. (Bester 798, 928, 970, 1000, 1108, 1277, 2898, 2946, 2966, 3096; Story 479[PRE]) g,v,sa,a M-E-B 1200-2130

*Cyrtanthus contractus* N.E.Br. (Bester 789, 1101, 1202, 1291; Marais 1041[PRE]) g M-D-E 1380-1470

●*Cyrtanthus epiphyticus* J.M.Wood (Bigalke 8[NU]; Hilliard & Burt 3754[NU], 16674[NU]; Stewart 1917[NU]) 1372-2600

●*Cyrtanthus flanaganii* Baker (Hilliard & Burt 14666[NU]; Leighton 23021[PRE]; Wedermann & Oberdick 1119[PRE]) 2591

▲*Cyrtanthus mackenii* Hook.f. (Bester 3350, 3402) g E-B 1350-1840

▲*Cyrtanthus mackenii* Hook.f. var. *cooperi* (Baker) R.A. Dyer (Bester 715, 754, 755, 1201, 2890; Reynolds 3033[PRE], 3605[PRE], 37783[PRE], PRE37784; Stirton 6289[PRE]; Theron PRE37793[PRE]) g E 1180-1470

*Cyrtanthus macowanii* Baker (Bester 3350, 3402; Reynolds 3144[PRE]) g E-B-1350-1840

*Cyrtanthus obrienii* Baker (Bester 432, 825, 1888, 1895, 1986, 2056, 2086, 2141, 3421, 3562, 3577) g,a,sa,v M-E-B 1300-2370

*Cyrtanthus rectiflorus* Baker (Flanagan 2732[PRE]) 1525

*Cyrtanthus tuckii* Baker (Bester 2934, 3024, 3227) g,v M-E 1240-1300

*Cyrtanthus tuckii* Baker var. *viridilobus* I. Verd. (Reynolds 3601[PRE], 3604[PRE])

**Haemanthus L.**

*Haemanthus humilis* Jacq. (Bester 3204) g 1710

*Haemanthus humilis* Jacq. subsp. *humilis* (Bester 82, 1805; Flanagan 2761[PRE]; Reynolds 1742[PRE]) g,r,a T-E-C-B 915-1920

*Haemanthus humilis* Jacq. subsp. *hirsutus* (Bak.) Snijman (Bester 1574, 2015)

**Nerine Herb.**

*Nerine angustifolia* (Baker) Baker (Bester 141, 2169; Strever 779[PRE]) g,v M-B 1320-2378

▲*Nerine appendiculata* Baker (Bigalke 203[PRE]; Strever 888[PRE]) 1250

*Nerine bowdenii* Watson (Van Zinderen Bakker 59[PRE]) 1675

*Nerine filifolia* Baker (Bester 3638, 3646) v

*Nerine gibsonii* Douglas (McNeil PRE37130[PRE]; Reynolds 3802[PRE], 3803[PRE])

*Nerine undulata* (L.) Herb. (Aves PRE60993[PRE])

**Scadoxus Raf.**

*Scadoxus puniceus* (L.) Friis & Nordal (Bester 916, 1034) f,g E 1470-1800

**ANACARDIACEAE**

**Rhus L.**

*Rhus* sp. (Bester 2852)

*Rhus carnosula* Schönland (Hutchings & Hutchings 1412[PRE])

*Rhus chirindensis* Baker f. (Bester 2798; Van Zinderen Bakker 68[PRE]) r T 980-1100

*Rhus dentata* Thunb. (Abbott 5621[PRE], 5711[PRU]; Bayliss 1332[PRE]; Bester 168, 170, 537, 538, 1604, 3303; Britten 4564[PRE]) g,f,r T-M-E 1020-1600

*Rhus discolor* E. Mey. ex Sond. (Abbott 5628[PRE]; Bester 227, 1121, 3298, 3323, 3324, 3325, 3326, 3364, 3443, 3660; Story 513[PRE]; Van Wyk & Abbott

- 12057[PRE]) g,v T-E-B 1020-1800  
*Rhus divaricata* Eckl. & Zeyh. (Ratray 7289[PRE]) 2255  
*Rhus krebsiana* C. Presl ex Engl. (Acocks 21919[PRE]; Bester 813, 814, 2839, 3282) g M 1180-1465  
*Rhus lucida* L. forma *lucida* (Bester 229, 964) g E 1500-1560  
*Rhus montana* Diels (Bester 341, 2728, 2745; Flanagan 2752[PRE]; Galpin 6829[PRE]; Strever 908[PRE]; Van Wyk & Abbott 12019[PRE], 12050[PRE]) g,sa E 1250-1900  
*Rhus pallens* Eckl. & Zeyh. (Bester 599, 607, 621, 2778, 2819) g M-E 1260-1420  
*Rhus pyroides* Burch. (Bester 3329) g E 1200  
*Rhus pyroides* Burch. var. *pyroides* (Bayliss 1330[PRE], 1333[PRE], 7033[PRE]; Bester 6, 602; Flanagan 2818[PRE]; Story 506[PRE]; Strever 749[PRE]) g,f E-915-1890  
*Rhus pyroides* Burch. var. *gracilis* (Engl.) Burtt Davy (Bester 3239) g A 1410  
*Rhus refracta* Eckl. & Zeyh. (Gibbs Russell 4550[PRE]) 1973  
*Rhus rehmanniana* Engl. var. *rehmanniana* (Abbott 5665[PRE], 5707[PRE]) 1400-1500  
*Rhus rigida* Mill. var. *dentata* (Engl.) Moffett (Bester 2775) g E 1340  
*Rhus rigida* Mill. var. *margarettae* Burtt Davy ex Moffet (Bester 3652; Pegler 1664[PRE]) r M  
*Rhus tomentosa* L. (Bester 492, 554, 842, 3652) f,g E 1300-1550

## APIACEAE

### Alepidea De La Roche

- Alepidea amatymbica* Eckl. & Zeyh. (Bester 348, 349, 2692) g E 1460  
*Alepidea amatymbica* Eckl. & Zeyh. cf. (Bester 312) g  
*Alepidea amatymbica* Eckl. & Zeyh. var. *aquatica* (Kunze) Weim. (Pegler 1670[PRE])  
*Alepidea capensis* (P.J.Berglus) R.A.Dyer var. *capensis* (Hilliard & Burtt 16645[PRE]) 2286  
*Alepidea cirsiifolia* Schltr. & H.Wolff (Flanagan 2789[PRE]; Hilliard & Burtt 3741[PRE])  
*Alepidea comosa* Dummer (Bester 467) g M 1200  
 ● *Alepidea galpinii* Dummer (Bester 1998, 2082; Galpin 6640[NU]; Hilliard 3925[NU]; Hilliard & Burtt 12317[NU], 16329[NU], 16428[NU], 16542[NU]; Stewart 1923[NU]) g,a E 1524-2852  
*Alepidea longifolia* E.Mey. subsp. *longifolia* (Van Wyk & Abbott 12154[PRU]) g  
*Alepidea natalensis* J.M.Wood & M.S.Evans (Abbott 5661[PRE]; Acocks 21905[PRE]; Bester 104, 2755; Strever 766[PRE]; Van Wyk & Abbott 12165[PRE]) g M-B 1340-1908  
 ● *Alepidea pilifera* Weim. (Bester 1200, 1423, 1847, 1921, 2067; Bigalke 9[NU]; Galpin 6638[NU]) v,g M-E 1360-2806  
 ● *Alepidea pusilla* Weim. (Hilliard & Burtt 12294[PRE], 16410[NU], 16447[NU], 16673[NU]; Phillipson 677[PRE]; Van Wyk & Abbott 12115[PRE]) g 1900-2866  
*Alepidea serrata* Eckl. & Zeyh. var. *serrata* (Bester 33; Phillipson 601[PRE]) g E 1400-2000  
 ● *Alepidea thodei* Dummer (Bigalke 240[PRE]; Hilliard 3908[NU]; Hilliard & Burtt



16430[NU]; Van Wyk & Abbott 12170[PRE]) 2316-2744

● *Alepidea woodii* Oliv. (Bester 2612, 2840, 3420, 3532; Hilliard & Burt 12266[NU], 16342[NU], 18733[NU]; Van Wyk & Abbott 12088[PRE]) g,sa M-B 1180-2104

**Anginon Raf.**

*Anginon verticillatum* (Sond.) B.L.Burt (Hilliard & Burt 16593[PRE], 16617[PRE]) 2286-2438

**Annesorrhiza Cham. & Schlecht.**

*Annesorrhiza* sp. (Bester 151)

*Annesorrhiza montana* Eckl. & Zeyh. (Bester 1914) v E 1380

*Annesorrhiza schlechteri* H.Wolff (Stewart 1934[E])

**Apium L.**

*Apium prostratum* Vent. (Bester 2302) a B 2140

**Berula Koch**

*Berula erecta* (Huds.) Coville subsp. *thunbergii* (D.C.) B.L.Burt (Hilliard & Burt 12313[PRE]) 1973

**Bupleurum L.**

*Bupleurum mundii* Cham. & Schldl. (Abbott 5675[PRE]; Bester 306, 2093, 2210, 2686, 2730, 3477, 3486; Brusse 4603[PRE]; Sirever 750[PRE]; Van Wyk & Abbott 12177[PRE]) g,sa E-B 1890-2500

**Centella L.**

*Centella asiatica* (L.) Urban (Bester 1807, 2251) g E 1280

*Centella glabrata* L. var. *glabrata* (Hilliard & Burt 14547[PRE])

▲ *Centella glabrata* L. var. *natalensis* Adamson (Bester 785, 875) g E 1230-1380

**Conium L.**

*Conium* sp. (Story 477[PRE])

*Conium chaerophylloides* (Thunb.) Sond. (Hilliard & Burt 12311[PRE]) 1981

● *Conium fontanum* Hilliard & Burt var. *alticola* Hilliard & Burt (Bester 1715; Hilliard & Burt 16442[NU]) sa B 2060-2927

*Conium fontanum* Hilliard & Burt var. *fontanum* (Hilliard & Burt 12340[PRE]; Phillipson 706[PRE]) 2316-2550

**Heteromorpha Cham. & Schlecht.**

*Heteromorpha* sp. (Bester 3047)

*Heteromorpha arborescens* (Thunb.) Cham. & Schldl. (Bester 7, 1860, 2586) v, f E 1360-1500

*Heteromorpha trifoliata* (H.L.Wendl.) Eckl. & Zeyh. (Abbott 5618[PRE]; Van Wyk & Abbott 12033[PRU]) f 1500-1800

**Peucedanum L.**

*Peucedanum* sp. (Bester 3451)

▲ *Peucedanum caffrum* cf. (Meisn.) E.Phillips (Bester 315, 1631, 3072) g, v M-1140-1320

▲ *Peucedanum natalensis* (Sond.) Engl. cf. (Bester 3145) v E 1320

● *Peucedanum thodei* Arnold (Hilliard & Burt 16660[PRE]) 2045

*Peucedanum thodei* Arnold cf. (Bester 3095, 3601) a, sa B 2100-2200

**Pimpinella L.**

*Pimpinella* sp. cf. (Bester 336) g E 1460

*Pimpinella caffra* (Eckl. & Zeyh.) D.Dietr. (Bester 498, 1451, 2096, 2210, 2563,



2610, 2743, 3560; Van Wyk & Abbott 12032[PRE], 12087[PRE]; Strever 765[PRE], 881[PRE] g,sa E-C-B 1300-1908

*Pimpinella stadensis* (Eckl. & Zeyh.) D.Dietr. (Van Wyk & Abbott 12153)

**Polemanna** Eckl. & Zeyh.

*Polemanna grossulariifolia* Eckl. & Zeyh. (Bester 2613) sa B 1980

*Polemanna montana* Schltr. & H.Wolff (Bester 446) sa C 1600

*Polemanna simplicior* Hilliard & B.L.Burt (Hilliard & Burt 12196[E], 12346[E], 16487[E], 16566[E], 16576[E], 16593[E]) 1891-2669

**Sanicula** L.

*Sanicula elata* Buch.-Ham ex D.Don (Bester 2581) f E 1500

**APOCYNACEAE**

**Acokanthera** G.Don.

*Acokanthera oppositifolia* (Lam.) Codd (Bester 3177, 3184, 3358) g T-M 1020-1250

**Carissa** L.

*Carissa bispinosa* (L.) Desf. ex Brenan subsp. *bispinosa* (Bester 2787) r T 980

*Carissa haematocarpa* (Eckl.) A.DC. (Bester 2940) g M 1400

*Carissa macrocarpa* (Eckl.) A.DC. (Bester 1737) g M 1360

**Rauvolfia** L.

*Rauvolfia caffra* Sond. (Pegler 1133[PRE])

**APONOGETONACEAE**

**Aponogeton** L.f.

*Aponogeton junceus* Lehm. ex Schldt. subsp. *junceus* (Bester 679, 3214, 3223) v,g E 1380-1710

**AQUIFOLIACEAE**

**Ilex** L.

*Ilex mitis* (L.) Radlk. var. *mitis* (Abbott 5614[PRE]) 1500

**ARACEAE**

**Zantedeschia** Spreng.

*Zantedeschia aethiopica* (L.) Spreng. (Bester 988, 1112, 1276, 1757) v,sa,g M-E-B 1340-2010

*Zantedeschia albomaculata* (Hook.) Baill. subsp. *albomaculata* (Bester 1777, 3377; Van Wyk 6701[PRE]; Zietsman & Zietsman 1440[PRE]) g M-B 1320-1840

**ARALIACEAE**

**Cussonia** Thunb.

*Cussonia arenicola* Strey (Strey 10351[PRE], 10954[PRE])

*Cussonia paniculata* Eckl. & Zeyh. (Bester 812, 960, 2843) g M-E 1180-1560

*Cussonia paniculata* Eckl. & Zeyh. subsp. *paniculata* (Bester 207, 226; Comins 1890[PRE]; Flanagan 2839[PRE]; Pegler 1673[PRE]; Van Wyk & Abbott 12018[PRE]) g E 1220-1900

*Cussonia spicata* Thunb. (Bally TM37919[PRE]; Bester 604; De Vries 15[PRE]; Flanagan 1196[PRE], 1320[PRE], 1321[PRE]; Steyn PRE47626[PRE]; Strey 10350[PRE], 10955[PRE]; Watt & Brandwyk 1165[PRE]) g E 610-1420

## ASCLEPIADACEAE

### Anisotoma Fenzl

*Anisotoma pedunculata* N.E.Br. (Bester 1801, 3003) g,v M-E 1290-1530

### Asclepias L.

*Asclepias bicupsis* N.E.Br. cf. (Bester 1340) g E 1380

*Asclepias cucullata* (Schltr.) Schltr. (Bester 774, 941, 1123, 1599, 1603, 1652, 1708, 3209, 3129) g,sa E-C 1320-1710

*Asclepias decipiens* N.E.Br. (Bester 85) g E 1340

*Asclepias gibba* (E.Mey.) Schltr. var. *gibba* (Batten 104[PRE]; Bester 3380) g E 1680

● *Asclepias humilis* (E.Mey.) Schltr. (Bester 1866, 1904, 3600; Bigalke 2[NU]; Hilliard & Burt 14602[NU]; Phillipson 606[PRE]; Stewart 1877[NU]) a,v,sa E-B 1360-2200

*Asclepias macropus* (Schltr.) Schltr. (Bester 24, 32, 2175, 2203, 2205, 2468, 3467, 3582) g M-E 1250-1400

*Asclepias multicaulis* (E.Mey.) Schltr. (Bester 784, 1203, 1211, 1234, 1326, 1593, 1619, 3070) g,v,sa M-E-C 1320-1680

*Asclepias stellifera* Schltr. (Bester 933, 938, 961, 977, 982, 1089, 1100, 1122, 1162, 1169, 1247, 2876, 2944, 3002, 3054, 3058) v,g M-E 1220-1620

### Aspidoglossum E.Mey.

*Aspidoglossum* sp. (Bester 14)

*Aspidoglossum fasciculare* E.Mey. (Bester 1213) g M 1340

*Aspidoglossum glabrescens* (Schltr.) Kupicha (Bester 3000, 3121) v,g M-E 1290-1350

*Aspidoglossum glanduliferum* (Schltr.) Kupicha (Bester 1183) g M 1400

*Aspidoglossum gracile* (E.Mey.) Kupicha (Bester 1302, 1510, 1741) g,v,sa M-E-B 1320-1980

*Aspidoglossum grandiflorum* (Schltr.) Kupicha (Bester 1626, 1781, 3248) g M-E 1320-1600

*Aspidoglossum interruptum* (E.Mey.) Bullock (Bolos 10198[PRE]; Flanagan 2758[PRE]) 885-915

*Aspidoglossum lamellatum* (Schltr.) Kupicha (Sim 2359[PRE])

*Aspidoglossum ovatifolium* (Schltr.) Kupicha (Bester 1498, 1500) g,v M-E 1200-1480

▲ *Aspidoglossum virgatum* (E.Mey.) Kupicha (Bester 3198, 3276, 3314) g E 1420-1710

### Aspidonepis

*Aspidonepis flava* (N.E.Br.) A.Nicholas & D.J.Goyder (Bester 1509, 1818, 1848, 1849, 1883, 2075, 3340, 3373, 3401) v,g,sa E-B 1360-1840

### Brachystelma R.Br.

*Brachystelma australe* R.A.Dyer (Bester 3733) g C 1560

### Duvalia Haw.

*Duvalia* sp. (Roux s.n.[PRE]) 2580

### Fanninia Harv.

*Fanninia caloglossa* Harv. (Bester 1526, 3122, 3134) g E 1350-1620

### Miraglossum Kupicha

▲ *Miraglossum pilosum* (Schltr.) Kupicha (Bester 1422, 1511, 3120) v,g M-E-1350-1480

*Miraglossum pulchellum* (Schltr.) Kupicha (Bester 3365, 3366) g B 1800

### Orbea Haw.

*Orbea verrucosa* var. *verrucosa* (Masson) L.C.Leach (Leach 8847[PRE])

**Pachycarpus E.Mey.**

- Pachycarpus* sp. (Pegler 702B) sa, g E-B 2370  
*Pachycarpus campanulatus* (Harv.) N.E.Br. var. *sutherlandii* N.E.Br. (Bester 3346, 3395) g, sa E-B 1350-1840  
*Pachycarpus dealbatus* E.Mey. (Bester 1970) a B 2040  
*Pachycarpus natalensis* N.E.Br. (Bester 2098) g E  
▲ *Pachycarpus reflectus* E.Mey. (Bester 2074) g E  
*Pachycarpus rigidus* E.Mey. (Bester 1972, 1973) a B 1980  
*Pachycarpus rigidus* E.Mey. cf. (Bester 2142)  
*Pachycarpus vexillaris* E.Mey. (Bester 2034, 2076, 3390, 3423; Galpin 7309[PRE]; Roux 1718[PRE]) sa, a B 1920-2500

**Parapodium E.Mey.**

- Parapodium costatum* E.Mey. cf. (Bester 3150, 3156) g M 1140

**Periglossum Decne.**

- Periglossum angustifolium* Decne. (Bester 19, 238, 2174, 2194, 2337; Flanagan 2621[PRE]) v, g M 1220-1320

**Rioceuxia Decne.**

- Rioceuxia torulosa* Decne. (Bester 174, 3725; Flanagan 2734[PRE]) f M 1360-1550

**Sarcostemma R.Br.**

- Sarcostemma viminale* (L.) R.Br. (Bester 2792) r T 980

**Schizoglossum E.Mey.**

- Schizoglossum* sp. (Bester 3704)  
*Schizoglossum atropurpureum* E.Mey. subsp. *atropurpureum* (Bester 447) sa C 1600  
● *Schizoglossum bidens* E.Mey. subsp. *atrorubens* (Schltr.) Kupicha (Strever 913[PRE]) 1600  
*Schizoglossum bidens* E.Mey. subsp. *bidens* (Ratray 7308[PRE]) 2135  
▲ *Schizoglossum bidens* E.Mey. subsp. *gracile* Kupicha (Bester 1540) g E 1400  
*Schizoglossum* sp. cf. (Bester 3333) g E 1200  
▲/● *Schizoglossum flavum* Schltr. (Bester 1827) v M 1320  
▲ *Schizoglossum hamatum* E.Mey. (Bennie PRE51184[PRE]; Bester 208, 1674, 1694, 1892, 2085, 3351, 3508, 3509; Flanagan 2630[PRE]; Pegler 1712[PRE]) g, v, a, sa-E-B 1220-2100  
*Schizoglossum hamatum* E.Mey. cf. (Bester 2103, 2687, 2733) g, sa A-E 1350-1860  
● *Schizoglossum hilliardiae* Kupicha (Bester 2097) g E  
*Schizoglossum linifolium* Schltr. var. *linifolium* (Bester 1215, 3133, 3277) g M-E 1340-1620  
*Schizoglossum nitidum* Schltr. (Bester 1113, 1139, 2978, 2999, 3071) g, v M-E-1290-1440  
■ *Schizoglossum* sp. nov. (Bester 2025, 2028) g, sa E-B 2370  
*Schizoglossum stenoglossum* Schltr. subsp. *flavum* (N.E.Br.) Kupicha (Bester 2090, 3400) g B 1840  
▲ *Schizoglossum stenoglossum* Schltr. subsp. *stenoglossum* (Bester 2081) g E

**Secamone R.Br.**

- Secamone alpini* Schult. (Bester 462, 1727) g M 1200-1360  
*Secamone gerrardii* Harv. ex Benth. (Pegler 1274[PRE])

**Sisyranthus E.Mey.**

- Sisyranthus* sp. (Bester 2070) g E

- Sisyranthus barbatus* (Trucz.) N.E.Br. (Flanagan 2751[PRE]) 1370
- Tylophora** R.Br.  
*Tylophora flanaganii* Schltr. cf. (Bester 1422) f C 1680
- Xysmalobium** R.Br.  
*Xysmalobium involucreatum* (E.Mey.) Decne. (Batten 106[PREj; Bester 1480, 1893, 2071, 3348, 3371, 3418) v,g E-B 1350-1840  
*Xysmalobium prunelloides* Turcz. (Bester 3338) sa B  
▲*Xysmalobium stockenstromense* Scott-Elliot (Bester 3403) g B 1840  
*Xysmalobium tysonianum* (Schltr.) N.E.Br. (Bester 2027, 2083, 2089, 2112) sa,g E-B 2370  
*Xysmalobium undulatum* (L.) Aiton f. (Bester 3315) g E 1500

## ASPARAGACEAE

### **Myrsiphyllum** Willd.

- Myrsiphyllum asparagoides* (L.) Willd. (Bayer 4684[PRE]; Bester 122, 775, 2427; Gibbs Russell 4516[PRE]; Rattray 7324[PRE]) g,f M-E 1320-1980  
*Myrsiphyllum ramosissimum* (Baker) Oberm. (Bester 2688, 2916, 3109; Von Gadow 336[PRE]) g,f,sa E-B 1400-1840

### **Protasparagus** Oberm.

- Protasparagus* sp. (Bester 2850, 2868)  
*Protasparagus aethiopicus* (L.) Oberm. (Var. Zinderen Bakker 65[PRE]) 1160  
*Protasparagus africanus* (Lam.) Oberm. (Bester 1024, 1398) g M-E 1380-1470  
*Protasparagus concinnus* (Baker) Oberm. & Immelman (Bayer 4688[PRE]; Bester 3173) g T 1020  
*Protasparagus cooperi* (Baker) Oberm. (Bester 3117) f E 1720  
*Protasparagus densiflorus* (Kunth) Oberm. (Roux 1714[PRE]) a B 1560-2100  
*Protasparagus denudatus* (Kunth) Oberm. (Bester 3523; Gibbs Russell 4524[PRE]) 1973  
*Protasparagus divaricatus* Oberm. (Bester 3181) g T 1020  
*Protasparagus microraphis* (Kunth) Oberm. (Bester 3114; Hilliard & Burt 6729[NU]) rs E 1720-2409  
*Protasparagus plumosus* (Baker) Oberm. (Bester 419, 486) f,g M-E 1300-1500  
*Protasparagus setaceus* (Kunth) Oberm. (Bayer 4680[PRE])  
■*Protasparagus stellatus* (Baker) Oberm. (Gibbs Russell 4501[PRE]; Hilliard & Burt 6728, 6729[NU]) 1973-2404  
*Protasparagus virgatus* (Baker) Oberm. (Bester 635) g E 1420

## ASPHODELACEAE

### **Aloe** L.

- Aloe arborescens* Mill. (Bester 633, 2793) g,r T-E 980-1420  
*Aloe aristata* Haw. (Bester 3045, 3245) g E 1410-1580  
*Aloe ecklonis* Salm-Dyck (Bester 1924, 2014, 3319, 3567; Reynolds 1049[PRE]) v,a,g, M-E-B 1200-1920  
*Aloe ferox* Mill. (Reynolds 2049[PRE])  
*Aloe maculata* All. (Bester 632, 634, 949, 1093, 3080; Reynolds 913[PRE], 2046[PRE]) g M-E 1320-1620  
*Aloe myriacantha* Schult. & Schult. f. (Bester 458) g M 1200

*Aloe parvibracteata* Schönland (Reynolds 591, 3031)

*Aloe pratensis* Baker (Bester 3088; Reynolds 571[PRE], 3031[PRE]) g M 1380

#### **Anthericum L.**

*Anthericum cooperi* Baker (Bester 1208, 1662, 1753) g D-M-E 1220-1440

#### **Bulbine Willd.**

*Bulbine abyssinica* A.Rich. (Abbott 5670; Bester 100, 2597, 3392; Bigalke 89[PRE]; Dove 82[PRE]; Marais 1365[PRE]; Rattray 7327[PRE]; Zietsman & Zietsman 1438[PRE]) g,m,sa E-B 1340-2500

*Bulbine asphodeloides* (L.) Willd. (Bester 3200; Phillipson 721[PRE]) g E 1580-1950

*Bulbine filifolia* Baker (Bester 3011) g C 1800

*Bulbine frutescens* (L.) Willd. (Bester 1890, 1962) v,a E-B 1360-1860

*Bulbine latifolia* (L.f.) Roem. & Schil. (Edward 1224[PRE])

*Bulbine narcissifolia* Salm-Dyck (Bester 1530, 1624; Marais 1042[PRE]) g,a M-B 1380-2100

#### **Chlorophytum Ker-Gawl.**

*Chlorophytum acutum* cf. (Bester 3591) sa E 1600 (Not listed on PSA)

*Chlorophytum comosum* (Thunb.) Jacq. (Bester 2322) f E 1420

*Chlorophytum comosum* (Thunb.) Jacq. cf. (Bester 3433) g M 1400

*Chlorophytum cooperi* (Bester 3367) g B 1840 (Not listed on PSA)

#### **Gasteria Duval**

*Gasteria* sp. (Live specimen growing in garden of M. Dednam)

*Gasteria excelsa* Baker (Reynolds 1578[PRE]; Van Jaarsveld & Marthinus 7622)

#### **Kniphofia Moench**

*Kniphofia* sp. (Bester 2304)

▲*Kniphofia baurii* Baker (Abbott 5691[PRE]; Bester 315, 394, 445, 675, 2762, 2985, 3278, 3502, 3525, 3554; Killick & Marais 2051[PRE]; Marais 1028[PRE], 1032[PRE]) g,a,sa,v M-E-C-B 915-2500

▲*Kniphofia baurii* Baker \* (Marais 856) (\* Different flowering time)

▲*Kniphofia baurii* Baker cf. (Bester 2304, 2447, 3154) g,a M-E-B 1140-2140

●*Kniphofia brachystachya* (Zahlbr.) Codd (Bester 1412, 1493, 1913, 3075, 3146, 3465) v M-E 1200-1380

*Kniphofia caulescens* Baker (Bruce 569, 570; Galpin 6856; Hilliard & Burt 16556[NU]; Marais 1347; Naude 6; Reynolds 578) 2546

*Kniphofia* sp. near *K.caulescens* Baker (Hilliard & Burt 16431[NU], 16443[NU]) 2561-2988

*Kniphofia fluviatilis* Codd (Bruce 581)

■*Kniphofia hirsuta* Codd (Hilliard & Burt 16444[NU]; Matthews 817[NU]) 2622-2988

*Kniphofia linearifolia* Baker (Bester 140, 278, 314, 3519; Bruce 575[PRE], 576[PRE], 578[PRE], 579, 858, 871, 876, 877; Hilliard & Burt 16659[PRE]; Marais 871[PRE], 876[PRE], 877[PRE], 1046[PRE], 1370[PRE], 1379[PRE]; Roux 1187[PRE]; Zietsman & Zietsman 1430[PRE]; Van Wyk & Abbott 12040[PRU]) g M-B 1300-2134

*Kniphofia northiae* Baker (Bester 316, 1275, 3048; Bruce 572[PRE]; Galpin 6866) g,sa,a B 1010-2100

*Kniphofia* sp. near *K.northiae* Baker (Matthews 821[NU]) 2713

▲*Kniphofia parviflora* Kunth (Abbott 5629[PRE]; Acocks 21984[PRE]; Bester 28,

117, 290, 2140, 2145, 2161, 2247, 3473, 3489, 3518; Bolus 10335; Britten 4582; Bruce 559[PRE], 560[PRE], 577, 588[NU]; Flanagan 2712[PRE]; Galpin 6864; Hilliard & Burtt 6602[PRE], 13890[NU], 16328[NU], 16686[PRE]; Marais 1382[PRE], 1388[PRE]; McNeil PRE36781[PRE]; Reynolds 2503[PRE]; Strever 819[PRE]) g,sa,v M-E-C-B 1300-2530

● *Kniphofia ritualis* Codd (Zietsman & Zietsman 1400[PRE]) 2200

▲ *Kniphofia rooperi* (Moore) Lem. (Bester 2311) g M 1300

*Kniphofia stricta* Codd (Bayliss 3939[PRE]; Bester 2000; Bruce 567; Godfrey 1526[PRE]; Hilliard & Burtt 16650[PRE]; Marais 1349, 1361[PRE], 1364[PRE]; Naude 2; Rattray 7326[PRE]; Stewart 1879[NU]; Van Wyk 6715[PRE]) a B 1980-2370

*Kniphofia triangularis* Kunth (Hilliard & Burtt 12161[NU], 16412[NU], 16470[NU]) 2287-2744

*Kniphofia triangularis* Kunth subsp. *triangularis* (Bester 2209, 2338, 3427; Bruce 573[PRE]; Drege 3524; Galpin 14084; Marais 1350, 1371[PRE]; Naude 1; Reynolds 2506[PRE]; Stretton 120; Strever 754[PRE], 823[PRE]) a,g,sa B 1800-2100

*Kniphofia triangularis* Kunth subsp. *triangularis* cf. (Bester 3491) sa B 2500

*Kniphofia uvaria* (L.) Oken (Bester 2406, 3530; Marais 870[PRE], 876[PRE], 877A[PRE], 877B[PRE], 878[PRE]) sa B 2010-2100

### Trachyandra Kunth

*Trachyandra affinis* Kunth (Bester 3297; Strever 841[PRE]) g T 1020-1670

*Trachyandra affinis* Kunth cf. (Bester 1338, 1521, 1779) g M-E 1320-1500

*Trachyandra asperata* Kunth var. *asperata* (Bester 3341) sa B

*Trachyandra asperata* Kunth var. *macowanii* (Baker) Oberm. (Bester 3322; Phillipson 656[PRE]) g E 1200-2450

*Trachyandra asperata* Kunth var. *stenophylla* (Baker) Oberm. (Zietsman & Zietsman 1417[PRE]) 1700

▲ *Trachyandra capillata* (Poelln.) Oberm. (Bester 220) g E 1500

*Trachyandra saltii* (Baker) Oberm. cf. (Bester 2197) g E 1500

*Trachyandra saltii* (Baker) Oberm. var. *oatesii* (Baker) Oberm. (Bester 1287, 1413) g M-D 1380

*Trachyandra saltii* (Baker) Oberm. var. *saltii* (Bester 1110, 3343, 3415, 3557) v,sa E-B 1410-2100

■ *Trachyandra smalliana* Hilliard & B.L.Burtt (Bester 3383, 3628; Burdon 60[CFM]; Hilliard & Burtt 13414, 13944) sa B 1952-2200

*Trachyandra smalliana* Hilliard & B.L.Burtt cf. (Bester 1898) a B 1860

### ASPIDIACEAE

*Ctenitis* (C.Chr.) C.Chr. ex Tardieu

*Ctenitis lanuginosa* (Willd. ex Kaulf.) Copel. (McLoughlin 100[PRE])

*Cyrtomium* Presl

*Cyrtomium caryotideum* (Willd. ex Hook. & Grev.) C.Presl. var. *micropterum* (Kunze) C.Chr. (McLoughlin 111[PRE])

*Dryopteris* Adans.

● *Dryopteris esterhuyseniae* Schlepe & N.C.Anthony (Hilliard & Burtt 16405[NU]) 2739

*Dryopteris inaequalis* (Schltdl.) Kuntze (Abbott 5653[PRE]; Flanagan 2713[PRE]);



McLoughlin 100[PRE])

**Polystichum** Roth

*Polystichum alticola* Schlepe & N.C.Anthony (Strever 898[PRE]) 1250

*Polystichum luctuosum* (Kunze) T.Moore (Bester 513; Flanagan 2781[PRE];

McLoughlin 79[PRE]) f E 1250

*Polystichum pungens* (Kaulf.) C.Presl. (McLoughlin 957[PRE])

*Polystichum transvaalense* N.C.Anthony (McLoughlin M95[PRE]; Young TM511C[PRE])

**Woodsia** R.Br.

*Woodsia montevidensis* (Spreng.) Hieron var. *burgessiana* (Gerrard ex Hook. & Baker) Schelpe (Flanagan 2672[PRE]) 1525

**ASPLENIACEAE**

**Asplenium** L.

*Asplenium aethiopicum* (Burm. f.) Bech. (Bester 166, 514, 2552, 2557, 2683; Strever 906[PRE]; Young TM545C[PRE]) f E 1250-1550

*Asplenium boltonii* Hook. ex Schelpe (McLoughlin TM1031C[PRE])

*Asplenium erectum* Bory ex Willd. var. *erectum* (McLoughlin TM1932C[PRE]; Young TM611C[PRE])

*Asplenium lobatum* Pappe & Rawson (McLoughlin TM1030C[PRE]; Young TM591C[PRE])

*Asplenium monanthes* L. (Bester 866, 2611; McLoughlin TM1029C[PRE], 99[PRE]; Sim TM596C[PRE]) a B 2100

*Asplenium splendens* Kunze (Bester 2823; McLoughlin 93[PRE]) g M 1180

*Asplenium stoloniferum* Boris (Bester 515; Esterhuysen 29207[PRE]; Flanagan 2722[PRE]; Pegler 1637[PRE]; Young TM616C[PRE]) f E 1250

*Asplenium varians* Wall. ex Hook. & Grev. subsp. *fimbriatum* (Kunze) Schelpe (Bester 2558) g E 1400

**Ceterach** DC.

*Ceterach cordatum* (Thunb.) Desv. (Flanagan 2837[PRE]; McLoughlin M113[PRE]; Strever 771[PRE]) 1890

**ASTERACEAE**

**Acanthospermum** Schrank

*Acanthospermum australe* (Loefl.) Kuntze (Bester 3635) o

**Anthemus** L.

*Anthemus cotula* L. (Bath PRE57086[PRE]; Bester 1347) g E 1500

**Arctotis** L.

*Arctotis arctotoides* (L. f.) O.Hoffm. (Bester 1316; Hilliard & Burtt 6726[PRE]; Marais 1369[PRE]) g E 1400-2560

**Artemisia** L.

*Artemisia afra* Jacq. ex Willd. (Bester 2647; Van Wyk & Abbott 12014[PRU]) g E 1560-1800

**Aster** L.

*Aster* sp. (Bester 1862) v 1360

● *Aster ananthocladus* Hilliard & B.L.Burtt (Bester 1862, 3264) sa B 1940

*Aster bakeranus* Burtt Davy ex C.A.Sim (Bester 130, 249, 441, 507, 591, 610, 719.

845, 869, 1056, 1285, 1666; Zietsman & Zietsman 1431[PRE]) g,sa M-E-C-D-1250-1700

● *Aster erucifolius* (Thell.) Lippert. (Bester 2216, 2481; Galpin 6662[NH]; Hilliard 3917[NH]; Strever 744[NH]) a B 2250-2593

● *Aster perfoliatus* Oliv. (Coleman 629[NH]; Strever 1282[NH]; Taylor 180[NU]) f 1700-1750

*Aster squamatus* (Spreng.) Hieron. (Galpin 9849[PRE])

#### Athanasia L.

● *Athanasia grandiceps* Hilliard & B.L.Burt (Bester 572, 2032) sa,a B 1940-2370

● *Athanasia thodei* H.Bol. (Bester 2672) a B 2600

#### Athrixia Ker-Gawl.

● *Athrixia angustissima* D.C. (Bester 2069, 2274, 2339, 3349, 3511; Bigakle 214[PRE]; Hilliard & Burt 3762[NU], 6720[NU]) g E-B 1350-2500

*Athrixia fontana* MacOwan (Bester 2398; Brusse 5879[PRE]; Galpin 6701[PRE]; Phillipson 660[PRE]; Van Wyk 6716[PRE]) sa B 2020-2500

*Athrixia phyllicoides* D.C. (Bester 48, 442, 598, 1844, 2679) g,sa,v E-C 1360-1600

● *Athrixia pinifolia* N.E.Br. (Bester 1264, 2863) g E 1340-1620

#### Berkheya Ehrh.

● *Berkheya cirsiifolia* (D.C.) Roessler (Bigalke 523[NU]; Hilliard & Burt 6636[NU]; Van Wyk & Abbott 12121[PRU]; Zietsman & Zietsman 1476[PRE]) 1900-2161

*Berkheya erysithales* (D.C.) Roessler (Bester 552) f E 1400

● *Berkheya multijuga* (D.C.) Roessler (Bester 2095; Galpin 6751[NH]; Hilliard 3923[NU]; Hilliard & Burt 12207[NU], 14652[NU]; Phillipson 700[PRE]) g E-B 1890-2684

*Berkheya onopordifolia* var. *onopordifolia* (Gibbs Russell 4523[PRE]) 1973

*Berkheya purpurea* (D.C.) O.Hoffm. ex Burt Davy (Bester 2001; Flanagan 2644[PRE]; Phillipson 713[PRE]; Van Wyk 6700[PRE]; Zietsman & Zietsman 1478[PRE]) a B 2161-2370

*Berkheya rhapontica* (D.C.) Hutch. & Burt Davy subsp. *aristosa* (D.C.) Roessler (Bester 448, 2603, 2626) g,sa E-C 1440-1600

*Berkheya rhapontica* (D.C.) Hutch. & Burt Davy subsp. *aristosa* (D.C.) Roessler var. *aristosa* (Acocks 21904[PRE]; Bester 49, 376, 2603, 2626) g E 1440-1585

*Berkheya rhapontica* (D.C.) Hutch. & Burt Davy subsp. *aristosa* (D.C.) Roessler var. *exalata* Roessler (Abbott 5630[PRU]; Bester 1407) g M 1380-1500

*Berkheya rhapontica* (D.C.) Hutch. & Burt Davy subsp. *platyura* (Harv.) Roessler (Bester 377) g E 1440

*Berkheya setifera* D.C. (Bester 1491, 1647, 3026) v,g M-E 1200-1380

*Berkheya speciosa* (D.C.) O.Hoffm. (Bester 805) g E 1420

▲ *Berkheya sphaerocephala* (D.C.) Roessler (Abbott 5678[PRU], 5626[PRU]; Galpin 6749[PRE]; Van Wyk & Abbott 12010[PRE]) g,r 1500-2100

■ *Berkheya sp. nov.* cf. (Bester 3001) v M 1290

#### Blumea DC.

*Blumea alata* (D.Don) DC. (Bester 2785) r T 980

#### Brachylaena R.Br.

▲ *Brachylaena elliptica* (Thunb.) D.C. (Meuse 9681[PRE])

▲ *Brachylaena ilicifolia* (Lam.) Phill. & Schweick. (Bester 620) g E 1420



**Centaurea L.**

*Centaurea melitensis* L. (Flanagan 2681[PRE]) 1295

**Chrysanthemoides Tourn. ex Medik.**

*Chrysanthemoides monilifera* (L.) Norl. subsp. *canescens* (D.C.) Norl. (Abbott 5669[PRE]; Bester 2625) g E 1380-1450

*Chrysanthemoides monilifera* (L.) Norl. subsp. *pisifera* (L.) Norl. (Bester 288) g M 1280

**Chrysocoma L.**

*Chrysocoma ciliata* L. (Bester 593, 646, 834, 1037, 1135, 1320, 2693, 2815; Brusse 4604[PRE]; Codd 9245[PRE]; Flanagan 224A[PRE]; Gibbs Russell 4557[PRE]; Rattray 7301[PRE]; Van Wyk & Abbott 12054[PRE], 12125[PRU]) g M-E-B 520-2200

**Cineraria L.**

*Cineraria albicans* N.E.Br. (Bester 535, 550, 551; Guillarmod 2325; Hilliard & Burtt 12177, 16604[PRE]) f,g E 1100-2499

*Cineraria albicans* N.E.Br. cf. (Bester 2537) g E 1410

*Cineraria aspera* Thunb. (Bester 2521, 2782, 2804; Nel 57962[PRE]) g M-E-1260-1340

*Cineraria geifolia* (L.) L. (Hilliard & Burtt 16603[PRE]) 2499

*Cineraria geraniifolia* D.C. (Bester 2394, 2442, 2459, 2652) g,sa E-B 1420-2020

*Cineraria mollis* E.Mey. ex D.C. (Bester 2959; Hilliard 5185[NU]; Hilliard & Burtt 6688[NU], 12186[NU], 12253[NU], 13132[NU], 14593[NU], 16452[NU]) a B-1829-2927

**Conyza Less.**

*Conyza gouanii* (L.) Willd. (Flanagan 2783[PRE]) 915

*Conyza obscura* D.C. (Bester 76, 2531, 2803; Pegler 1175[PRE]) g M-E 1260-1330

*Conyza pinnata* (L. f.) Kunze (Abbott 5623[PRE]; Bester 2813; Galpin 6665[PRE]) g M 1260

*Conyza podocephala* D.C. (Flanagan 2674[PRE]) 1295

*Conyza scabrida* D.C. (Bester 2779; Galpin 9426[PRE]) g E 1340

**Cotula L.**

*Cotula anthemoides* L. (Watt & Brandwyk 1160[PRE])

*Cotula australis* (Spreng.) Hook. f. cf. (Bester 1402) g M 1380

*Cotula heterocarpa* D.C. (Bester 79, 689; Hilliard 5164[PRE], 5176[PRE]) g E-1330-1530

*Cotula hispida* (D.C.) Harv. (Abbott 5613[PRU]; Bester 217, 689; Van Wyk & Abbott 12022[PRU], 12179[PRU]) g,f/r E 1420-1800

● *Cotula lineariloba* (DC.) Hilliard (Hilliard & Burtt 6685[NU], 12194[NU], 16388[NU]) 2134-2561

● *Cotula membranifolia* Hilliard (Hilliard & Burtt 6614[NU], 12271[NU]) 2104-2440

● *Cotula paludosa* Hilliard (Galpin 6702; Hilliard & Burtt 6702[NU], 16419[NU]) 2440-2620

● *Cotula socialis* Hilliard (Bester 2483, 3599; Galpin 6704; Hilliard 3952[NU]; Hilliard & Burtt 6591B[NU], 6680[NU], 12151[NU], 16420[NU]; Marais 1353[NH]; Van Wyk & Abbott 12101[PRE]) sa B 1900-2622

**Denekia Thunb.**

*Denekia capensis* Thunb. (Bester 678, 894, 2976) v,g M-E 1330-1680

**Dicoma Cass.**

*Dicoma anomala* Sond. (Bester 103, 2564) g M-E 1340-1400

*Dicoma anomala* Sond. subsp. *anomala* (Bester 406) g E 1300

**Dimorphotecha Vaill ex Moench**

*Dimorphotecha sinuata* DC. (Hardy & Rauch 1562[PRE])

**Edmondia Cass.**

*Edmondia pinifolia* (Lam.) Hilliard (Bester 2091) g E

**Eriocephalus L.**

*Eriocephalus punctulatus* D.C. (Bester 853, 2870) g,a M-B 1440-2220

**Eumorphia DC.**

*Eumorphia* sp. (Bester 2734) sa E 1860

● *Eumorphia prostrata* Bolus (Bester 2031; Galpin 6700[NH]; Hilliard & Burt 6708[NU], 16401[NU]) sa B 2370-2823

*Eumorphia sericea* J.M.Wood & M.S.Evans (Hilliard & Burt 16501[NU]) 2744

*Eumorphia sericea* J.M.Wood & M.S.Evans subsp. *robustior* Hilliard & B.L.Burt (Bester 565, 1716, 2675, 3267; Galpin 6699; Hilliard 5213[NU]; Hilliard & Burt 6732[NU], 12331[NU], 14695[NU], 16369[NU], 16657[PRE]; Van Wyk 6713[PRE]; Viljoen 696[PRE]) sa C-B 1980-2636

**Euryops Cass.**

*Euryops candollei* Harv. (Abbott 5677[PRU], 5683[PRE]; Bester 655, 1373, 1578, 1928, 1987; Galpin 7305[PRE]; Hilliard & Burt 12314[PRE]; Ingpen 26[PRE]; Van Wyk 6708[PRE]; Van Wyk & Abbott 12159[PRE]; Werger 1815[PRE]) g,sa,a B 2010-2560

*Euryops floribundus* N.E.Br. (Bayliss 1346[PRE]; Flanagan 2626[PRE]) 1220-2315

● *Euryops montanus* Schltr. (Galpin 6740[PRE]; Hilliard & Burt 5208[NU], 14610[NU]) 1890-2622

*Euryops oligoglossus* D.C. subsp. *oligoglossus* (Zietsman & Zietsman 1401[PRE]) 2200

● *Euryops tysonii* E.Phillips (Abbott 5673[PRU]; Bester 573, 854, 857, 1266, 1580, 1927, 2101; Galpin 6737[PRE]; Hilliard 3949[NU]; Hilliard & Burt 3766[NU], 6643[NU], 12174[NU], 16564[NU]; Viljoen 693[PRE], 695[PRE]; Van Wyk & Abbott 12104[PRU], 12171[PRU]) g,sa,a B 1940-2561

**Felicia Cass.**

*Felicia aethiopica* (Burm. f.) Bolus & Wolley-Dod ex Adamson & Salter subsp. *aethiopica* (Rattray 7300[PRE]) 2530

■ *Felicia caespitosa* Grau (Galpin 6661[PRE]; Hilliard & Burt 16555[NU]) 2549-2560

*Felicia filifolia* subsp. (Vent.) Burt Davy *filifolia* (Bester 647, 657, 659, 2479, 2572, 2904; Flanagan 2705[PRE]; Gibbs Russell 4512[PRE]; Marais 1045[PRE]; Van Wyk 6692[PRE]) g E-B 1370-2200

*Felicia muricata* (Thun.) Nees subsp. *muricata* (Bester 234, 521, 645, 844, 2549; Flanagan 2677[PRE]; Pegler 1719[PRE]; Story 473[PRE]) g M-E-B 1295-2200

*Felicia petiolata* (Harv.) N.E.Br. (Bester 2759; Flanagan 2961[NU]; Hilliard 5211[NU]; Hilliard & Burt 6731[NU], 13156[NU]) sa E 1860-2622

*Felicia quinquenervia* (Klatt.) Grau (Bester 391, 1906) sa,a B 1900

*Felicia rosulata* Yeo (Acocks 13834[PRE]; Bester 896, 1370, 3017; Strever

411[PRE]) g,sa E-B 1530-2900

*Felicia zeyheri* (Less.) Nees subsp. *linifolia* (Harv.) Grau (Van Wyk & Abbott 12062[PRE]) 1900

**Gazania Gaertn.**

*Gazania krebsiana* Less. subsp. *krebsiana* (Bester 1356, 2628; Strever 740[PRE]) sa C 2000-2622

*Gazania krebsiana* Less. subsp. *serrulata* (D.C.) Roessler (Abbott 5686[PRU]; Bester 132, 364, 3309; Dove 100[PRE], 101[PRE]; Zietsman & Zietsman 1468[PRE], 1477[PRE]) g M-E-B 1320-2460

*Gazania linearis* (Thunb.) Druce (Bester 978, 1570) g E-C 1350-1860

*Gazania linearis* (Thunb.) Druce var. *linearis* (Bester 405, 650) g E-B 1300-2200

**Gerbera L.**

*Gerbera ambigua* (Cass.) Sch.Bip. (Bester 1070, 1524, 2880, 3093; Pegler 43[PRE]) g,a M-E-B 460-2100

● *Gerbera piloselloides* (L.) Cass. (Bester 1250, 1600, 1748, 2878, 2925) g,sa M-E-C 1220-1680

*Gerbera viridifolia* (D.C.) Sch.Bip. subsp. *natalensis* (Sch.Bip.) H.V.Hansen (Bester 810) v E 1320

*Gerbera viridifolia* (D.C.) Sch.Bip. subsp. *viridifolia* (Bester 128, 920, 1219, 1726) g M-E 1320-1380

**Gnaphalium L.**

*Gnaphalium* sp. (Stapelberg 286[PRE])

● *Gnaphalium limicola* Hilliard (Galpin 6667; Hilliard & Burt 6639[NU], 14662[NU], 16654[NU]) 2134-2500

*Gnaphalium pensylvanicum* Willd. (Bester 877) g E 1380

**Haplocarpha Less.**

*Haplocarpha nervosa* (Thunb.) P.Beauv. (Acocks 20185[PRE]; Bester 648, 750) g E-B 1320-2200

*Haplocarpha scaposa* Harv. (Bester 404, 595, 1230, 1298) g,v M-E 1300-1420

**Helichrysum Mill.**

*Helichrysum* sp. (Gibbs Russell 4513[PRE]) 1973

▲ *Helichrysum adenocarpum* D.C. subsp. *ammophilum* Hilliard (Bester 1901, 2737, 3461, 3654) a B 1555-1900

*Helichrysum adenocarpum* D.C. subsp. *adenocarpum* (Bester 121, 284, 502, 2222, 2737, 3654; Van Wyk & Abbott 1234[PRE]; Van Zinderen Bakker Jnr. 55[PRE]) g M-E 1280-1320

*Helichrysum albo-brunneum* S.Moore (Ratray 7303[PRE])

● *Helichrysum albirosulatum* Killick (Bester 329) g E 1500

*Helichrysum anomalum* Less. (Abbott 5681[PRE]; Gibbs Russell 4552[PRE], 4553[PRE]) 1973-2100

*Helichrysum appendiculatum* (L. f.) Less. (Bester 286, 1776, 2196, 2408, 2621, 3581) g M-E 1280-1400

*Helichrysum argyrophyllum* D.C. (Bester 711; Pegler 1608[PRE]; Strever 124A[PRE]) g E 1400-1530

*Helichrysum aureum* (Houtt.) Merr. var. *argenteum* Hilliard (Bester 892) g E-1340-1680

*Helichrysum aureum* (Houtt.) Mer. var. *monocephalum* (D.C.) Hilliard (Bester 716,

891, 1386) g,a E-B 1470-2230

● *Helichrysum aureum* (Houtt.) Mer. var. *serotinum* Hilliard (Bester 1015, 2012, 2937; Nordenstam 2027[NU]; Strever 406[PRE]) v,sa,g M-E-B 1310-2300

● *Helichrysum aureum* (Houtt.) Mer. var. *scopulosum* (M.D.Hend.) Hilliard (Bester 1272, 1468) sa,v E-B 1310-2010

*Helichrysum aureo-nitens* Sch.Bip. (Bester 661, 873, 926, 1186, 1768) g M-E-1380-1400

▲ *Helichrysum auriceps* Hilliard (Bester 2252) g E 1280

● *Helichrysum basalticum* Hilliard (Bester 2376, 2660; Galpin 6676; Hilliard 3914[NU]; Hilliard & Burtt 3914, 6725, 16402[NU]; Strever 733[PRE]) a,sa B-2206-2652

*Helichrysum bellidiastrum* Moeser (Bester 1710, 1863, 3270; Galpin 6677) g,sa,v B 1360-2956

● *Helichrysum bellum* Hilliard (Hilliard & Burtt 6722[NU]; Nordenstam 2020[NU]; Van Wyk & Abbott 12164[PRU]) 2400-2500

*Helichrysum caespitium* (D.C.) Harv. (Bester 1068, 2947) g M 1220-1470

*Helichrysum callicomum* Harv. (Bester 2772, 2766, 2822; Pegler 1718[PRE]) g M-E 1260-1340

*Helichrysum cephaloideum* D.C. (Bester 44, 237, 1417, 1806, 1821, 2761, 2816, 3466; Gibbs Russell 3459[PRE]) g,v M-E 1250-1530

*Helichrysum chionosphaerum* D.C. (Bester 21, 1063, 1134, 1642, 2570, 3085; Sim 20374[PRE]; Van Wyk 6697[PRE]; Wederman & Oberdick 1097[PRE], 1097A[PRE]) v,r,g M-E 915-1420

● *Helichrysum confertum* N.E.Br. (Bester 663; Hilliard 5175[NU]) g E 1420-1921

*Helichrysum cooperi* Harv. (Bester 58, 209, 2546) g E 1400-1500

*Helichrysum coriaceum* Harv. (Bester 1858, 2624, 3447) v E 1250-1360

● *Helichrysum cymosum* (L.) D.Don. (Hilliard & Burtt 6594, 6600, 6678) 2380-2500

*Helichrysum cymosum* (L.) D.Don. subsp. *clavum* Hilliard (Hilliard & Burtt 6594[NU], 6600[NU], 6678[NU], 12262[NU]; Phillipson 659[PRE]) 2407-2515

*Helichrysum dasycephalum* O.Hoffm. (Bester 101; Hilliard & Burtt 6586[NU], 6667[NU], 3736[NU], 6739[NU], 12176[NU], 16424[NU]; Van Wyk & Abbott 12097[PRE]) g M 1340-2561

*Helichrysum dregeanum* Sond. & Harv. (Bester 1605, 1732) g M-E 1360-1600

▲ *Helichrysum ecklonis* Sond. (Bester 714, 790, 806, 922, 927, 1065, 1117, 1146, 1864, 2931) g,v M-E 1240-1500

*Helichrysum elegantissimum* D.C. (Bester 392, 3538, 3541; Galpin 6679[PRE]; Van Wyk & Abbott 12009[PRE], 12163[PRE]) sa B 1900

● *Helichrysum flanaganii* Bolus (Hilliard 5198[NU]; Hilliard & Burtt 6703[PRE]; Phillipson 712[PRE]) 2500-2620

*Helichrysum foetidum* (L.) Moench (Mauve 4878[PRE])

● *Helichrysum glaciale* Hilliard (Bester 2965; Bigalke 61[NU]; Hilliard 5186[NU]; Hilliard & Burtt 6724[NU]; Nordenstam 2053; Wederman & Oberdick 1107) sa B 2190-2580

*Helichrysum glomeratum* Klatt. (Bester 379, 503, 644, 2548, 2573, 2690, 2735; Coleman 682[NU]; Galpin 6684[PRE]; Gibbs Russell 4565[PRE]; Hilliard & Burtt 12347[NU], 16682[NU]) g E-B 915-2348

*Helichrysum grandibracteatum* M.D.Hend. (Bester 893, 903, 946, 1026, 1039, 1325,

1362) g,sa E-C-B 1370-2000

*Helichrysum griseolanatum* Hilliard (Abbott 5612[PRE], 5615[PRU]; Acocks 20425; Bester 127, 848, 890, 2608, 2630; Bigalke B213[PRE]; Galpin 2325; Hilliard 3901, 3911; Hilliard & Burt 6587[NU], 6622[NU]; Van Wyk & Abbott 12035[PRU], 12042[PRE], 12117[PRE]; Zietsman & Zietsman 1463[PRE]) g M-E-B 1400-2340

*Helichrysum gymnocomum* DC. (Bigalke 216[PRE]; Gibbs Russell 4556[PRE])-1973-2316

*Helichrysum herbaceum* (Andrews) Sweet (Abbott 5609[PRE]; Bester 38, 223, 253, 501, 616, 2723; Bigalke 192[PRE]; Flanagan 2790[PRE]; Zietsman & Zietsman 1419[PRE]) g M-E 1065-1700

● *Helichrysum heterolasium* Hilliard (Bester 2049) g E

● *Helichrysum inornatum* Hilliard & B.L.Burt (Bester 1409, 1896) v,a M-B 1380-1860

*Helichrysum krebsianum* Less. (Abbott 5616[PRE]; Strever 857[PRE]) 1500-1650

● *Helichrysum krookii* Moeser (Abbott 5610[PRU], 5647[PRE]; Hilliard 3945[NU]; Hilliard & Burt 16692[NU]; Nordenstam 2039[NU]; Schofield s.n.[NU]; Strever 825[PRE]; Van Wyk & Abbott 12000[PRE]) g 1400-2591

*Helichrysum lineare* DC. (Bester 1357; Esterhuysen 29166; Hilliard & Burt 14564[PRE]; Killick & Marais 2080; Van Wyk & Abbott 12069[PRU]; Wederman & Oberdick 1116) g,sa C 1372-2000

● *Helichrysum lineatum* H.Bol. (Galpin 6669[PRE]; Hilliard & Burt 16402A[NU]) 2744

● *Helichrysum lingulatum* Hilliard (Bester 947, 990, 1030, 1038; Cloete 1149[NH]; Hilliard 517[NU]; Hilliard & Burt 13103[PRE], 16684[NU]) g E 1372-2195

● *Helichrysum marginatum* DC. (Bester 2050, 2087, 2488, 3603; Dove 103[PRE]; Hilliard 3912[NU]; Hilliard & Burt 6740[NU], 12158[PRE], 12260[PRE]; Phillipson 653[PRE]; Rattray 7302[PRE]; Van Wyk & Abbott 12113[PRE]; Zietsman & Zietsman 1460[PRE]) g,sa E-B 1900-2560

*Helichrysum melanacme* DC. (Bester 2771) g E 1340

*Helichrysum miconiifolium* DC. (Bester 1415, 2245, 3161) v,g M 1140-1500

*Helichrysum mixtum* (Kunze) Moeser var. *mixtum* (Abbott 5663[PRE], 5649[PRU]; Bester 900, 1450, 2054, 2695) g,f E-C 1250-1680

*Helichrysum montanum* DC. (Bester 1556, 2352) g,a C-B 1600-2480

*Helichrysum monticola* Hilliard (Bester 576, 2152, 3539, 3552; Forbes 1083; Hilliard & Burt 3753; Marais 1403; Strever 811[PRE]) a,g,sa C-B 1370-1940

*Helichrysum mundii* Harv. (Pegler 1744[PRE])

● *Helichrysum nanum* Klatt (Bester 560, 2536, 2619; Hilliard 3897[NU]) g E-1400-1524

● *Helichrysum nudifolium* (L.) Less. (Bester 899, 1125, 1746, 1799, 1856, 2048, 3242; Hilliard & Burt 6658[NU], 12163[NU]; Pegler 228A[PRE]) g,v,a M-E-1220-2439

*Helichrysum odoratissimum* (L.) Sweet (Bester 1458, 2609, 2715; Van Wyk & Abbott 12031[PRE]) g E 1400-1900

*Helichrysum pallidum* DC. (Bester 3119)

● *Helichrysum palustre* Hilliard (Hilliard & Burt 14684[NU]; Wright 753[NH]) g E 1350-3050



*Helichrysum pilosellum* (L. f.) Less. (Bester 102, 701, 1053, 1160, 1798) g E-1360-1530

*Helichrysum platypterum* DC. (Bester 69, 2264, 2382) g E 1330

*Helichrysum psilolepis* Harv. (Bester 1606) g E 1600

● *Helichrysum retortoides* N.E.Br. (Hilliard 5195[NU]; Hilliard & Burt 14675[NU]) 2500-2591

*Helichrysum rugulosum* Less. (Bester 283, 1832, 2530, 2826, 3389) g,sa M-B-1320-2500

*Helichrysum scitulum* Hilliard & B.L.Burt (Drege *s.n.*; Flanagan 3013[NU]; Hilliard & Burt 16624[NU]) 1921-2287

● *Helichrysum sesilioides* Hilliard (Bester 849, 902, 1374, 2958; Bigalke *s.n.*[NU]; Broster *s.n.*[NU]; Hilliard 3932[NU], 5193[NU]; Hilliard & Burt 12200[NU], 12281[NU], 12342[NU], 14676[NU], 14720A[NU]) g,a C-B 1800-2622

*Helichrysum simillimum* DC. (Strever 812[PRE]) 1650

*Helichrysum spiralepis* Hilliard & B.L.Burt (Bester 37, 1206, 1635, 2059; Brusse 5594[PRE]; Pegler 1728[PRE]; Phillipson 2450[PRE]; Van Wyk & Abbott 12167[PRU]) g M-E 1380-2500

*Helichrysum splendidum* (Thunb.) Less. (Bester 1880, 2355; Bigalke 215[PRE]; Brusse 4606[PRE]; Gibbs Russell 4562[PRE]; Story 498[PRE]; Van Wyk & Abbott 12048[PRE], 12053[PRU], 12081[PRE]; Zietsman & Zietsman 1469[PRE]) g,v-1360-2316

*Helichrysum subluteum* Burt Davy (Strever 821[PRE]) 1660-1900

*Helichrysum subglomeratum* Less. (Bester 2490, 2616, 2720; Bigalke 36[NU]; Hilliard 3913[NU]; Van Wyk & Abbott 12092[PRE]) g,a,sa E-B 1400-2439

*Helichrysum sutherlandii* Harv. (Bester 592) g E 1420

*Helichrysum swynertonii* S.Moore (Bester 687, 752) g E 1320-1530

*Helichrysum teretifolium* (L.) D.Don. (Bester 1076) g E 1620

*Helichrysum trilineatum* DC. (Bester 863, 1388, 1684, 1929, 2677; Bigalke 227[PRE]; Flanagan 3014[NU]; Galpin 6691[PRE]; Hilliard 3956[NU]; Hilliard & Burt 6663[NU], 12156[NU], 14661[NU]; Strever 415[PRE]; Van Wyk & Abbott 12130[PRU], 12131[PRE]; Viljoen 692[PRE]) g,a B 1829-2745

*Helichrysum umbraculigerum* Less. (Abbott 5648[PRU], 5692[PRU], 5694[PRE], 5689[PRU]; Bester 45, 2607, 3328, 3513; Van Wyk & Abbott 12023[PRE]; Zietsman & Zietsman 1473[PRE]) g E-B 1500-2161

● *Helichrysum vernum* Hilliard (Phillipson 675[PRE]) 2450

● *Helichrysum witbergense* Bolus (Bester 1361, 2953, 3102; Hilliard 5210[NU]; Hilliard & Burt 6668[NU], 13134[NU], 16472[NU]; Strever 413[PRE]) a,sa B-2000-2927

*Helichrysum xerochrysum* DC. (Bester 1855, 2063) v,g E 1360

#### Heteromma Benth.

● *Heteromma decurrens* (DC.) O.Hoffm. (Hilliard & Burt 664[NU], 6562[NU], 7629[NU], 12230[NU], 16572[NU]) 1616-2073

● *Heteromma simplicifolium* Wood & Evans (Hilliard & Burt 6610[NU], 16658[NU]) 2043-2439

#### Hirpicium Cass.

*Hirpicium armerioides* (DC.) Roessler (Bester 330, 365, 3625, 1945, 2114; Brusse 5881[PRE]; Van Wyk & Abbott 12093[PRU], 12127[PRU]) g,a,sa E-B 1440-2500

**Hypochoeris L.**

*Hypochoeris radicata* L. (Abbott 5645[PRU]; Zietsman & Zietsman 1435[PRE]) g 1500-1700

**Ifloga Cass.**

*Ifloga* sp. (Pegler 1749[PRE]; Sim 2753[PRE])

**Inulanthera Killersjö**

*Inulanthera calva* (Hutch.) Källersjö (Bester 350, 2545, 2566) g E 1400-1620

*Inulanthera coronopifolia* (Hutch.) Källersjö (Bester 2711) g E 1400

*Inulanthera leucoclada* (DC.) Källersjö (Bester 652) g B 2200

● *Inulanthera thodei* (Bolus) Källersjö (Bester 2374, 2672; Hilliard & Burt 6611[NU], 12330[NU], 16421[NU]; Van Wyk & Abbott 12065[PRU]; Zietsman & Zietsman 1457[PRE]) g,a,sa B 2161-2622

● *Inulanthera tridens* (Oliv.) Källersjö (Bigalke 212[PRE]; Hilliard 3909[NU]; Hilliard & Burt 6539[NU], 6616[NU], 12279[NU], 13886[NU], 16607[NU]) 1448-2500

**Lactuca L.**

*Lactuca capensis* Thunb. (Bester 1778, 2921, 2814; Van Wyk & Abbott 12122[PRU]) g M 1260-1320

*Lactuca tysonii* (E.Phillips) C.Jeffrey (Bester 1664, 2061) g E 1440

**Lasiospermum Lag.**

*Lasiospermum bipinnatum* (Thunb.) Druce (Bester 1003) sa B 1980

*Lasiospermum papillosum* (Bester 2991) v M 1220 (Not listed on PSA)

**Launaea Cass.**

*Launaea rarifolia* (Oliv. & Hiern) Boulos (Bester 923, 952, 1336, 2919) g M-E-1260-1590

**Lepidostephium Oliv.**

*Lepidostephium denticulatum* Oliv. (Bester 2696, 2724, 3561) g,sa E-B 1400-1900

**Macowania Oliv.**

*Macowania pulvinaris* N.E.Br. (Galpin 6694; Hilliard 5209; Hilliard & Burt 6621) 2440-2620

● *Macowania sororis* Compton (Bester 1274, 1583, 1688) a,sa B 2010-2100

**Matricaria L.**

*Matricaria nigellifolia* DC. *nigellifolia* (Flanagan 10[PRE], S.N. 44190[PRE])

**Metalasia R.Br.**

*Metalasia densa* (Lam.) P.O.Karis (Bester 408, 2996; Van Wyk & Abbott 12119[PRE]) g,v E 1300-1900

*Metalasia muricata* (L.) D.Dom (Bester 662, 664, 780) g E 1340-1440

**Nidorella Cass.**

● *Nidorella agria* Hilliard (Acocks 22185; Hilliard 3924[NU], 3944[NU]; Hilliard & Burt 6657[NU], 6669[NU], 12244[NU], 16619[NU]) 1980-2430

*Nidorella anomala* Steetz (Abbott 5650[PRE]; Acocks 20231[PRE]) 1500-2045

*Nidorella auriculata* DC. (Bester 1923) v E 1380

*Nidorella foetida* (L.) DC. (Galpin 6664[PRE]) 2470

*Nidorella resedifolia* DC. subsp. *resedifolia* (Flanagan 2679[PRE]) 1295

*Nidorella undulata* (Thunb.) Sond. ex Harv. (Abbott 5627[PRE], 5701[PRE]; Bester 586, 638, 2204, 3468; Flanagan 2623[PRE]; Galpin 6663[PRE]; Van Wyk & Abbott 12123[PRE]) sa,g E-B 1220-2200

**Osteospermum L.**

- *Osteospermum attenuatum* Hilliard & B.L.Burtt (Bester 726) g E 1440
- Osteospermum barberae* (Harv.) Norl. (Flanagan 849[PRE])
- Osteospermum calendulaceum* L. f. (Flanagan 865[PRE]; Pegler 2100[PRE])
- Osteospermum caulescens* Harv. (Bester 1774, 2473, 2969) g, v M 1320-1330
- Osteospermum grandidentatum* DC. (Flanagan 553[PRE]) 610
- Osteospermum herbaceum* L. f. (Flanagan 13[PRE]; Pegler 504[PRE])
- Osteospermum imbricatum* L. subsp. *nervatum* (DC.) Norl. (Bester 1085) g E 1380
- Osteospermum imbricatum* L. subsp. *nervatum* (DC.) Norl. var. *nervatum* (Pegler 919[PRE])
- Osteospermum jucundum* (E.Phillips) Norl. (Bester 575, 2717; Phillipson 669[PRE]; Story 491[PRE]) g, a E-B 1400-2450

**Othonna L.**

- Othonna* sp. (Hilliard & Burtt 6677[PRE])
- *Othonna burttii* B.Nord. (Hilliard & Burtt 18676[NU]) 2012
- Othonna natalensis* Sch.Bip. (Bester 712, 1680) g, sa E-B 1440-2010

**Pentzia Thunb.**

- Pentzia cooperi* Harv. (Bester 654, 2676; Hilliard 3955[NU], 3956[NU], 3959[NU]; Hilliard & Burtt 6603[NU], 12229[NU], 16382[NU]; Van Wyk & Abbott 12061[PRU], 12105[PRU]; Viljoen 694[PRE]) g B 2073-2561

**Phymaspermum Less. emmend Källersjö**

- Phymaspermum acerosum* (DC.) Källersjö (Bester 504, 2480) g, sa E-B 1300-1960
- Phymaspermum erubescens* (Hutch.) Källersjö (Acocks 12161[PRE]; Story 420[PRE]) 1035-1065
- Phymaspermum parviflorum* (DC.) Benth. & Hook. ex Jacks. (Viljoen 707[PRE]) 1890
- Phymaspermum woodii* (Thell.) Källersjö (Bester 2645) g E 1560

**Printzia Cass.**

- Printzia auriculata* Harv. (Bester 2811; Van Wyk & Abbott 12013[PRU]) g, f M 1260-1800
- Printzia cooperi* (Bester 2678) (Not listed on PSA)
- Printzia huttoni* Harv. (Bester 693) g E 1440
- *Printzia nutans* (H.Bol.) Leins (Hilliard & Burtt 6743[NU], 16516[NU], 16643[NU]) 2287-2439
- ▲ *Printzia pyrifolia* Less. (Bester 579, 2809) g, sa M-B 1260-2000

**Pseudognaphalium Kirp.**

- Pseudognaphalium luteo-album* (L.) Hilliard & B.L.Burtt (Bester 820, 1164, 1171) v, g M-E 1350-1440
- Pseudognaphalium oligandrum* (DC.) Hilliard & Burtt (Bester 2384) g E 1300
- Pseudognaphalium undulatum* (L.) Hilliard & B.L.Burtt (Bester 2411, 2736) g, sa E 1860

**Relhania L'Hérit emmend Bremer**

- *Relhania acerosa* (DC.) K.Bremer (Abbott 5676[PRU]; Bester 585, 856; Hilliard 5189[NU]; Hilliard & Burtt 6596[NU], 12208[NU], 16535[NU]; Nixon S.N.[NU]; Sim 2358[PRE]; Van Pletzen 5[PRE]; Werger 1816[PRE]; Van Wyk & Abbott 12037[PRU]) a, sa, g B 1900-2500
- ▲ *Relhania pungens* L'Her. subsp. *angustifolia* (DC.) K.Bremer (Bester 40; Bigalke



193[PRE]; Brusse 4621[PRE]; Roux 1719[PRE] g E 1356-1600

*Relhania pungens* L'Her. subsp. *pungens* (Bester 12; Galpin 6693) g M

**Schisostephium** Less.

*Schisostephium* sp. (Acocks 9531[PRE]) 765

*Schisostephium crataegifolium* (DC.) Fenzl ex Harv. (Bester 615, 2773) g E 1340-1420

**Schkuhria** Roth

*Schkuhria pinnata* (Lam.) Carb. (Bester 2857) g M 1360

**Senecio** L.

*Senecio* sp. (Bester 2124; Rookien & Smith PRE45116[PRE])

*Senecio* sp. aff. *Senecio hastatus* (Bester 2664, 2665, 2666) a B 2500

*Senecio achilleifolius* DC. (Bester 2673) a B 2600

*Senecio arabisifolius* O.Hoffm. (Bester 3435; Hilliard & Burtt 3757[NU], 6660[NU]) g M 1400

*Senecio asperulus* DC. (Bester 3092; Flanagan 2683[PRE]; Van Wyk & Abbott 12126[PRU]) a,g B 1295-2100

● *Senecio austromontanus* Hilliard (Hilliard & Burtt 12348[NU]) 2350

*Senecio barbatus* DC. (Bester 1788) g E 1530

*Senecio barbetonicus* Klatt. (Bester 2033) g,sa E-B 1530-2370

*Senecio baurii* Oliv. (Acocks 21920[PRE], 23880[PRE]; Bester 201, 202, 363, 581, 596, 597, 1130, 2995, 3069; Britten 4550[PRE]; Flanagan 2693[PRE]) g,sa,v M-E-B 1220-2000

*Senecio brevidentatus* M.D.Hend. (Bester 1782) v E 1440

*Senecio breviscapus* (DC.) Sch.Bip. (Acocks 20230[PRE]) v E 1440-2045

*Senecio bupleuroides* DC. (Bester 2508) g M 1320

*Senecio byrnensis* Hilliard (Bester 2758) sa E 1860

*Senecio cathcartensis* O.Hoffm. (Bester 636; Strever 769[PRE]; Zietsman & Zietsman 1416[PRE]) sa B 1700-2200

*Senecio caudatus* DC. (Bester 1111) v E 1410

● *Senecio caloneotes* Hilliard (Hilliard & Burtt 16426[NU]) 2561

*Senecio coronatus* (Thunb.) Harv. (Bester 1397, 1490, 3042) g,v M-E 1200-1410

● *Senecio cryptolanatus* Killick (Galpin 6723; Hilliard & Burtt 6601[NU], 16408[NU]) 2530-2744

*Senecio deltoideus* Less. (Bester 2680) g E 1400

● *Senecio dissimulans* Hilliard (Hilliard 5214[E]) 2590

*Senecio erubescens* Aiton var. *crepidifolius* DC. (= *Senecio erubescens* Aiton var. *erubescens*) (Bester 2982) v B 1330

*Senecio erubescens* Aiton var. *dichotomus* DC. (= *Senecio erubescens* Aiton var. *erubescens*) (Bester 2922) g M 1260

*Senecio erubescens* Aiton var. *erubescens* (Flanagan 2684[PRE]; Royffe TM25728[PRE]) g M 1260

*Senecio glaberrimus* DC. (Bester 1766; Galpin 7304[PRE]) g E 1340-1980

*Senecio gregatus* Hilliard (Bester 505, 2725; Hilliard 3900[E]; Hilliard & Burtt 16637[E]) g E 1300-2135

*Senecio harveianus* MacOwan (Acocks 21913[PRE]; Bester 2512, 2808; Britten 4539[PRE]) g M 1260-1585

*Senecio hastatus* L. (Flanagan 2634[PRE]; Hilliard & Burtt 16602[PRE]) a B 915-

2500

- Senecio helminthioides* (Sch.Bip.) Hilliard (Bester 3271) g E 1420  
*Senecio heliopsis* Hilliard & Burt (Bester 3271) g E 1420  
*Senecio hirsutilobus* Hilliard (Flanagan 2733[PRE]) 1525  
*Senecio hirsutilobus* Hilliard cf. (Bester 2124)  
*Senecio inaequidens* DC. (Steyn 9[PRE]; Stirton 6302[PRE])  
 ● *Senecio ingeliensis* Hilliard (Hilliard & Burt 6701[NU], 12286[PRE]) 2103-2560  
*Senecio inornatus* DC. (Zietsman & Zietsman 1411[PRE]) 1700  
*Senecio isatideus* DC. (Bester 3138; Flanagan 2827[PRE]) g E 1620  
*Senecio latifolius* DC. (Zietsman & Zietsman 1414[PRE]) 1700  
*Senecio macowanii* Hilliard (Hilliard & Burt 6592[PRE]) 2743  
*Senecio macrocephalus* DC. (Bester 718, 756, 897, 1387, 1440, 1885; Strever 424[PRE]; Van Wyk & Abbott 12134[PRE]) g,f E 1410-2600  
 ● *Senecio macrospermus* DC. (Bester 3219; Hilliard & Burt 6665[NU], 12334[NU], 16445[NU]) f E 1420-2744  
*Senecio napifolius* MacOwan (Bester 1813) v E 1410  
*Senecio othonniflorus* DC. (Bester 1833, 1926) a,g M-B 1320-2520  
*Senecio oxydontus* DC. (Bester 551, 1729) f,g E-M 1360-1400  
*Senecio oxyriifolius* DC. (Bester 328, 1444, 3137) g,f E-C 1500-1680  
*Senecio panduriformis* Hilliard (Bayliss 1329[PRE]) 1525  
*Senecio polyodon* (DC.) var. *subglaber* (Kuntze) Hilliard & B.L.Burt (Bester 1191, 3411; Van Wyk & Abbott 12112[PRU]) g,r M-B 1400-2100  
*Senecio polyodon* (DC.) Kuntze var. *polyodon* (Bester 819) v M 1350  
 ● *Senecio praeteritus* Killick (Hilliard & Burt 7372[NU]) 1768  
 ▲ *Senecio pterophorus* DC. (Bester 533, 589; Codd 10683[PRE]) g E 765-1420  
 ● *Senecio qathlambanus* Hilliard (Hilliard & Burt 16455[NU]) 2927  
*Senecio quinquelobus* (Thunb.) DC. cf. (Bester 767) f E 1410  
*Senecio retrorsus* DC. (Flanagan 248[PRE]; Killick & Marais 2047[PRE]; Pegler 1174[PRE])  
*Senecio rhomboideus* Harv. (Bester 1595, 3212) g,sa C 1680-1710  
*Senecio scitulus* Hutch. & Burt Davy (Bester 1054, 1218, 2710) g M-E 1340-1440  
 ● *Senecio seminiveus* J.M.Wood & M.S.Evans (Brusse 4602[PRE]; Hilliard & Burt 3776[NU]; Strever 734[PRE]) 2439-2622  
*Senecio serratuloides* DC. var. *serratuloides* (Sim 2761[PRE])  
*Senecio* sp. near *S.tugelensis* Wood & Evans (Hilliard & Burt 6714[NU])  
*Senecio* sp. nov. (Bester 1905) a B 1900  
*Senecio* sp. B allied to *S. hastatus* L. (Bester 2666) a B 2500  
*Senecio speciosus* Willd. (Bester 583, 2663; Hilliard & Burt 6711[PRE]) sa,a B 2000-2529  
*Senecio subcoriaceum* Schltr. (Bester 2907, 2994) a,v E-B 1320-2100  
 ● *Senecio submontanus* Hilliard & B.L.Burt (Hilliard & Burt 12265[NU], 12345[NU]) 2104-2362  
*Senecio tenacetopsis* Hilliard (Bester 2332; Hilliard & Burt 6654[NU], 6674[NU], 6744[NU], 12130[NU], 12350[NU]) g B 1829-2363

#### Sonchus L.

- Sonchus dregeanus* DC. (Bester 1036) g E 1470  
*Sonchus gigas* Boulos ex Humbert (Flanagan 2814[PRE]) 915

**Stoebe L.**

*Stoebe vulgaris* Levyns (Bester 2513, 2644)

**Taraxacum Wiggers**

*Taraxacum bessarabicum* (Hornem.) Hand.-Mazz. (Gill s.n.)

*Taraxacum brachyglossum* (Dahlst.) Dahlst. (Strever 391[PRE]) 2600

*Taraxacum officinale* Weber *sensu lato* cf. (Bester 2567)

**Tolpis Adans.**

*Tolpis capensis* (L.) Sch.Bip. (Bester 925, 1055, 1223, 2729, 2975) g,v M-E-1330-1440

**Troglophyton Hilliard & Burt**

*Troglophyton capillaceum* (Thunb.) Hilliard & B.L.Burt subsp. *diffusum* (DC.)

Hilliard (Bester 2648) g E 1560

**Ursinia Gaertn.**

● *Ursinia montana* DC. subsp. *montana* (Bester 88, 1390; Flanagan 2632[PRE]; Hilliard 5180[NU]; Hilliard & Burt 968, 3743[NU], 6653[NU], 6767[NU], 12166[NU], 12251[NU], 12316[NU], 13101[PRE], 13139[NU], ) g,a E-B 1220-2230

*Ursinia nana* DC. var. *nana* (Bester 968) g M 1320

*Ursinia tenuiloba* DC. (Abbott 5682[PRE]; Bester 1064, 1072, 1260, 2858) g M-E 1470-2100

**Vernonia Schreb.**

*Vernonia capensis* (Houtt.) Druce (Bester 611) g E 1420

*Vernonia dregeana* Sch.Bip. (Bester 152, 1834, 1853, 2246, 3448) v,g M-E 1250-1360

*Vernonia galpinii* Klatt (Bester 1725) g M 1360

*Vernonia hirsuta* (DC.) Sch.Bip. ex Walp. (Bester 804, 1854, 3130) v,g E 1360-1620

*Vernonia natalensis* Sch.Bip. ex Walp. (Bester 47, 803, 1116, 1284, 1659, 1796, 3041) g D-E 1380-1600

*Vernonia oligocephala* (DC.) Sch.Bip. ex Walp. (Bester 2939) g M 1400

**ATHYRIACEAE**

**Cystopteris Bernh.**

*Cystopteris fragilis* (L.) Bernh. (Flanagan 2715[PRE]; McLoughlin 122[PRE])

**AYTONIACEAE**

**Asterella Beauv.**

*Asterella muscicola* (Steph.) S.W.Arnell (Anderson 1248[PRE])

**Plagiochasma Lehm. & Lindenb.**

*Plagiochasma rupestre* (G.Forst.) Steph. (Glen 1722[PRE])

**BALASAMINACEAE**

**Impatiens L.**

*Impatiens hochstetteri* Warb. subsp. *hochstetteri* (Bester 162) f E 1550

**BARTRAMIACEAE**

**Bartramia Hedw.**

*Bartramia hampeana* C.Müll. (Hilliard & Burt 13148[PRE]; Russel 3791[PRE]) 2500

**Philonotis** Brid.

*Philonotis falcata* (Hook.) Mitt. (Hilliard & Burt 3772; Russel 3772[PRE], 3773[PRE], 3778[PRE], 3793[PRE], 3798[PRE], 3799[PRE], 3800[PRE], 3812[PRE], 3813[PRE], 3814[PRE], 3821[PRE]) 1850-2600

**BLECHNACEAE**

**Blechnum** L.

*Blechnum attenuatum* (SW.) Mett. var. *giganteum* (Kaulf.) Bonap. (McLoughlin TM1046C[PRE])

*Blechnum attenuatum* (SW.) Mett. var. *giganteum* (Kaulf.) Bonap. cf. (Bester 547) r E 1440

*Blechnum australe* L. var. *australe* (Bester 123, 2542, 2812; McLoughlin 102[PRE]) g M-E 1260-1410

*Blechnum* sp. cf. (Bester 511) f E 1250

*Blechnum punctulatum* SW. var. *krebsii* (Kunze) Sim (McLoughlin 109[PRE])

**BORAGINACEAE**

**Anchusa** L.

*Anchusa capensis* Thunb. (Flanagan 2680[PRE]) 1280

**Cynoglossum** L.

*Cynoglossum* sp. (Phillipson 705[PRE]) 2550

● *Cynoglossum alticola* Hilliard & B.L.Burt (Hilliard & Burt 16468[E]) 2624

*Cynoglossum austroafricanum* Hilliard & B.L.Burt (Strever 917[PRE]; Hilliard & Burt 18746[NU]; Van Wyk & Abbott 12070[PRE]) 1250-1900

*Cynoglossum hispidum* Thunb. (Bester 1535, 1971) a,g E-B 1400-1980

*Cynoglossum spelaeum* Hilliard & B.L.Burt (Hilliard & Burt 12327[NU]) 2286

**Echium** L.

*Echium plantagineum* L. (Bester 710; Strever 721[PRE]) g E 1400-2439

*Echium vulgare* L. (Ratray 3163; Edwards, Chadman & Norris 3163[PRE]; Van Wyk & Abbott 12059[PRE])

**Heliotropium** L.

*Heliotropium* sp. (Bester 77; Dove 85) E 1330-2000

**Lithospermum** L.

*Lithospermum cinereum* DC. (Flanagan 2682[PRE]; Pegler 1791[PRE]) 1295

*Lithospermum papillosum* Thunb. (Bester 1119, 1363, 1473, 1627, 2474; Brusse 5591[PRE]; Phillipson 655[PRE]; Stewart 1895[E]) sa,g,v M-E-B 1310-2593

**Myosotis** L.

*Myosotis sylvatica* Hoffm. (Bester 509, 1717, 2024, 2667, 2747; Van Wyk & Abbott 12135[PRE]; Zietsman & Zietsman 1413[PRE]) f,a,sa E-B 1250-2500

**BRASSICACEAE**

**Aplanodes** Marais

*Aplanodes sisymbrioides* (Schltr.) Marais (Ratray 7284[PRE]) 2440

**Cardamine** L.

*Cardamine africana* L. (Bester 1460, 3116) f E-C 1680-1720

**Heliophila** L.

*Heliophila* sp. (Dove 85[PRE])

- *Heliophila alpina* Marais (Galpin 6573; Guillarmod 2358; Hilliard & Burt 14677[NU]; Strever 430[PRE]) 2656-2670
- Heliophila brassicifolia* Eckl. & Zeyh. cf. (Bester 3542) sa B 1900
- Heliophila rigidiuscula* Sond. (Bester 354, 870, 939, 1142, 1420, 2113, 3218; Strever 838[PRE]) g M-E 1360-1710
- Heliophila sauvissima* Burch. ex DC. (Hilliard & Burt 16633[NU]) 2073
- Heliophila subulata* Burch. ex DC. (Pegler 445B[PRE])

**Lepidium L.**

- Lepidium* sp. (Strever 1477[PRE]) 2500
- *Lepidium basuticum* Marais (Galpin 6574; Hilliard & Burt 16370[NU]) 2561

**Matthiola R.Br.**

- Matthiola torulosa* (Thunb.) DC. (Hilliard & Burt 14567[PRE])

**Rorippa Scop.**

- Rorippa nudiuscula* Thell. (Bester 3424) sa B 2100

**BRYACEAE**

**Anomobryum Schimp.**

- Anomobryum filiforme* (Dicks.) Solms (Glen & Reid 1724[PRE]) 2000

**Brachymenium Schwaegr.**

- Brachymenium pulchrum* Hook. (Pegler 1704[PRE])

**Bryum Hedw.**

- Bryum alpinum* Huds. ex With. (Russel 3789[PRE], 3790[PRE], 3795[PRE], 3796[PRE], 3802[PRE], 3803[PRE], 3804[PRE]) 2500-2600
- Bryum argenteum* Hedw. (Ellis 3104[PRE], 3106[PRE]; Russel 3817[PRE]) 2600
- Bryum caespiticium* Hedw. (Russel 3818) 2600
- Bryum pseudotriquetrum* (Hedw.) Gaertn., Meyer & Scherb. (Russel 3801[PRE], 3808[PRE], 3822[PRE]) 2600

**CAMPANULACEAE**

**Craterocapsa Hilliard & Burt**

- Craterocapsa congesta* Hilliard & B.L.Burt (Bester 1944, 3458; Brusse 5880[PRE]; Galpin 6762; Phillipson 652[PRE]) se, a E—B 1250-2520
- Craterocapsa tarsodes* Hilliard & B.L.Burt (Hutchings & Hutchings 1468[PRE])

**Lightfootia L'Hérit.**

- Lightfootia juncea* (H.Buek) Sond. (Sim 20381[PRE]) 915

**Wahlenbergia Schrad. ex Roth**

- Wahlenbergia apressifolia* Hilliard & Burt (Bester 2293) a B 2070
- *Wahlenbergia capillacea* (L. f.) A.DC. subsp. *capillacea* (Abbott 5646[PRE]; Van Wyk & Abbott 12029[PRU], 12155[PRE]) g 1500-1800
- Wahlenbergia congestifolia* Brehmer cf. (Bester 1132) g E 1500
- Wahlenbergia cuspidata* Brehmer (Bester 311, 355, 2213, 2433; Hilliard & Burt 16694[PRE]; Strever 806[PRE]; Van Wyk & Abbott 12161[PRE]) g E-B 1440-2195
- Wahlenbergia denudata* A.DC. (Bester 1058, 1840) g, v E 1360-1620
- Wahlenbergia denudata* A.DC. var. *denudata* (Bester 1248, 1696) g, a E-B 1620-2100
- *Wahlenbergia fasciculata* Brehmer (Bester 183, 327, 356, 357, 402, 428, 443; Bigalke B218[PRE]; Strever 836[PRE]) g, sa M-E-C 1300-2316
- Wahlenbergia huttonii* (Sond.) Thulin (Acocks 20428[PRE]; Bester 508, 2057, 2422,

2618) g E 1250-1586

*Wahlenbergia krebsii* Cham. subsp. *krebsii* (Abbott 5643[PRE]; Bester 411, 429, 1393, 2742, 3531; Rattray 7307[PRE]) g,sa M-B 1300-2285

● *Wahlenbergia lobulata* Brehmer (Hilliard & Burt 16418[NU]; Van Wyk & Abbott 12073[PRU]) g 2683

*Wahlenbergia paucidentata* Shinz (Bester 413, 427, 1614) g M-E 1300-1590

*Wahlenbergia paucidentata* Shinz cf. (Bester 2741) sa E 1860

● *Wahlenbergia polytrichifolia* Schltr. subsp. *dracomontana* Hilliard & B.L. Burt (Bester 401, 3575) g M-E 1300-1340

*Wahlenbergia undulata* (L. f.) A.DC. (Abbott 5697[PRU], 5698[PRU]; Bester 74, 235; Bigalke 210[PRE], B211[PRE], B229[PRE]; Rouke 1737[PRE]; Van Wyk & Abbott 12162[PRU]; Zietsman & Zietsman 1426[PRE], 1444[PRE]) g M-E 1320-2316

## CAPPARACEAE

### *Capparis* L.

*Capparis* sp. (Bester 2790)

*Capparis sepiaria* L. var. *citrifolia* (Lam.) Toelken (Bester 3182) g T 1020

## CARYOPHYLLACEAE

### *Cerastium* L.

*Cerastium* sp. (Bester 649)

*Cerastium arabis* E.Mey. ex Fenzl (Bester 582, 1454, 1572, 1695, 1702, 2707; Story 478[PRE]) g,sa,a E-C-B 1320-2100

*Cerastium capense* Sond. (Van Wyk & Abbott 12173[PRE])

### *Dianthus* L.

*Dianthus* sp. (Bester 1669)

*Dianthus basuticus* Burt Davy subsp. *basuticus* var. *basuticus* (Bester 3386, 3387, 3482; Galpin 6582[PRE]) sa B 2500

*Dianthus basuticus* Burt Davy subsp. *basuticus* var. *grandiflorus* Hooper (Bester 1014, 1143, 1282, 1309, 1665, 1763, 1925, 2701) g,a E-D-B 1340-2520

*Dianthus crenatus* Thunb. (Bester 567, 3413, 3430) sa C-B 1980-2100

*Dianthus lainsburgensis* Hooper (Zietsman & Zietsman 1441[PRE]) 2161

*Dianthus micropetalus* Ser. (Bester 3428) sa B 2100

*Dianthus mooiensis* F.N. Williams subsp. *mooiensis* var. *dentatus* Burt Davy (Phillipson 603[PRE]) 2000

### *Silene* L.

*Silene* sp. (Gibbs Russell 4506[PRE]) 1973

*Silene bellidioides* Sond. (Bester 126, 308, 1538, 1713, 1868, 1869, 2712; De Vries 59[PRE]; Flanagan 880[PRE]; Van Wyk & Abbott 12172[PRU]) g,sa,v M-E-B-610-2060

*Silene burchellii* Oth var. *angustifolia* Sond. (Bester 1283, 1523, 1550, 1762, 1793) g D-E-C 1340-1600

*Silene burchellii* Oth var. *latifolia* Sond. (Bester 1802) g E 1530

*Silene burchellii* Oth var. *latifolia* Sond. cf. (Bester 1016) g E 1530

*Silene pilosellifolia* Cham. & Schldl. (Bester 3369, 3515) g B 1840

*Silene undulata* Aiton (Bester 285, 477, 2748; Brusse 5593[PRE]; Strever 735[PRE])



g,sa M-B 1280-2591

**Spergula L.**

*Spergula arvensis* L. (Bester 2992) v M 1220

**Stellaria L.**

*Stellaria media* (L.) Vill. (Bester 1697) a B 2100

**CELASTRACEAE**

**Cassine L.**

*Cassine aethiopica* Thunb. (Bester 630, 3166) g M-E 1140-1420

*Cassine barbata* L. (Adamson 907[PRE])

*Cassine crocea* (Thunb.) Kuntze (Marais 503[PRE]; Van Zinderen Bakker 66[PRE])  
1130

*Cassine peragua* L. (Acocks 12171[PRE]) 1370

*Cassine tetragona* (L. f.) Loes. (Bester 493, 730, 739, 778, 962, 2587, 2829, 2860;  
Van Wyk & Abbott 12021[PRU]) g,f M-E 1180-1800

**Maytenus Molina**

*Maytenus acuminata* (L. f.) Loes. (Bester 763, 766) f E 1410

*Maytenus acuminata* (L. f.) Loes. var. *acuminata* (Bester 2582; Van Wyk & Abbott  
12039[PRU]) f 1800

*Maytenus ciliaris* (Bester 544, 779) g,f E 1440-1450 (Not listed on PSA)

*Maytenus heterophylla* (Eckl. & Zeyh.) N.Robson (Abbott 5717[PRE], 5722[PRE];  
Bester 464, 530, 557, 2588, 2592, 2768, 2842, 3110, 3115, 3162, 3172, 3179, 3354,  
3356, 3363; Dove 80[PRE]; Van Wyk & Abbott 12015[PRU]) f,g T-M-E 1020-1800

*Maytenus lucida* (L.) Loes. (Adamson 901[PRE])

*Maytenus nemorosa* (Eckl. & Zeyh.) Marais (Bester 606, 629, 2800, 3362; Marais  
505[PRE]) g,r T-M-E 980-1420

*Maytenus undata* (Thunb.) Blakelock. (Abbott 5714[PRE]; Bester 489, 545, 625,  
2797, 2841, 3289; Galpin 6597[PRE]; Van Wyk & Abbott 12183[PRU]) g,s,f,rf T-E  
1020-1675

**Pterocelastrus Meisn.**

*Pterocelastrus tricuspidatus* (Lam.) Sond. (Marais 507[PRE]; Royffe TM25724[PRE])

**CHENOPODIACEAE**

**Chenopodium L.**

*Chenopodium* sp. (Bester 2495)

*Chenopodium ambrosioides* L. (Bester 2635) g E 1380

**CLUSIACEAE**

**Hypericum L.**

*Hypericum aethiopicum* Thunb. (Bester 3307) g M 1220

*Hypericum aethiopicum* Thunb. subsp. *aethiopicum* (Bester 3506) g B 1840

*Hypericum aethiopicum* Thunb. subsp. *sonderi* (Bredell) N.Robson (Bester 1434,  
1633, 2080, 2722) g,sa M-E 1300-1860

*Hypericum lalandii* Choisy (Bester 134, 1656, 3368) g M-E-B 1320-1840

**COLCHICACEAE**

### Androcymbium Willd.

*Androcymbium longipes* Baker (Bester 3527; Rattray 7330[PRE]) a B 2400

*Androcymbium melanthioides* Willd. var. *striatum* (Hochst.) Baker (Bester 3385; Bigalke 246[PRE]) a, g B 1860-2316

*Androcymbium melanthioides* Willd. var. *subulatum* Baker (Bester 1966) a B 1860

### Wurmbea Thunb.

*Wurmbea* sp. (Bester 2185)

● *Wurmbea angustifolia* B. Nord. (Acocks 21915[PRE]; Bester 93, 1894, 2253) g, a-E-B 1340-1860

● *Wurmbea elatior* B. Nord. (Bester 2214, 2353, 2476; Bigalke B225[PRE]; Hilliard & Burtt 6606[PRE], 16916[NU]; Nordenstam 2036[PRE]; Strever 737[PRE], 747; Van Wyk & Abbott 12114[PRE]; Zietsman & Zietsman 1445[PRE]) gs, r, m E-B 2475-2607

*Wurmbea krausii* Baker (Bester 1041, 1071, 2998) g, v M-E 1320-1500

## COMMELINACEAE

### Commelina L.

*Commelina africana* L. var. *africana* (Bester 97, 371) g E 1340-1440

*Commelina africana* L. var. *krebsiana* (Kunth.) C.B. Cl. (Bester 2492) g M 1320

*Commelina africana* L. var. *lancispatha* B. Clarke (Bester 1059) g E 1440

### Cyanotis D. Don.

*Cyanotis speciosa* (L. f.) Hassk. (Bester 95, 1131, 1416; Killick & Marais 2058[PRE]) g, v M-E 915-1500

## CONVOLVULACEAE

### Convolvulus L.

*Convolvulus farinosus* L. (Bester 2451) g E 1420

*Convolvulus natalensis* Bernh. apud Krauss var. *transvaalensis* (Schltr.) A. Meeuse (Bester 1479, 1969) g, a E-B 1380-1860

### Dichondra Forts.

*Dichondra repens* J.R. & G. Frost (Botha & Coetzee 1618[PRE])

### Ipomoea L.

*Ipomoea crassipes* Hook. (Bester 1082, 1094, 2905, 3449) g, v M-E 1250-1400

*Ipomoea pellita* Hallier f. (Bester 266) g M 1400

*Ipomoea simplex* Thunb. (Bester 683, 1502, 3439) g, v M-E 1300-1480

### Turbina Rafin.

*Turbina oblonga* (E. Mey. ex Choisy) A. Meeuse (Bester 187) g E 1340

## CORNACEAE

### Curtisia Ait.

*Curtisia dentata* (Burm. f.) C.A. Sm. (Bayliss 1328[PRE]) 1525

## CRASSULACEAE

### Cotyledon L.

*Cotyledon orbiculata* L. var. *oblonga* (Haw.) DC. (Acocks 13816[PRE]; Bester 1612, 1984; Plowes 2409[PRE]) g, a E-B 1214-2280



## Crassula L.

- Crassula* sp. (Acocks 21914[PRE]; Bester 412, 3313; Rattray 7293[PRE], 7298[PRE]; Van Wyk & Abbott 12006[PRE], 12116[PRE])
- Crassula acinaciformis* Schinz (Abbott 5664[PRE]) 1500
- Crassula alba* Forsk. var. *alba* (Bester 2375) sa B 2260
- Crassula atropurpurea* (Haw.) D.Dietr. var. *atropurpurea* (Haw.) Dinter (Bester 1639, 3025) g M-C 1300-1880
- Crassula campestris* (Eckl. & Zeyh.) Endl. ex Walp. (Abbott 5642[PRE]) 1500
- Crassula capitella* Thunb. subsp. *capitella* (Bester 3159, 3195) g,r T 1020
- Crassula crenulata* Thunb. (Bester 224, 289, 3241, 3273, 3320) g M-E-A 1200-1420
- Crassula dependens* Bolus (Wisura 2693[PRE])
- *Crassula gemmifera* Friedrich (Glen 1730[PRE]; Hilliard & Burt 16511[NU])-2200-2622
- Crassula lanceolata* (Eckl. & Zeyh.) Endl. ex Walp. subsp. *lanceolata* (Bester 491, 2465, 2578; Galpin 6618[PRE]; Van Wyk & Abbott 12012[PRE]) g,f E 1420-1500
- Crassula lanceolata* (Eckl. & Zeyh.) Endl. ex Walp. subsp. *transvaalensis* (Kuntze) Toelken (Schlechter 6380[PRE]) 1050
- Crassula multiclava* Lem. subsp. *multiclava* (Bester 3287) s T 1020
- *Crassula natalensis* Schönland. (Bester 2363, 2364; Phillipson 718[PRE]; Rattray 7297A[PRE]) sa B 2260-2560
- Crassula natans* Thunb. (Nicholas 1543[CFM])
- Crassula nudicaulis* L. var. *nudicaulis* (Galpin 6617[PRE]) 2355
- Crassula obovata* Haw. var. *obovata* (Bester 9, 99, 2386, 2781; Galpin 2320[PRE]; Van Wyk & Abbott 12007[PRE]) g E-M 1340-1900
- Crassula orbicularis* L. (Van Jaarsveld 7920[PRE])
- Crassula orbicularis* L. cf. (Bester 2917) sa B 1840
- Crassula ovata* (Mill.) Druce (Bester 623) g E 1420
- Crassula pellucida* L. subsp. *brachypetala* (Drège ex Harv.) Toelken (Bester 96, 106; Flanagan 2655[PRE]; Marais 864[PRE]; Pegler 1529[PRE]; Rattray 7296[PRE]; Strever 887[PRE]) g M-E 1256-2440
- Crassula peploides* Harv. (Bester 2377; Glen 1725[PRE]; Van Wyk & Abbott 12095[PRE]) sa B 1900-2260
- Crassula sarcocaulis* Eckl. & Zeyh. subsp. *rupicola* Toelken (Abbott 5685[PRU]; Bigalke 221[PRE], 223[PRE]; Brusse 4607[PRE]; Rattray 7298[PRE]; Strever 861[PRE]) g 1370-2560
- Crassula sediflora* (Eckl. & Zeyh.) Endl. & Walp. var. *sediflora* (Bester 98) g E 1340
- Crassula setulosa* Harv. var. *longiciliata* Toelken (Bester 1950) a B 2520
- Crassula setulosa* Harv. var. *rubra* (N.E.Br.) G.D.Rowley (Bester 105; Zietsman & Zietsman 1464[PRE]) g M 1340
- Crassula setulosa* Harv. var. *setulosa* (Bester 2279; Galpin 6624[PRE]; Rattray 7297B[PRE]) a B 2160-2560
- Crassula southii* Schönland var. *sphaerocephala* Toelken (Flanagan 2770[PRE])
- ▲ *Crassula streyi* Toelken (Bester 2788) r T 980
- *Crassula umbraticola* N.E.Br. (Hilliard & Burt 3732[NU]) 1372
- Crassula vaginata* Eckl. & Zeyh. subsp. *vaginata* (Bester 36, 231, 2600, 2716, 3441; Rattray 7294[PRE]) g,v E 1250-2315

*Crassula vaillantii* (Willd.) Roth (Ratray 7295[PRE]; Van Wyk & Abbott 12106[PRU]) g 1980

**Kalanchoe Adans.**

*Kalanchoe* sp. (S.N. 6666[PRE])

*Kalanchoe rotundifolia* (Haw.) Haw. (Bester 457, 622, 2844) g M-E 1200-1420

*Kalanchoe thyrsiflora* Harv. (Story 4118[PRE]) 1062

**CUCURBITACEAE**

**Cucumis L.**

*Cucumis anguria* L. (Bester 2497) g M 1320

*Cucumis hirsutus* Sond. (Bester 1752) g M 1220

*Cucumis zeyheri* Sond. (Bester 247) g M 1400

**Zehneria Endl.**

*Zehneria* sp. (Pegler 1689[PRE])

*Zehneria scabra* (L.f.) Sond. subsp. *scabra* (Bayliss 1335[PRE]; Bester 3505; Pegler 1688[PRE]) g B 1840

**CYATHEACEAE**

**Cyathea J.E.Sm.**

*Cyathea dregei* Kunze (Abbott 5651[PRE]; Bester 1859) v 1360-1500

**CYPERACEAE**

**Abildgaardia Vahl**

*Abildgaardia ovata* (Burm.f.) Kral (Bester 2510) g M 1320

**Ascolepis Nees ex Steud.**

*Ascolepis capensis* (Kunth) Ridl. (Bester 995, 1486) v,g M-E 1260-1380

**Bulbostylis Kunth**

*Bulbostylis densa* (Wall.) Hand.-Mazz. subsp. *afromontana* (Bester 2255, 2317)(Not listed on PSA)

*Bulbostylis humilis* (Kunth) C.B.Clarke (Acocks 20409[PRE]; Bester 2469; Marais 874[PRE]; Strever 851[PRE]) g E 1360-1670

*Bulbostylis oritrephes* (Ridl.) C.B.Clarke (Bester 2886, 2888) g 1230

*Bulbostylis oritrephes* (Ridl.) C.B.Clarke subsp. *oritrephe*s (Flanagan 2690[PRE]; Killick & Marais 2060[PRE], 2071[PRE])

*Bulbostylis schoenoides* (Kunth) C.B.Clarke (Bester 881, 882, 972, 1305, 1554, 2887; Hilliard & Burt 14552[PRE]) g,v E-M-C 1290-1600

*Bulbostylis scleropus* C.B.Clarke (Bester 2887; Hilliard & Burt 14551[PRE]; Killick & Marais 2071A[PRE], 2078[PRE]) g 1220-1230

**Carex L.**

*Carex acutiformis* Ehrh. (Bester 3094) a B 2100

*Carex austro-africana* (Kük.) Raymond (Bester 1308) v M 1330

*Carex cognata* Kunth var. *cognata* (Reid 1210[PRE])

*Carex cognata* Kunth var. *drakensbergensis* C.B.Clarke (Phillipson 701[PRE])

*Carex glomerabilis* Krecz. (Flanagan 2795[PRE]) 910

*Carex killickii* Nelmes (Phillipson 667[PRE]) 2450

*Carex schlechteri* Nelmes (Phillipson 690[PRE]) 2650

*Carex subinflata* Nelmes (Bester 3507; Galpin 6882[PRE]; Phillipson 704[PRE]),

- 711[PRE]; Reid 1212[PRE] g B 1840-2635  
*Carex zuluensis* C.B. Clarke (Bester 177, 1544, 1632; Flanagan 2748[PRE]) f, g M-E 1300-1550
- Carpha** Banks & Soland.  
 ● *Carpha filifolia* Reid & Arnold (Hilliard & Burtt 16677[NU]) 2195
- Cyperus** L.  
*Cyperus* sp. (Bester 84, 1311)  
*Cyperus denudatus* L.f. (Britten 4580)  
*Cyperus denudatus* L.f. var. *denudatus* (Bester 2526) g M 1340  
*Cyperus esculentus* L. (Bester 78) g E 1330  
*Cyperus haematocephalus* Boeck. ex C.B. Clarke (Flanagan 2723) 1220  
*Cyperus margaritaceus* Vahl (Acocks 21931) 1370  
*Cyperus marginatus* Thunb. (Acocks 21931[PRE]; Bester 3304) r T 1020-1370  
*Cyperus obtusiflorus* Vahl. (Bester 1300)  
*Cyperus obtusiflorus* Vahl var. *obtusiflorus* (Baur 1170[PRE]; Bester 198, 1300) g, v M-E 1330-1340  
*Cyperus obtusiflorus* Vahl var. *sphaerocephalus* (Vahl) Kük. (Bester 1077; Royffe TM25712[PRE], Wederman & Oberdick 1142[PRE]) g, r E 1340-1620  
*Cyperus pulcher* Thunb. (Bester 2631, 2639) g E 1380  
*Cyperus rupestris* Kunth var. *parvinux* (C.B. Clarke) Kük. (Bester 119; Marais 873[PRE]) g M 1340  
*Cyperus rupestris* Kunth var. *rupestris* (Bester 1487) g E 1380  
*Cyperus schlechteri* C.B. Clarke (Bester 1917) v E 1380  
*Cyperus semitrifidus* Schrad. var. *semitrifidus* (Bester 1487, 1640, 1823) g M-E-1300-1380  
*Cyperus usitatus* Burch. var. *usitatis* (Bester 2657) g E 1560
- Eleocharis** R.Br.  
*Eleocharis* sp. (Bester 2506, 3006, 3221)  
*Eleocharis palustris* R.Br. (Acocks 20229[PRE]) v E 1300-2045
- Epischoenus** C.B. Cl.  
*Epischoenus adnatus* Levyns (Hilliard & Burtt 13125[PRE]) 2103
- Ficinia** Schrad.  
*Ficinia* sp. (Acocks 12887[PRE]; Bester 1555, 3607; Hilliard & Burtt 14550[PRE])  
*Ficinia dasystachys* C.B. Clarke (Hilliard & Burtt 16613[E]) 2502  
 ● *Ficinia filiculmea* B.L. Burtt (Hilliard & Burtt 16613[NU]) 2500  
*Ficinia stolonifera* Boeck. (Acocks 20225[PRE]; Bester 918, 1078) g E-C 1500-2045
- Fimbristylis**  
*Fimbristylis complanata* (Retz.) Link (Bester 2509, 3148) g, v M 1200-1320  
*Fimbristylis dichotoma* (L.) Vahl (Acocks 21985[PRE]; Bester 418) g M 1300-1435
- Fuirena** Rottb.  
*Fuirena* sp. (Bester 3226)  
*Fuirena pubescens* (Poir.) Kunth (Bester 2511, 3004) g, v M 1290-1320
- Isolepis** R.Br.  
 ● *Isolepis angelica* B.L. Burtt (Acocks 20188[PRE]; Hilliard & Burtt 14688[E])-2195-2563  
*Isolepis cernua* (Vahl) Roem. & Schult. (Bester 883) g E 1380  
*Isolepis costata* (Boeck.) A. Rich. var. *macra* (Boeck.) B.L. Burtt (Bester 910, 3005)

g, v E 1300-1470

*Isolepis fluitans* (L.) R.Br. (Acocks 20190[PRE]; Strever 880[PRE]) 1200

*Isolepis natans* (Thunb.) A.Dietr. (Strever 876[PRE]) 1200

**Kyllinga** Rottb.

*Kyllinga alata* Nees (Bester 1488, 2533) g M-E 1340-1380

*Kyllinga pulchella* Kunth (Bester 2503) g M 1320

**Lipocarpa** R.Br.

*Lipocarpa nana* (A.Rich.) Cherm. (Bester 2502) g M 1320

*Lipocarpa rehmannii* (Ridl.) Goetgh. (Bester 2519) g M 1340

**Mariscus** Gaertn.

*Mariscus* sp. (Galpin 6872[PRE])

*Mariscus congestus* (Vahl) C.B.Clark (Bester 2491; Britten 4592[PRE]) g M 1320

*Mariscus squarrosus* (L.) C.B.Clark cf. (Bester 2500) g M 1320

*Mariscus thunbergii* (Vahl) Schrad. (Bester 1252) g E 1620

**Pycreus** Beauv.

*Pycreus cooperi* C.B.Clark (Bester 3147) g, v E 1320-1500

*Pycreus flavescens* (L.) Rchb. (Bester 2504) g M 1320

*Pycreus macranthus* (Boeck.) C.B.Clark (Bester 1453, 2523, 2524) g M-E 1340-1500

*Pycreus rehmannianus* C.B.Clark (Acocks 20421[PRE]) 1340

*Pycreus unioloides* (R.Br.) Urb. (Acocks 21935[PRE]) 1370

**Rhynchospora** Vahl

*Rhynchospora brownii* Roem. & Schult. (Bester 1838, 2244; Flanagan 2778[PRE]) g M 1220-1320

**Schoenoplectus** Palla

*Schoenoplectus brachyceras* (A.Rich.) Lye (Bester 2167) v M 1300

*Schoenoplectus muriculatus* (Kük.) Browning (Bester 1836, 2505) g M 1320

*Schoenoplectus paludicola* (Kunth) Palla ex J.Raynal (Bester 2633, 2641) g E 1380

**Schoenoxiphium** Nees

*Schoenoxiphium* sp. (Bester 1329)

*Schoenoxiphium ecklonii* Nees (Acocks 12899[PRE]) g E 1340-1435

● *Schoenoxiphium bracteosum* Kukkonen (Bester 1329; Hilliard & Burt 12210[NU], 14590[NU]) 1890-2283

*Schoenoxiphium filiforme* Kük. (Bester 2754, 3551; Phillipson 666[PRE]) sa E 1860

*Schoenoxiphium lehmannii* (Nees) Steud. (Galpin 6880[PRE]) 1675

*Schoenoxiphium rufrum* Nees (Bester 2754) sa E 1860

*Schoenoxiphium sparteum* (Wahlenb.) C.B.Clark (Acocks 21882[PRE]; Bester 1329; Galpin 6879[PRE]; Killick & Marais 2053[PRE]) 915-2940

● *Schoenoxiphium strictum* Kukkonen (Bester 1497) v M 1200

**Scirpus** L.

● *Scirpus falsus* C.B.Clark (Acocks 12178[PRE]; Bester 1279, 1389; Galpin 6873[PRE]; Strever 421[PRE]; Weger 1817[PRE]) g, a M-B 1360-2940

*Scirpus falsus* C.B.Clark cf. (Bester 1040) g E 1500

*Scirpus ficinoides* Kunth (Acocks 20177[PRE]) 2195

*Scirpus pinguiculus* C.B.Clark (Phillipson 674[PRE]) 2450

**Scleria** Berg.

*Scleria* sp. (Bester 2516, 2525)

*Scleria bulbifera* Hochst. ex A.Rich. (Bester 1445, 1506) f,g E-C 1480-1680  
*Scleria dieterlenii* Turrill (Acocks 21916[PRE]; Britten 4650[PRE]) 1311-1585  
*Scleria woodii* C.B.Clark (Acocks 21927[PRE]) 1435

**Tetraria Beauv.**

*Tetraria cuspidata* (Rottb.) C.B.Clark (Bester 332, 500, 1319) g E 1300-1500

**DENNSTAEDTIACEAE**

**Pteridium Gled ex Scop.**

*Pteridium aquilinum* (L.) Kuhn (Bester 1317) g E 1400

**DICRANACEAE**

**Campylopus Brid.**

*Campylopus pilifer* Brid. (Russel 3760[PRE], 3762[PRE]) 1700

**Dicranella (C.Müll.) Schimp.**

*Dicranella cardotii* (Russel 3811[PRE]) (Not listed on PSA)

*Dicranella subsubulata* (C.Müll.) A.Jaeger (Russel 3768[PRE], 3810[PRE]) 1850-2600

**DIOSCOREACEAE**

**Dioscorea L.**

▲*Dioscorea diversifolia* Griseb. (Bester 2037; Bolus 10330[PRE]; Flanagan 2717[PRE], 2741[PRE]) sa B 2370

*Dioscorea rupicola* Kunth (Bester 176, 3136) f,g M-E 1550-1620

**DIPSACACEAE**

**Cephalaria Roem. & Schult.**

●*Cephalaria galpiniana* Szabó subsp. *simplicior* (Szabó) B.L.Burt (Bester 3595; Hilliard & Burt 6716[NU], Van Wyk & Abbott 12091[PRE], 12107[PRE]) sa B 1900-2439

*Cephalaria galpiniana* Szabó subsp. *galpiniana* (Szabó) Szabó (Batten 517[NU], 594[NU]; Hilliard 3910[NU]; Hilliard & Burt 6595[NU], 16608[NU]) 2439-2500

*Cephalaria oblongifolia* (Kunze) Szabó (Bester 232, 299, 588, 2220, 2418, 2629, 2713, 2751; Van Wyk & Abbott 12157[PRE]) g,sa E-B 1500-2000

*Cephalaria zeyheriana* Szabó (Van Wyk & Abbott 12156[PRE])

**Scabiosa L.**

*Scabiosa columbaria* L. (Abbott 5690[PRE]; Bester 59, 116, 263, 1368, 1425, 1767, 2661, 2752, 3334, 3514, 3604; Van Wyk & Abbott 12086[PRE]; Zietsman & Zietsman 1448[PRE]) g,sa M-E-B 1340-2180

**DROSERACEAE**

**Drosera L.**

*Drosera natalensis* Diels (Bester 2006, 2130, 2133, 3574) g,sa M-B 1320-1920

**EBENACEAE**

**Diospyros L.**

*Diospyros austro-africana* De Winter var. *microphylla* (Burch.) De Winter (Bester 2783; Gibbs Russell 4519[PRE], 4549[PRE]) g E 1340-1973

- *Diospyros austro-africana* De Winter var. *rubriflora* (De Winter) De Winter (Bayliss 1339[PRE]) 1705
- Diospyros dichrophylla* (Grand.) De Winter (Botha & Coetzee 1616[PRE])
- Diospyros lycioides* Desf. (Bester 3127, 3180, 3306) r,g T-E 1020-1440
- Diospyros lycioides* Desf. subsp. *lycioides* (Abbott 5637[PRU]; Bayliss 1340[PRE], 1440[PRE], 7031[PRE]; Bester 422, 966, 2636; Dove 79[PRE]; Sim PRE49108[PRE]; Van Wyk & Abbott 12004[PRU]) g,f,f/r M-E 1065-1830
- Diospyros lycioides* Desf. subsp. *sericea* (Bernh.) De Winter (Marais 1038[PRE])
- Diospyros scabrida* (Harv. ex Hiern) De Winter var. *cordata* (E.Mey. ex A.DC.) De Winter (Bester 628) g E 1420
- ▲ *Diospyros scabrida* (Harv. ex Hiern) De Winter var. *scabrida* (Pegler 1245[PRE])
- ▲ *Diospyros simii* (Kuntze) De Winter (Bester 2585) f E 1500
- Diospyros whyteana* (Hiern) F.White (Abbott 5633[PRU]; Bayliss 1327[PRE]; Bester 765, 768, 912, 2777) f E 1410-1800
- Diospyros whyteana* (Hiern) F.White cf. (Bester 737) g E 1410

#### **Euclea Murray**

- Euclea* sp. (Bester 2930)
- Euclea coriacea* A.DC. (Hilliard & Burt 16581[NU], 16649[PRE])
- Euclea crispa* (Thunb.) Gürke subsp. *crispa* (Abbott 5720[PRU], 5721[PRE]; Bester 627, 2650, 2769, 2845, 3566; Pegler 1117A[PRE]) g,f M-E 1180-1560
- Euclea racemosa* Murry (Adamson 908[PRE])
- Euclea undulata* Thunb. var. *undulata* (Clarke 498[PRE]; White 10676[PRE])

#### **EQUISETACEAE**

##### **Equisetum L.**

- Equisetum ramossissimum* Desf. (Bester 118, 2642, 2649) g M 1340

#### **ERICACEAE**

##### **Erica L.**

- Erica* sp. (Hilliard & Burt 10477[PRE]; 13111[PRE]; Bester 864; Rattray 7275[PRE])
- *Erica albospicata* Hilliard & B.L.Burt (Bester 1685) a B 2100
- *Erica algida* Bolus (Bester 1581, 1991, 2705, 2753; Boardman 278[NU]; Brusse 5882[PRE]; Hilliard 5216A[NU]; Hilliard & Burt 12276[NU], 14601[NU], 16663[NU]; Stewart 1919[NU]; Van Wyk & Abbott 12083[PRE], 12100[PRU], 12138[PRE]) g,a,sa B 1890-2500
- Erica alopecurus* Harv. (Bester 653, 2615) g B 2200
- Erica alopecurus* Harv. var. *alopecurus* (Bigalke 224[PRE]; Strever 738[PRE]; Van Wyk & Abbott 12074[PRE]) 2316
- Erica caespitosa* Hilliard & B.L.Burt (Bester 1681) a B 2100
- Erica caffra* L. (Bester 697, 748, 2903, 3256) g,sa E-B 1320-2040
- Erica caffra* L. var. *caffra* (Abbott 5631[PRU]; Bester 841, 1739) g E-M 1360-1500
- Erica caffrorum* Bolus (Bester 1028, 1031) g E 1380-1470
- Erica caffrorum* Bolus var. *aristula* H.Bol. (Bigalke 247[PRE]) 2316
- Erica caffrorum* Bolus var. *caffrorum* (Bester 13, 222, 694, 917, 1457, 2064, 3565; Hilliard & Burt 14553[PRE]; Rattray 7274[PRE]; Van Wyk & Abbott 12147[PRU]) g E-M 1340-1500



- Erica caffrorum* Bolus var. *glomeratum* Bolus (Ratray 7274B[PRE]) 1980
- Erica cerinthoides* L. var. *cerinthoides* (Bester 331, 746, 794, 888, 945, 2052) g M-E 1380-1590
- Erica cooperi* Bolus (Bester 639, 640, 2606, 2614, 2622, 2706, 2719, 2739, 3312, 3589; Hilliard 3906[NU]; Hilliard & Burt 12255[NU]) g,sa,a E-B 1400-2200
- *Erica cooperi* Bolus var. *cooperi* (Abbott 5634[PRE]; Bester 30; Strever 713[PRE], 759[PRE]; Van Wyk & Abbott 12024[PRE], 12076[PRE]) g E 1410-2640
- *Erica cooperi* Bolus var. *missionis* Bolus (Bester 3634, 3658, 3659; Dove 86[PRE]; Fourcade 8730[PRE]; Galpin 2318[PRE]; Zietsman & Zietsman 1450[PRE]) 1340-2161
- *Erica dissimulans* Hilliard & B.L.Burt (Bester 861, 2908, 2911, 2967; Hilliard & Burt 13167[E], 16532[E], 14645[E]) a,sa,g M-B 1220-2100
- *Erica dominans* Killick (Bester 637, 1671, 1673, 2873, 2951, 2955; Hilliard & Burt 14671[NU], 16411[NU], 16482[NU]) a,sa B 2010-2744
- Erica dracomontana* Oliv. (Hilliard & Burt 13166[NU], 14604[NU], 16412[NU]) 1890-2134
- Erica frigida* Bolus (Bester 1902, 2486, 2704, 3547, 3613; Brusse 5883[PRE]; Hilliard 3919[NU]; Hilliard & Burt 12198[NU], 12257[PRE], 12274[PRE], 16451[NU], 16508[NU], 18608[NU]; Ratray 7280[PRE]) g,sa,a E-B 1400-2866
- *Erica hillburtii* (E.G.H.Oliver) E.G.H.Oliver (Bester 1683, 1719, 2746, 2910, 2971, 2973, 2980, 3263, 3396, 3397; Hilliard & Burt 16662[PRE]; Oliver 8151[PRU]) g,sa,a B 1840-2134
- Erica leucopelta* Tausch var. *leucopelta* (Esterhuysen 29170[PRE], 29181[PRE]; Hilliard & Burt 13111[PRE], 14545[PRE], 14544[PRE]; Ratray 7278[PRE]) 1372-2075
- Erica leucopelta* Tausch var. *pubescens* Bolus (Bester 865, 1106, 2913, 2915, 2950, 2954, 2963, 2970, 2972; Esterhuysen 29170) a,sa C-B 1320-2100
- ▲ *Erica natalensis* Dulfer (Bester 808, 1722, 1728, 3229, 3230) v,g M-E-C 1300-1650
- Erica natalitia* (Bester 670, 698, 742, 743, 876, 2884, 2923, 2938)
- *Erica reenensis* Zahlbr. (Van Wyk & Abbott 12099[PRE]) 1900
- *Erica schlechteri* Bolus (Bester 1105, 1670, 1682, 2487, 2962, 3012; Bigalke 29[NU]; Dove 102[PRE]; Galpin 7276[PRE]; Hilliard 5216B[NU]; Hilliard & Burt 13153[NU], 14603[NU], 14670A[NU], 16492[NU], 14739[NU], 16661[NU]; Strever 404[PRE]; Van Wyk 6709[PRE]; Weger 1812[PRE]; Zietsman & Zietsman 1453[PRE]) a,sa C-B 1768-2591
- *Erica thodei* L.Guthrie & Bolus (Batten *s.n.*[PRE], 508[PRE]; Bester 2668, 3620; Hilliard 3916[NU]; Hilliard & Burt 6623[NU]; Van Wyk & Abbott 12068[PRE], 12110[PRE], 12111[PRE]; Zietsman & Zietsman 1461[PRE], *s.n.*) g 1900-2560
- Erica trichoclada* Guth. & Bol. (Bester 2151) g E 1820
- *Erica tysonii* Bolus (Batten 681[NU]; Bester 3215; Hilliard & Burt 6566[NU]; Tyson 1290[NU]) 1616-2226
- *Erica tysonii* Bolus var. *tysonii* (Bester 1359) sa,g B 1710-2000
- Erica woodii* Bolus (Abbott 5625[PRU]; Bester 31, 56, 641, 3474, 3604, 3605; Ratray 7279[PRE]; Van Wyk & Abbott 12026[PRE]) sa,g E-B 1410-2200
- *Erica woodii* Bolus subsp. *platyura* Hilliard & B.L.Burt (Hilliard & Burt 16503[E], 16671[E]) 2196-2685
- *Erica woodii* Bolus subsp. *platyura* Hilliard & B.L.Burt variant (Hilliard & Burt

12256[NU] 2104

## ERIOCAULACEAE

### Eriocaulon L.

*Eriocaulon abyssinicum* Hiern (Bester 2501) g M 1320

*Eriocaulon dregei* Hochst. var. *sonderianum* (Körn.) Oberm. (Bester 992) v M 1260

▲*Eriocaulon ruhlandii* Schinz (Bester 2501) g M 1320

## ERIOSPERMACEAE

### Eriospermum Jacq. ex Willd.

*Eriospermum cooperi* Baker var. *natalense* (Baker) P.L.Perry (Bester 3719)

*Eriospermum natalense* Baker (Bester 1484, 1703, 1814, 1919) g,v E 1320-1410

*Eriospermum ornithogaloides* Baker (Bester 1537, 1598, 2122, 3211, 3275; Rattray 7329[PRE]) sa,g E-C-B 1400-2560

## ESCALLIONACEAE

### Choristylis Harv.

*Choristylis rhamnoides* Harv. (Abbott 5713[PRE]) 1400

## EUPHORBIACEAE

### Acalypha L.

*Acalypha angustata* Sond. (Bester 3158) g M 1140

*Acalypha peduncularis* E.Mey. ex Meisn. (Bester 1232) M 1360.

*Acalypha punctata* Meisn. (Abbott 5659[PRU]; Bester 706, 1157, 2945) g M-E-1220-1440

*Acalypha punctata* Meisn. cf. (Bester 2574) g E 1500

*Acalypha punctata* Meisn. var. *punctata* (Bester 5) g E

*Acalypha punctata* Meisn. var. *punctata* cf. (Bester 434) g E 1500

*Acalypha schinzii* Pax (Bester 1158, 1189, 1645) g M-E 1360-1400

### Clutia L.

*Clutia alpina* Prain (Galpin 6827[NH]; Hilliard & Burtt 14698, 16459) 2563-2837

*Clutia cordata* Bernh. ex Krauss (Bester 1259) g E 1650

*Clutia daphnoides* Lam. (Viljoen 703[PRE]) 1890

*Clutia dregeana* Scheele (Bester 3046) g E 1410

*Clutia hirsuta* E.Mey. ex Sond. var. *hirsuta* (Abbott 5640[PRE]; Van Wyk & Abbott 12008[PRE]) 1500-1900

▲*Clutia katherinae* Pax (Bester 862) a B 2100

*Clutia laternoides* L. var. *angustifolia* E.Mey. ex Sond. (Royffe TM25731[PRE])

*Clutia laxa* Eckl. ex Sond. (Bester 1584, 1585) sa B 2010

*Clutia monticola* S.Moore (Bester 823) g M 1300

●*Clutia nana* Prain (Hilliard & Burtt 16423[NU]) 2561

*Clutia natalensis* Bernh. ex Krauss (Bester 1; Hilliard & Burtt 14561[PRE]) g B 1981

*Clutia pulchella* L. var. *pulchella* (Abbott 5655[PRU]; Bester 2584; Story 440[PRE]) f,rs E 1372-1500

*Clutia pulchella* L. var. *obtusata* Sond. (Bester 541, 2836) g M-E 1180-1440

*Clutia rubricaulis* Eckl. ex Sond. var. *rubricaulis* (Bester 3254) sa B 2040



## Euphorbia L.

*Euphorbia* sp. (Bester 131)

*Euphorbia bupleurifolia* Jacq. (Bester 3168) g M 1140

*Euphorbia epicyparissias* E.Mey. ex Boiss. var. *epicyparissias* (Bester 3268; Werger 1811[PRE]) sa 2040-2500

▲*Euphorbia ericoides* Lam. (Bester 480; Phillipson 651[PRE], 720[PRE]) g E-1500-2450

*Euphorbia ernestii* N.E.Br. cf. (Bester 66) g E 1600

*Euphorbia franksiae* N.E.Br. var. *franksiae* (Bester 1104) g M 1380

*Euphorbia genistoides* P.J.Bergius (Bigalke B222[PRE]) 2316

*Euphorbia mauritanica* L. var. *mauritanica* (Royffe 222[PRE], TM25730[PRE]) 1219

*Euphorbia natalensis* Bernh. (Bester 667, 1985; Dove 97[PRE]; Van Wyk 6714[PRE], 6718[PRE]; Van Wyk & Abbott 12169[PRE]) g,a E-B 1290-2460

*Euphorbia striata* Thunb. var. *striata* (Bester 236, 660, 1185, 1324, 1562, 1692, 2875) g,a M-E-B 1320-2100

▲*Euphorbia woodii* N.E.Br. (Bester 686) g E 1230

## Phyllanthus L.

*Phyllanthus* sp. (Flanagan 2803[PRE]) 915

## FABACEAE

### Acacia Mill.

*Acacia dealbata* Link (Henderson 1008[PRE]) 1500

*Acacia karroo* Hayne (Bester 465; Swartz 39[PRE]) g M 1200

### Alysicarpus Desv.

*Alysicarpus rugosus* (Willd.) DC. subsp. *perennirufus* J.Léonard (Flanagan 2802[PRE]) 915

### Argyrolobium Eckl. & Zeyh.

*Argyrolobium* sp. (Acocks 20223[PRE], 20224[PRE]; Bester 1447, 2088, 2902, 2986, 3027, 3611; Strever 761[PRE])

*Argyrolobium harveyanum* Oliv. (Bester 155, 954, 1050, 1091, 1243, 1178, 1349, 1466, 1608) g,v M-E 1350-1620

*Argyrolobium lotoides* Harv. (Hilliard & Burt 16372[NU], 16373[NU], 16577[NU], 16634[NU], 16699[NU]) 1890-2561

*Argyrolobium pilosum* Harv. (Bester 435, 1525, 2457, 3459; Gibbs Russell 3470[PRE]) g,se E 1250-1500

*Argyrolobium stipulaceum* Eckl. & Zeyh. (Bester 802; Van Wyk 1817, 6698[PRE]) g E 1420

*Argyrolobium tomentosum* (Andrews) Druce (Bester 172; Clarke 501[PRE]) f M 1550

*Argyrolobium tuberosum* Eckl. & Zeyh. (Bester 1791, 2078, 2110, 3379, 3330, 3550, 3593) g,sa E-B 1200-2200

*Argyrolobium tuberosum* Eckl. & Zeyh. cf. (Bester 3339) sa B

●*Argyrolobium tysonii* Harms (Bester 1576, 1637; Hilliard & Burt 16628[PRE], 16635[PRE]) g,sa M-B 1300-2286

*Argyrolobium tysonii* Harms cf. (Bester 1677) sa B 2010

●*Argyrolobium variophile* N.E.Br. (Galpin 7291[PRE]) 2255

### Aspalathus L.

*Aspalathus chortophila* Eckl. & Zeyh. (Bester 29, 1165, 1663, 1008, 1009) g E-1440-

1560

- Aspalathus chortophila* Eckl. & Zeyh. subsp. *chortophila* (Bester 3081) g E 1440  
*Aspalathus katbergensis* (R.Dahlgren) R.Dahlgren (Bester 688, 1601) g E 1320-1600  
 ▲*Aspalathus simii* Bolus (Bester 3067) g M 1410  
*Aspalathus simii* Bolus cf. (Bester 1049) g E 1440  
*Aspalathus spinosa* L. subsp. *spinosa* (Bester 906; Strever 815[PRE]; Van Wyk & Abbott 12041[PRE]) g E-C 1500-1900

**Bauhenia L.**

- Bauhenia bowkeri* Harv. (Sim 19960[PRE])  
*Bauhenia natalensis* Oliv. ex Hook. (Pegler 127D[PRE], PRE53953[PRE])

**Calpurnia E.Mey.**

- Calpurnia aurea* (Aiton) Benth. subsp. *sylvatica* (Burch.) Brummitt (Clarke 500[PRE])

**Chamaecrista Moench**

- Chamaecrista capensis* (Thunb.) E.Mey. var. *capensis* (Bester 1478) g E 1380  
*Chamaecrista capensis* (Thunb.) E.Mey. var. *flavescens* (Thunb.) E.Mey. (Bester 1634, 1736) g M 1300-1360  
*Chamaecrista pulmosa* E.Mey. var. *pulmosa* (Clarke 471[PRE])

**Crotalaria L.**

- Crotalaria globifera* E.Mey. (Pegler 1194[PRE])  
*Crotalaria obscura* DC. (Bester 1646, 1735) g M-E 1360-1380

**Dalbergia L.f.**

- Dalbergia obovata* E.Mey. (Clarke 497[PRE])

**Dichilus DC.**

- Dichilus reflexus* (N.E.Br.) A.L.Schutte (Flanagan 2697A[PRE]) 1295  
*Dichilus strictus* E.Mey. (Bester 3344; Flanagan 2697B[PRE]) g 1295-1350

**Dolichos L.**

- Dolichos angustissimus* E.Mey. (Bester 1328, 1341) g E 1340-1380  
*Dolichos falciiformis* E.Mey. (Pegler 1738[PRE])  
*Dolichos linearis* E.Mey. (Bester 1733) g M 1360

**Elephantorrhiza Benth.**

- Elephantorrhiza elephantina* (Burch.) Skeels (Sim 20192[PRE]) 915

**Eriosema (DC.) D.Don**

- ▲*Eriosema acuminatum* (Eckl. & Zeyh.) C.H.Stirt. (Bester 1432) g M 1300  
*Eriosema cooperi* (Bester 1705, 3331) g E 1200-1320 (Not listed on PSA)  
*Eriosema cooperi* var. *natalensis* (Bester 3372) g B 1840 (Not listed on PSA)  
*Eriosema cordatum* E.Mey. (Flanagan 2819[PRE])  
*Eriosema kraussianum* Meisn. (Bester 707, 722, 942) g E 1290-1590  
 ▲*Eriosema rossii* C.H.Stirt. (Bester 2009) g M 1320  
*Eriosema salignum* E.Mey. (Bester 1707, 1843, 2010, 3149) v,g M-E 1140-1360  
*Eriosema squarrosum* (Thunb.) Walp. (Marais 237[PRE])

**Eriospermum**

- Eriospermum* sp. (Bester 3203)

**Erythrina L.**

- Erythrina caffra* Thunb. (Pegler 89[PRE], 89A[PRE], 89B[PRE], 89C[PRE], 1134[PRE]; Marais 476[PRE]; Flanagan 319[PRE]; Kriel 8865[PRE]; Strey 6663[PRE]; Ward 5779[PRE])

## Indigastrum

*Indigastrum argyraeum* (Eckl. & Zeyh.) Schrire (Flanagan 2625[PRE], Sim 4160[PRE]) 1220

## Indigofera L.

*Indigofera alpina* Eckl. & Zeyh. (Bester 1367) sa B 2180

*Indigofera cuneifolia* Eckl. & Zeyh. (Bester 867, 1597) g,sa E-C 1530-1680

*Indigofera cuneifolia* Eckl. & Zeyh. subsp. *cuneifolia* (Bester 1265, 2943) g M-E 1220-1620

*Indigofera dimidiata* Vogel ex Walp. (Bester 1520, 1575; Zietsman & Zietsman 1452[PRE]) g,sa E-B 1500-2161

*Indigofera hedyantha* Eckl. & Zeyh. (Abbott 5667[PRE]; Bester 57, 246, 1691; Britten 4531[PRE]; Strever 901[PRE]; Van Wyk 6695[PRE], 6698; Van Wyk & Abbott 12185[PRE]) g,a M-E-B 1300-2100

*Indigofera hilaris* Eckl. & Zeyh. (Bester 451, 800, 940, 1011, 1090, 1118, 1244, 1667, 3068) g M-E 1200-1620

*Indigofera longebarbata* Engl. (Strever 914[PRE]) 1600

*Indigofera mollis* Eckl. & Zeyh. (Bester 1545, 3053) g,sa C-B 1600-1900

▲*Indigofera natalensis* Bolus (Abbott 3362[PRE])

*Indigofera nigromontana* Eckl. & Zeyh. (Bester 2872) g

*Indigofera torulosa* E.Mey. var. *angustifolia* (Baker f.) J.B.Gillett (Schlechter 6387[PRE]) 3600

## Lessertia DC.

*Lessertia harveyana* L.Bolus (Flanagan 2820[PRE]) 915

*Lessertia perennans* (Jacq.) DC. (Bester 1977) a B 1585-2280

*Lessertia perennans* (Jacq.) DC. var. *sericea* L.Bolus (Acocks 21971[PRE]; Bester 3345) g E 1350

*Lessertia perennans* (Jacq.) DC. var. *perennans* (Bester 2105) g C 1800

*Lessertia stricta* L.Bolus (Hilliard & Burt 16638[PRE]) 2072

## Lotononis (DC.) Eckl. & Zeyh.

*Lotononis* sp. (Bester 564; Brusse 4609[PRE]; Flanagan 2805[PRE])

*Lotononis alpina* (Eckl. & Zeyh.) B.-E. van Wyk subsp. *multiflora* (Eckl. & Zeyh.) B.-E. van Wyk (Hilliard & Burt 13110[PRE]) 1371

*Lotononis arida* Dummer (Bester 2851) g M 1360

*Lotononis carnososa* (Eckl. & Zeyh.) Benth. subsp. *carnososa* (Sim 2356[PRE])

*Lotononis corymbosa* (E.Mey.) Benth. (Bester 975, 1182, 1288, 2901) g,v M-D 1290-1400

*Lotononis divaricata* (Eckl. & Zeyh.) Benth. (Edwards, Chadman & Norris 3161[NU]; Hilliard & Burt 12232[NU], 14558[PRE]) 1676-2073

*Lotononis eriocarpa* (E.Mey.) B.-E. van Wyk (Bester 1857) v 1360

●*Lotononis galpinii* Dummer (Bester 1997, 2275, 3617; Brusse 5589[PRE]; Rattray 7290[PRE]; Zietsman & Zietsman 1462[PRE]) a,sa B 2161-2500

*Lotononis galpinii* Dummer subsp. *galpinii* (Hilliard & Burt 16506[NU]) 2561-2744

*Lotononis laxa* Eckl. & Zeyh. (Bester 1638; Hilliard & Burt 16642[PRE]) g M-1300-2012

*Lotononis lotonoides* (Scott-Elliot) B.-E. van Wyk (Abbott 5684[PRE]) 2100

*Lotononis minor* Dummer & Jenn. (Hilliard & Burt 16609[PRE]) 1499

*Lotononis pulchella* (E.Mey.) B.-E. van Wyk (Bester 1689, 2147, 3010, 3216;

- Hilliard & Burtt 14559[PRE]; Van Wyk & Abbott 12096[PRE]) g,a M-C-B 1300-2100
- Lotononis pulchra* Dummer (Bester 1018, 1074, 1433) g E 1530-1620
- Lotononis sericophylla* Benth. (Bester 1872, 1877, 3618; Dove 93[PRE]; Hilliard & Burtt 3768[NU], 12231[NU], 16524[NU], 16610[PRE], 16625[PRE]; Van Wyk 6717[PRE]; Van Wyk & Abbott 12137[PRE]) v,sa B 1300-2499
- Lotononis stricta* (Eckl. & Zeyh.) B.-E. van Wyk (Strever 912[PRE]) v,sa B 1600-2200
- Lotononis stricta* (Eckl. & Zeyh.) B.-E. van Wyk cf. (Bester 157) g E 1420
- Lotononis tenuifolia* var. *pulchella* (Hilliard & Burtt 14581[NU], 14656[NU]) 1890-1951 (Not listed on PSA)
- *Lotononis trisegmentata* Phill. (Hilliard & Burtt 16573[NU], 16610[NU]; Stewart 1885[NU]) 1890-2500
- Lotononis woodii* H.Bol (Bester 1638) g M 1300 [= *Lotononis laxa*]
- Melolobium** Eckl. & Zeyh.
- Melolobium alpinum* Eckl. & Zeyh. (Bester 1615, 1873, 3228) v,g E-C 1360-1660
- Melolobium candicans* (E.Mey.) Eckl. & Zeyh. (Royffe TM25691[PRE])
- Melolobium microphyllum* (L.f.) Eckl. & Zeyh. (Bester 2764; Flanagan 2701[PRE]) sa E 1295-1860
- Melolobium obcordatum* Harv. (Abbott 5680[PRE]; Bester 1975; Galpin 6604[PRE]; Van Wyk & Abbott 12071[PRE]) a B 1900-2285
- Millettia** Wight & Arn.
- Millettia grandis* (E.Mey.) Skeels (Edwards 2470[PRE])
- Ornithopus** L.
- Ornithopus sativus* Brot. (Bester 1170) g E 1440
- Otholobium** C.H.Stirt.
- Otholobium* sp. (Bester 1586, 1878, 3040; Hilliard & Burtt 6677) sa,v,g E-B-1360-2380
- ▲ *Otholobium caffrum* (Eckl. & Zeyh.) C.H.Stirt. (Abbott 5672[PRE]; Bester 303; Roux 1198[PRE]; Van Wyk & Abbott 12017[PRE]) g 1450-1900
- Psoralea** L.
- Psoralea* sp. (Abbott 5671[PRE]; Bester 211)
- Psoralea asarina* (P.J.Bergius) Salter (Bester 2053) g E
- Psoralea oligophylla* Eckl. & Zeyh. (Bolus 8858[PRE]; Flanagan 2698[PRE]) 1295
- Rhynchosia** Lour.
- Rhynchosia* sp. (Clarke 469[PRE])
- Rhynchosia adenodes* Eckl. & Zeyh. (Bester 1743) g M 1220
- Rhynchosia harmsiana* Schltr. ex Zahlbr. var. *burchellii* Burtt Davy (Flanagan 796[PRE]) 610
- Rhynchosia nervosa* Benth. & Harv. var. *nervosa* (Bester 71, 2765) g,sa E 1330-1860
- Rhynchosia reptabunda* N.E.Br. (Bester 3052; Story 434[PRE]) g E 1500
- Rhynchosia sordida* (E.Mey.) Schinz (Bester 3155; Clarke 504[PRE]) g M 1140
- Rhynchosia totta* (Thunb.) DC. (Bester 3062) g M 1380
- Rhynchosia totta* (Thunb.) DC. var. *totta* (Thunb.) DC. (Abbott 5668[PRE]; Bester 64, 2455, 3144; Strever 850[PRE]) g,v M-E 1290-16770
- Schotia** Jacq.
- Schotia* sp. (Bester 2789)

*Schotia afra* (L.) Thunb. var. *angustifolia* (E.Mey.) Harv. (Flanagan 1322[PRE], 1451; Pegler 1756[PRE])

*Schotia brachypetala* Sond. (Hilliard & Burt 16471) 2746

*Schotia latifolia* Jacq. (Edwards 4312[PRE]) 1220

**Sutherlandia** R.Br. ex Ait.f.

*Sutherlandia montana* E.Phillips & R.A.Dyer (Bester 3265) sa B 2040

*Sutherlandia montana* E.Phillips & R.A.Dyer cf. (Bester 228) g E 1500

**Tephrosia** Pers.

*Tephrosia capensis* (Jacq.) Pers. (Bester 470) g M 1200

*Tephrosia capensis* (Jacq.) Pers. var. *hirsuta* Harv. (Clarke 468[PRE])

*Tephrosia cordata* Hutch. & Burt Davy (Clarke 502[PRE])

*Tephrosia grandiflora* (Aiton) Pers. (Bester 455, 1734; Grobelaar 2303[PRE]) g M 1200-1360

*Tephrosia macropoda* (E.Mey.) Harv. (Bester 471) g M 1200

*Tephrosia marginella* H.M.L.Forbes (Bester 453, 1916) g,v M-E 1200-1380

**Trifolium** L.

▲*Trifolium burchellianum* Ser. subsp. *burchellianum* (Abbott 5688[PRE]; Bester 569, 1496, 2744; Van Wyk & Abbott 12049[PRE]; Zietsman & Zietsman 1454[PRE]) v,sa M-C 1200-2161

*Trifolium dubium* Sibth. (Bester 1471) v M 1310

*Trifolium repens* L. (Bester 1179) v E 1410

**Vigna** Savi

*Vigna* sp. (Flanagan 2800[PRE]) 915

*Vigna mudenia* B.J.Pienaar (Pienaar 1408[PRE])

*Vigna nervosa* Markötter (Bester 258; Strever 875[PRE]) g M 1300-1400

*Vigna vexillata* (L.) A.Rich. var. *angustifolia* (Schumach. & Thom.) Baker (Bester 3065) g M 1380

*Vigna vexillata* (L.) A.Rich. var. *vexillata* (Bester 1289) g D 1380

**Zornia** J.F.Gmel.

*Zornia* sp. (Bester 3453)

*Zornia capensis* Pers. (Bester 2534) g M 1340

**FISSIDENTACEAE**

**Fissidens** Hedw.

*Fissidens bryoides* Hedw. (Russel 3769[PRE]) 1850

*Fissidens glaucescens* Hornsch. (Sim 8573[PRE]) 1525

**FLACOURTIACEAE**

**Dovyalis** E.Mey. ex Arn.

*Dovyalis lucida* Sim (Acocks 13814[PRE], 13815[PRE]; Bester 2554; Marais 501[PRE]; Sim 2183[PRE]; Van Wyk & Abbott 12182[PRU]; Von Gadow 372[PRE]) g,rf E 915-1400

**Kiggelaria** L.

*Kiggelaria africana* L. (Bester 199, 485, 525, 769, 777, 3107; Ferreira 2[PRE]) f,g. E 1340-1720

**Scolopia** Schreb.

*Scolopia* sp. (Bester 2801)

*Scolopia* sp. cf. (Bester 770) f E 1410

▲*Scolopia flanaganii* (Bolus) Sim (Acocks 12168[PRE]; Story 504[PRE]) 1370-1372

*Scolopia mundii* (Eckl. & Zeyh.) Warb. (Bester 488, 494, 496, 517, 542, 732, 2817; Killick 4073[PRE]) g, f E 1230-1500

*Scolopia zeyheri* (Nees) Harv. (Abbott 5712[PRU]; Galpin 6830[PRE]) 1400-1675

**Trimeria** Harv.

*Trimeria grandifolia* (Hochst.) Warb. (Bester 539, 608, 3192) g T-E 1020-1440

*Trimeria trinervis* Harv. (Bester 631, 735, 2818, 2846; Van Wyk & Abbott 12184) g M-E 1180-1420

**FUMARIACEAE**

**Cysticapnos** Mill.

*Cysticapnos pruinosa* (Bernh.) Lidén (Bester 1999, 2700; Phillipson 1717[PRE]; Van Wyk & Abbott 12058[PRE]; Zietsman & Zietsman 1458[PRE]) a B 1900-2550

**GENTIANACEAE**

**Chironia** L.

*Chironia krebisii* Griseb. (Bester 2116, 3376, 3730) g B 1840

**Sebaea** Soland. ex R.Br.

*Sebaea* sp. (Bester 142) g M 1320

*Sebaea bojeri* Griseb. (Bester 367, 2257) g E 1280-1440

*Sebaea filiformis* Schinz (Bester 2258, 2659) g,sa E-C 1280-1760

*Sebaea grandis* (E.Mey.) Steud. (Bester 338, 3444) g E 1460

*Sebaea grisebachiana* Schinz (Bester 2256)

*Sebaea hymenosephala* Gilg (Bigalke B244[PRE]; Phillipson 715[PRE]) 2316-2550

*Sebaea longicaulis* Schinz (Bester 369) g E 1440

*Sebaea macrophylla* Gilg (Hilliard & Burtt 13120[PRE]) 2103

●*Sebaea marlothii* Gilg (Hilliard & Burtt 14681[NU]) 2591

▲*Sebaea natalensis* Schinz (Bester 860, 2909; Van Wyk 6710[PRE]) a,sa B 1840-2100

●*Sebaea natalensis* Schinz cf. (Van Wyk & Abbott 12047[PRU])

*Sebaea pentandra* E.Mey. var. *pentandra* (Zietsman & Zietsman 1474[PRE]) 2161

●*Sebaea procumbens* A.W.Hill (Hilliard & Burtt 13119[NU]; Story 486[PRE])-2104-2440

*Sebaea rehmannii* Schinz (Hilliard & Burtt 16681[PRE]) 2195

*Sebaea repens* Schinz (Bester 1004; Strever 419[PRE]; Wedermann & Oberdick 1109[PRE]) sa B 1980-2700

*Sebaea sedoides* Gilg var. *confertiflora* (Schinz) Marais (Abbott 5702[PRU]; Bester 34, 143, 153, 366, 370) g M-E 1320--2100

*Sebaea sedoides* Gilg var. *schoenlandii* (Schinz) Marais (Bester 2342)

●*Sebaea spathulata* (E.Mey.) Steud. (Hilliard & Burtt 14667[NU]; Stewart 190[NU]) 2591

●*Sebaea thodeana* Gilg (Bester 1365; Hilliard & Burtt 14668[NU]; Wederman & Oberdick 1111) sa B 2000-2591

*Sebaea thomasii* (S.Moore) Schinz (Bester 855, 1273, 2912; Hilliard & Burtt 13121[PRE]; Strever 427[PRE]; Wedermann & Oberdick 1111[PRE]) a,sa,r B-1840-2100



**Swertia L.**

*Swertia welwitschii* Engl. (Bester 1899) a B 1860

**GERANIACEAE**

**Erodium L'Hérit.**

*Erodium* sp. (Hilliard & Burt 6604[PRE])

*Erodium cicutarium* (L.) L'Hér. (Acocks 2042, 12334[PRE]; Bester 1353; Pegler 1747[PRE], 1748; Strever 390[PRE]) sa C 2000-2600

**Geranium L.**

*Geranium baurianum* R.Kunth (Bester 570, 1699; Hilliard & Burt 14537[PRE], 16697[PRE]) sa,a C-B 1432-2195

*Geranium brycei* N.E.Br. (Bester 479, 563; Dove 90[PRE]; Hilliard & Burt 16600[PRE], 16698[PRE], 16701[PRE]; Van Wyk & Abbott 12144) sa C-B 1980-2500

*Geranium canescens* L'Hér. (Abbott 5696[PRE]; Bester 1075) g E 1620-2100

*Geranium grandistipulatum* Hilliard & B.L.Burt (Bester 1712) sa B 2060

*Geranium multisectum* N.E.Br. (Bester 2117; Hilliard & Burt 12307[PRE], 14600[NU], 16591[NU]; Stewart 1902[NU]) 2103-2500

*Geranium multisectum* N.E.Br. cf. (Bester 2662) sa B 2500

● *Geranium pulchrum* N.E.Br. (Bester 1267) sa B 2010

*Geranium robustum* Kuntze (Hilliard & Burt s.n.[NU], 12312[PRE], 14555[PRE], 14568[NU], 14623[NU], 16528A[NU], 16588A[NU]) 1676-2439

*Geranium schlechteri* R.Kunth (Bester 158, 571, 578, 2565; Hilliard & Burt 16702; Strever 772[PRE] 782) g,sa E-C-B 1420-2042

*Geranium wakkerstroomianum* R.Kunth (Bester 124, 691, 1392) g M-E 1320-1440

**Monsonia L.**

*Monsonia brevirostrata* R.Kunth (Bester 2416; Bolus 8725[PRE]) g E 1500

**Pelargonium L'Hérit.**

*Pelargonium* sp. (Roux 1716[PRE])

*Pelargonium alchemilloides* (L.) L'Hér. (Bester 566, 1301, 1541, 1616, 2990, 3089) sa,v,g,a M-E-C-B 1220-2100

*Pelargonium alchemilloides* (L.) L'Hér. cf. (Bester 1607) g E 1600

▲ *Pelargonium bowkeri* Harv. (Bester 1607, 2924) g M-E 1260-1600

*Pelargonium bowkeri* Harv. cf. (Bester 788, 824, 1339) g M-E 1230-1380

*Pelargonium caffrum* (Eckl. & Zeyh.) Harv. (Bester 2121) sa B 1920

*Pelargonium capituliforme* R.Kunth (Van Wyk & Abbott 12064[PRE], 12075[PRE]) 1900

● *Pelargonium dispar* N.E.Br. (Bester 156) g E 1420

*Pelargonium graveolens* L'Hér. (Flanagan 2628[PRE]) 1220

*Pelargonium grossularioides* (L.) L'Hér. (Galpin 7287[PRE]; Hilliard & Burt 14542[PRE]; Strever 916[PRE]) 1200-1980

*Pelargonium leucophyllum* Turcz. (Abbott 5674[PRE]; Bester 1456; Roux 1195[PRE]) g E 1500-2100

*Pelargonium luridum* (Andrews) Sweet (Bester 129, 261, 520, 708, 1057, 1140, 1249, 1147, 1175, 1222, 1437, 1501, 1516, 1536, 1591, 1613, 1651, 1920, 2065, 2466, 2643, 2655, 3061, 3100, 3337, 3445) g,v,sa M-E-C 1200-1680

*Pelargonium luridum* (Andrews) Sweet cf. (Bester 965, 2008) g M-E 1320-1560

- Pelargonium multicaule* Jacq. subsp. *multicaule* (Bester 469, 617) g M-E 1200-1420  
*Pelargonium panduriforme* Eckl. & Zeyh. (Acocks 13817[PRE]) 1370  
*Pelargonium peltatum* (L.) L'Hér. (Bester 3171, 3188) g T 1020  
▲*Pelargonium pulverulentum* Colvill ex Sweet (Bester 1096, 1097, 1334, 1335, 1963, 3250, 3252, 3260, 3272) g,sa M-E-B 1340-2040  
*Pelargonium schizopetalum* Sweet (Bester 1730) g E 1420  
*Pelargonium sidoides* DC. (Bester 269, 1965, 3064, 3422; Crawthorn PRE 56411[PRE]; Van Wyk & Abbott 12094[PRE]) a,sa,g M-B 1380-2100  
*Pelargonium zonale* (L.) L'Hér. (Bester 600, 3302) g,r T-E 1020-1420

#### GESNERIACEAE

##### *Streptocarpus* Lindl.

- Streptocarpus* sp. (Bester 2437)  
▲*Streptocarpus baudertii* Britten (Bester 8, 3436) f E  
▲*Streptocarpus gardenii* Hook. (Abbott 5706[PRE]) 1700  
*Streptocarpus meyeri* B.L.Burt (Reid 1206[PRE])  
*Streptocarpus pusillus* Harv. ex C.B.Clarke (Bester 216, 3456) g,v E 1250-1500  
*Streptocarpus pusillus* Harv. ex C.B.Clarke cf. (Bester 282, 3437) g M 1280-1400  
▲*Streptocarpus rexii* (Hook.) Lindl. (Bester 165, 2319; Ranger 17[PRE]) f E 610-1550

#### GLEICHENIACEAE

##### *Gleichenia* J.E.Sm.

- Gleichenia polypodioides* (L.) Sm. (Flanagan 2714[PRE]; McLoughlin 121[PRE])  
*Gleichenia umbraculifera* (Kunze) T.Moore (Britten 7026[PRE]; Flanagan 2629, 2691[PRE]; McLoughlin TM1034C[PRE]; Pegler 772[PRE])

#### GRIMMIACEAE

##### *Grimmia* Hedw.

- Grimmia pulvinata* (Hedw.) Sm. (Hilliard & Burt 13145) 2347

##### *Schistidium* Brid.

- Schistidium apocarpum* (Hedw.) Burch. & Schimp. (Hilliard & Burt 13143[PRE]) 2367

#### HAEMODORACEAE

##### *Barberetta* Harv.

- ▲*Barberetta aurea* Harv. (Bester 171; Bolus 8709[PRE]; Edwards & Chadman & Norris 3298[PRE]; Flanagan 2708[PRE]) f M 1220-1550

#### HALORAGACEAE

##### *Gunnera* L.

- Gunnera perpensa* L. (Bester 1889; Zietsman & Zietsman 1479[PRE]) 1700

#### HAMAMELIDACEAE

##### *Trichocladus* Pers.

- Trichocladus ellipticus* Eckl. & Zeyh. subsp. *ellipticus* (Edwards 4311[PRE]; Ellis & Jarman 1081[PRE]) 1220



## HOOKERIAEAE

### Cycoldictyon Mitt.

*Cycoldictyon vallis-gratiae* (Hampe) Kuntze (Sim 8576[PRE]) 1525

### Hookeriopsis (Besch.) Jaeg.

*Hookeriopsis pappeana* (Hampe) A.Jaeger (Sim CH8198[PRE], 8575[PRE]) 1525

## HYACINTHACEAE

### Albuca L.

*Albuca* sp. (Bester 734, 828, 1133, 1295, 2932)

● *Albuca humilis* Baker (Bester 1935) a B 2520

● *Albuca rupestris* Hilliard & B.L.Burt (Bester 1773) g E 1340

● *Albuca rupestris* Hilliard & B.L.Burt cf. (Bester 1355) sa C 2000

*Albuca setosa* Jacq. (Bester 991, 1095, 1592, 1724, 1747, 1803, 1829, 1915, 3077) g,v,sa M-E-C 1220-1680

*Albuca shawii* Baker (Bester 191, 3336; Hilliard & Burt 6676) g E 1200-2378

■ *Albuca xanthocodon* Hilliard & B.L.Burt (Hilliard & Burt 14617[E], 14721[E]) 1890-2287

### Bowiea Harv. ex Hook.f.

*Bowiea volubilis* Harv. ex Hook.f. (Bester 613) g E 1420

### Dipcadi Medik.

*Dipcadi ciliare* (Zeyh. ex Harv.) Baker (Bester 1611, 1629, 1704, 1731, 3279) g M-E 1200-1600

*Dipcadi viride* (L.) Moench (Bester 1099, 1472, 1505, 1560, 1622, 1706, 1723, 1758, 1845, 3274, 3419) g,v,sa M-E-B 1310-2100

### Drimia Jacq. ex Willd.

*Drimia elata* Jacq. (Bester 1261, 3231, 3235) g E-C 1580-1650

*Drimia neriniformis* Baker (Bester 1602, 1756, 1783, 1804, 1819, 1851, 2084) g,v E 1340-1600

*Drimia sphaerocephala* Baker cf. (Bester 3213) g 1710

### Eucomis L'Hérit.

*Eucomis autumnalis* (Mill.) Chitt. subsp. *autumnalis* (Bester 161; Bigalke 87[PRE]) g E 1420

*Eucomis autumnalis* (Mill.) Chitt. subsp. *autumnalis* cf. (Bester 3457) E 1250

*Eucomis autumnalis* (Mill.) Chitt. subsp. *clavata* (Baker) Reyneke (Bester 2624; Pegler 1710[PRE]; Van Wyk 6702[PRE]; Van Wyk & Abbott 12080[PRE]) g E 1400-1900

*Eucomis bicolor* Baker (Bester 1886, 2242) v,sa B 1360-2160

■/● *Eucomis humilis* Baker cf. (Bester 3393) sa B 2500

*Eucomis schijffii* Reyneke (Galpin 6869[PRE]; Phillipson 703[PRE]) 2550-2635

### Galtonia Decne.

*Galtonia candicans* Decne. (Sim 1832[PRE])

*Galtonia viridiflora* I.Verd. (Bester 3526; Rattray 7282[PRE]; s.n. 2529) a B-2135-2400

### Ledebouria Roth.

*Ledebouria cooperi* (Hook. f.) Jessop (Bester 1149, 1174, 1404, 1405, 1418, 1449, 1522, 1617, 1811, 3165) g,v,f M-E 1140-1680

*Ledebouria marginata* (Baker) Jessop (Bester 3469) g T 1020

*Ledebouria ovatifolia* (Schrad.) Jessop (Bester 783, 792, 1103, 1429, 1952, 2900) g M-E-B 1230-1680

*Ledebouria revoluta* (L. f.) Jessop (Bester 2968, 3210; Van der Merwe 1861[PRE]) g,v M-E 1330-1710

*Ledebouria revoluta* (L. f.) Jessop cf. (Bester 1532) g E 1400

**Litanthus** Harv.

*Litanthus pusillus* Harv. (Bester 1391) a B 2230

**Massonia** Thunb. ex Houtt.

*Massonia* sp. (Bester 2370)

*Massonia echinata* L.f. (Bester 562) sa C 1980

*Massonia jasminiflora* Burch. ex Baker (Glen 1720[PRE])

**Ornithogalum** L.

*Ornithogalum* sp. (Bester 205, 2219, 2225, 3222)

*Ornithogalum conicum* Jacq. subsp. *conicum* (Bester 1534, 3160, 3295) g T-M-E 1020-1400

*Ornithogalum fimbrimarginatum* Leight. (Royffe TM25722[PRE])

*Ornithogalum graminifolium* Thunb. (Acocks 21876[PRE]; Bester 334; Roux 1156[PRE]) g E 1435-1460

*Ornithogalum graminifolium* Thunb. cf. (Bester 540) g E 1440

*Ornithogalum juncifolium* Jacq. (Acocks 21908[PRE]; Bester 822, 1406, 1464, 2989, 3028, 3332, 3454; Strever 118A[PRE]) g,f,v M-E-C 1200-1680

*Ornithogalum longibracteatum* Jacq. (Bester 1528, 1817, 3194) g T-M-E 1020-1340

*Ornithogalum ornithogaloides* (Kunth) Oberm. (Bester 2219, 2225; Rattray 7328[PRE]) a,sa B 1950-2250

*Ornithogalum paludosum* Baker (Bester 969, 993, 1992, 2118) g,v,a M-C-B 1260-2370

*Ornithogalum paludosum* Baker cf. (Bester 1366) sa B 2180

*Ornithogalum septonii* Hilliard & B.L.Burtt (Hilliard & Burtt 14665[E]) 2471

*Ornithogalum tenuifolium* F.Delaroche subsp. *tenuifolium* (Bester 1775, 1792, 3078) g M-E 1320-1520

**Scilla** L.

*Scilla natalensis* Planch. (Bester 1150, 1559, 1751, 3164) g M-E 1140-1540

*Scilla nervosa* (Burch.) Jessop (Bester 1517, 1628, 1636, 1720, 3201, 3321; Van der Merwe PRE36160[PRE]; Van Wyk 6693[PRE]) g M-E 1140-1710

**Urginea** Steinh.

*Urginea* sp. (Bester 3059, 3251)

*Urginea cooperi* cf. (Bester 1529) g M 1300 (Not listed on PSA)

*Urginea macrocentra* Baker (Bester 1531, 1558, 3033, 3232) g M-E-C 1300-1650

*Urginea modesta* Baker (Bester 1414, 1547, 1549) g M-C 1380-1600

● *Urginea tenella* Baker (Bester 1461; Hilliard & Burtt 14635[NU]) g E 1500-1890

**HYPOXIDACEAE**

**Empodium** Salsb.

*Empodium elongatum* (Nel) B.L.Burtt (Hilliard & Burtt 14710) 1769

**Hypoxis** L.

*Hypoxis acuminata* Baker (Bester 1017, 1188, 1225, 2882, 2899, 3073) g,v M-E 1200-1530

*Hypoxis angustifolia* Lam. var. *angustifolia* (Bester 215; Strever 804[PRE]) g E-1500-1550

*Hypoxis angustifolia* Lam. var. *buchananii* Baker (Bester 254, 832) g M 1230-1400

*Hypoxis argentea* Harv. ex Baker var. *sericea* Baker (Bester 924) g E 1380

▲*Hypoxis colchicifolia* Baker (Flanagan 2843[PRE])

*Hypoxis costata* Baker (Bester 1020, 3220) g E 1470-1710

*Hypoxis filiformis* Baker (Bester 23; Bolus 8711[PRE]; Flanagan 2771[PRE]) r M 915-1340

*Hypoxis forskoolii* (Bester 474) g M 1200 (Not listed on PSA)

*Hypoxis galpinii* Baker (Bester 1331, 1332, 1343; Bolus 10318[PRE]) g E 1340-1435

▲*Hypoxis gerrardii* Baker (Bester 671, 740, 1187, 1384, 2883) g, a M-E-B 1290-2230

*Hypoxis hemerocallidea* Fisch. & C.A.Mey. (Bester 2623, 2883) g E 1230-1400

*Hypoxis iridifolia* Baker (Bester 2642; Flanagan 2641[PRE], 2842[PRE]) g E-1220-1380

*Hypoxis multiceps* Buchinger ex Baker (Bester 709, 1594, 2881) g, sa E-C 1290-1680

▲*Hypoxis oblonga* Nel (Bester 1046, 1333; Hilliard & Burt 14620[E]) g E 1340-1440

*Hypoxis parvula* Baker var. *albiflora* B.L.Burt (Bester 1825) g E 1340

*Hypoxis rigidula* Baker var. *rigidula* (Bester 273; Britten 4598[PRE]; Flanagan 2845[PRE]; Story 466[PRE]) g M 1340-1676

#### Rhodohypoxis Nel

▲*Rhodohypoxis baurii* (Baker) Nel var. *baurii* (Acocks 12183[PRE], 20192[PRE], 21903[PRE]; Bester 1380, 1408, 1448, 1551, 1939, 3036; Galpin 6862[K]; Jacott-Guillarmod 7209[E]; Stewart 1910[NU], 1915[NU]) a, f, g M-C-B 1435-2520

▲*Rhodohypoxis baurii* (Baker) Nel var. *platypetala* (Baker) Nel (Bester 1824, 1826) g E 1340

●*Rhodohypoxis deflexa* Hilliard & B.L.Burt (Hilliard & Burt 6705; Phillipson 671[PRE]) 2450-2600

*Rhodohypoxis milloides* (Baker) Hilliard & B.L.Burt (Hilliard & Burt 12295[NU]; Marais 1372[PRE]; Phillipson 650[PRE]; Strever 743[NH]) m 2100-2450

●*Rhodohypoxis rubella* (Baker) Nel (Abbott 5878[PRE]; Acocks 12184[PRE]; Bester 1940; Hilliard 5194[PRE]; Hilliard & Burt 14691[NU]) a B 2400-2560

#### Saniella Hilliard & Burt

*Saniella verna* Hilliard & B.L.Burt (Hilliard 5201[NU], 5204[E]; Hilliard & Burt 14686[NU]; Strever 399[PRE]) 2580-2600

### ICACINACEAE

#### Cassinopsis Sond.

*Cassinopsis ilicifolia* (Hochst.) Kuntze (Abbott 5709[PRU]; Bester 532, 556, 764, 2583) f M-E 1400-1600

### ILLECEBRACEAE

#### Pollichia Ait.

*Pollichia campestris* Aiton (Bester 291, 460, 2637) g M 1200-1400

#### Scleranthus L.

*Scleranthus annuus* L. (Bester 2369) a B 2500

## IRIDACEAE

### Aristea Ait.

*Aristea* sp. (Bester 2303)

*Aristea angolensis* Baker subsp. *angolensis* cf. (Bester 1769) g E 1340

*Aristea cognata* N.E.Br. ex Weim. (Bester 11, 65, 89, 1476, 1657; Stewart 1937[NU]; Van Wyk & Abbott 12025[PRU]) g M-E 1340-1800

*Aristea galpinii* N.E.Br. ex Weim. cf. (Bester 2303) a B 2140

● *Aristea grandis* Weim. (Bester 2129) sa B 1920

*Aristea montana* Baker (Bester 1621; Rattray 7322[PRE]) g E 1590-2440

*Aristea woodii* N.E.Br. (Bester 1769, 1953, 3405, 3570) g M-B 1340-1840

### Crocsmia Planch.

■ *Crocsmia masonorum* (L.Bolus) N.E.Br. (Flanagan 2731[PRE]; Marais 1400[PRE]) 1615

*Crocsmia paniculata* (Klatt) Goldblatt (Bester 3637)

▲ *Crocsmia pottsii* (Macnab ex Baker) N.E.Br. (Bester 287) g M 1280

### Dierama K.Koch

*Dierama* sp. (Dove 83[PRE]; Reynolds 3412A[PRE]; Zietsman & Zietsman 1403[PRE])

*Dierama dissimile* Hilliard (Hilliard & Burtt 13107[NU]; Royffe TM25713[PRE]) 1372

*Dierama dracomontana* Hilliard (Bester 3598; Hilliard & Burtt 12270[NU]; Stewart 1906[NU]) sa B 2104-2200

*Dierama floriferum* Hilliard (Bester 1764, 1765, 1867, 3008) v,g E 1300-1360

*Dierama floriferum* Hilliard cf. (Bester 981, 1012, 1025, 1515) v,g E-M 1300-1500

*Dierama igneum* Klatt (Bester 2073) g E

*Dierama jucundum* Hilliard (Hilliard & Burtt 13140)

*Dierama pauciflorum* N.E.Br. (Bester 1740, 1993; Brusse 5875[PRE]; Stewart 1927[NU]) a,g M-B 1360-2439

▲ *Dierama reynoldsii* I.Verd. (Batten 564[NU]; Bester 1426, 1455, 1759; Reynolds 2183[PRE], 2183A[PRE], 3153[PRE], 3437[PRE]; Stewart 1854[NU]) v,g M-E 1340-1500

*Dierama robustum* N.E.Br. (Bester 1136, 1492, 1513, 1514; Hilliard & Burtt 14653[NU], 14697[NU], 16363[NU], 16467[NU], 16467A[NU]; Reynolds 3409[PRE], 3412[PRE]; Stewart 1888[NU]) g,v M-E 1200-2622

*Dierama trichorhizum* (Baker) N.E.Br. (Bester 2896) v 1200

### Dietes Salisb. ex Klatt

*Dietes iridifolia* (L.) Sweet ex Klatt (Bester 614, 3286) r,s T-E 1020-1420

### Gladiolus L.

*Gladiolus* sp. (Bester 2066)

*Gladiolus crassifolius* Baker (Bester 240, 260, 2206) g M-E 1320-1500

▲ *Gladiolus cruentus* S.Moore (Bester 2168, 2365) g,sa B 1920-2260

*Gladiolus dalenii* Van Geel (Bester 292, 396, 2448) g sa M-E-B 1400-1900

*Gladiolus ecklonii* Lehm. subsp. *ecklonii* (Bester 2182, 2181, 2282, 2478; Strever 903[PRE]) g,sa,a M-B 1250-2070

*Gladiolus longicollis* Baker (Stewart 1880[NU]) g,sa E-B 1350-2134

*Gladiolus longicollis* Baker var. *longicollis* (Bester 326, 929, 956, 1109, 1512, 1567, 3123, 3249; Bigalke 33[NU]) v,g,sa M-E-C-B 1300-2600

*Gladiolus longicollis* Baker var. *longicollis* cf. (Bester 971, 1043, 1623, 1865) v,g E 1290-1600

*Gladiolus longicollis* Baker var. *platypetalus* (Baker) Oberm. (Bester 1198, 1661) g M-E 1400-1440

*Gladiolus ochroleucus* Baker var. *macowanii* (Baker) Oberm. (Nel PRE37020[PRE]; Reynolds 2505[PRE], 3801[PRE]) 1646 1830

*Gladiolus ochroleucus* Baker var. *ochroleucus* (Bester 184, 2180, 3651) g M-E-1340-1350

▲*Gladiolus oppositiflorus* Herb. subsp. *oppositiflorus* (Bester 2325, 2372) f,sa E-B 1420-2260

*Gladiolus oppositiflorus* Herb. subsp. *salmoneus* (Baker) Oberm. (Bester 275, 395; Hilliard & Burt 6635[NU]; Van Wyk & Abbott 12118[PRE]; Zietsman & Zietsman 1471[PRE]) g,sa M-B 1400-2161

*Gladiolus papilio* Hook.f. (Bester 2132) sa B 1920

*Gladiolus permeabilis* D.Delaroche subsp. *edulis* (Burch. ex KerGawl.) Oberm. (Bester 1755, 1822; Zietsman & Zietsman 1399[PRE]) g E 1340

*Gladiolus permeabilis* D.Delaroche subsp. *wilsonii* (Baker) G.J.Lewis (Bester 724, 874, 984, 1006, 1013, 1021, 1080, 1087, 1190, 1245, 1257, 2920, 2072) v,g M-E 1260-1620

*Gladiolus permeabilis* D.Delaroche subsp. *wilsonii* (Baker) G.J.Lewis cf. (Bester 1610) g E 1600

*Gladiolus pubigerus* G.J.Lewis (Bester 1181, 1467, 1504, 2987, 3044, 3118, 3202, 3247) v,g,sa,rs M-E-B 1220-1980

●*Gladiolus saundersii* Hook.f. (Batten 57230[PRE]; Nel PRE39328[PRE]; Hilliard & Burt 6631[NU], 12223[NU], 16551[NU]; Van Wyk & Abbott 12082[PRE])-1900-2500

#### Hesperantha Ker-Gawl.

*Hesperantha* sp. (Van Wyk & Abbott 12151[PRE])

●*Hesperantha alborosea* Hilliard & B.L.Burt (Hilliard 12497[CFM], 17299[CFM])

●*Hesperantha alborosea* Hilliard & B.L.Burt cf. (Bester 1372) a B 2280

*Hesperantha baurii* Baker var. *baurii* (Bester 2599; Galpin 6851[PRE]) g C 1440-1705

●*Hesperantha baurii* Baker var. *formosa* Hilliard & B.L.Burt (Bester 2960) a B 2550

*Hesperantha candida* Baker (Bester 318, 358) g E 1440-1500

*Hesperantha candida* Baker cf. (Bester 850) a B 2340

●*Hesperantha crocopsis* Hilliard & B.L.Burt (Bigalke s.n.[NU])

●*Hesperantha grandiflora* G.J.Lewis (Batten 595[NU]; Bester 497, 506, 674, 2215, 2354, 2360, 2435, 2471, 2477, 2571, 2605, 2646, 2726; Bigalke 226[PRE]; Galpin 6850[PRE], 6857[NH]; Hilliard & Burt 6632[PRE]; Hutchings 1636[NU]; Strever 433[PRE], 719[PRE], 755[PRE]; Van Wyk & Abbott 12103[PRE], 12139[PRE]; Van Zinderen Bakker 57[PRE]) g,f,sa,a E-B 1250-2940

*Hesperantha glareosa* Hilliard & B.L.Burt (Galpin 6853[PRE]) 2590

*Hesperantha hygrophila* Hilliard & B.L.Burt (Bester 2954, 2956, 2961, 3018, 3019, 3098; Strever 433) sa,a B 2190-2550

▲*Hesperantha pulchra* Baker (Bester 2424, 2425, 2431; Strever 129A[PRE]) g E 1410-1890

●*Hesperantha schelpeana* Hilliard & B.L.Burt (Bigalke s.n.[NU])



● *Hesperantha scopulosa* Hilliard & B.L.Burtt (Bester 221) g E 1500  
*Hesperantha tysonii* Baker (Bester 1166, 1199, 1280, 1396, 1489, 2993, 3597) g,v  
 M-E 1200-1440

● *Hesperantha vernalis* Hilliard & B.L.Burtt (Bester 666, 830, 831, 858, 859;  
 Hilliard & Burtt 1313, 13161[NU], 13117[NU], 14541[NU], 14652[NU]; Strever  
 418[PRE]) g,a M-E-B 1230-2700

#### Moraea Mill.

*Moraea* sp. (Bester 2604, 2897)

● *Moraea albicuspa* Goldblatt (Batten 57203[PRE]; Bester 214, 3381, 3404, 3409,  
 3475, 3487; Bigalke 241[PRE]; Dove 91[PRE]; Galpin 6845[PRE], 6846[PRE];  
 Strever 910[PRE]; Zietsman & Zietsman 1443[PRE]) g,sa E-B 1500-2590

● *Moraea alticola* Goldblatt (Galpin 2322[PRE], 6845; Rattray 7321[PRE]; Reynolds  
 3148[PRE]; Stewart 1878[NU]; Story 480[PRE], 480A[PRE]) sa B 1980-2620

*Moraea elliotii* Baker (Bester 200, 1318, 1322, 1462) g E 1300-1500

*Moraea elliotii* Baker cf. (Bester 450, 1310) g M-E 1200-1400

*Moraea huttonii* (Baker) Oberm. (Bester 658, 3258; Werger 1814[PRE]) g,sa E-B  
 1400-3258

● *Moraea inclinata* Goldblatt (Batten PRE57206[PRE]; Bester 43; Bolus 10308[PRE];  
 Flanagan 2661[PRE]; Marais 1396[PRE]; Strever 835[PRE]) g E 1600

● *Moraea inclinata* cf. Goldblatt (Bester 2604)

● *Moraea modesta* Killick (Bester 1256, 1315, 1358, 1379, 1995, 2941, 3034, 3049,  
 3051, 3261, 3310; Killick & Marais 1525, 2075[PRE]; Stewart 1881[NU],  
 1928[NU]) a,sa,g M-E-B 1220-2439

*Moraea muddii* N.E.Br. cf. (Bester 998) g E 1710

*Moraea natalensis* Baker (Bester 185, 3083) g E 1340-1420

*Moraea spathulata* (L.f.) Klatt (Bester 699, 1887, 1994; Marais PRE60867[PRE])  
 g,v,a E-B 1360-2370

*Moraea stricta* Baker (Bester 696, 720, 781, 851, 852, 1378, 1381, 3009; Hilliard  
 & Burtt 3747[NU], 12290[NU], 13116[NU], 14622[NU]) a,g E-C-B 1260-2340

*Moraea stricta* Baker cf. (Bester 1323) g E 1300

● *Moraea trifida* R.C.Foster (Abbott 5695[PRE]; Bester 773, 1144, 1543, 1553,  
 1709, 2927, 2988, 3031, 3207) g,v M-E-C 1320-2100

*Moraea tricuspadata* (L.f.) G.J.Lewis (Bester 2149) g C 1800

#### Romulea Maratti

*Romulea camerooniana* (Hilliard & Burtt 6590[PRE]) 2515 (Not listed on PSA)

*Romulea macowanii* Baker (Bester 3627) sa B 2200

*Romulea macowanii* Baker var. *macowanii* (Bester 213; Galpin 4684[NH]) g E-1500-  
 2745

● *Romulea macowanii* Baker var. *oreophila* M.P. de Vos (Bester 2368; Dyer & Colett  
 4725[PRE]; Galpin 4725, 6848[PRE]; Hilliard & Burtt 6589[PRE]; Marais  
 1367[PRE]; Sephton s.n.[NU]; Van Wyk & Abbott 12109[PRE]) a B 1900-2745

#### Schizostylis Bckh. & Harv.

*Schizostylis coccinea* Bckh. & Harv. (Acocks 20411[PRE]; Bester 114, 3564; Pegler  
 759[PRE]; Strever 746[PRE]; Van Zinderen Bakker 58[PRE]) g M 1340-1875

#### Syringodea Hook.f.

*Syringodea concolor* (Baker) M.P.de Vos (Rattray 7323[PRE]) 2560

### **Tritonia Ker-Gawl.**

*Tritonia disticha* (Klatt) Baker subsp. *rubrolucens* (R.C.Foster) M.P. de Vos (Strever 808[PRE]) 1640

■ *Tritonia drakensbergensis* M.P. de Vos (Abbott 5611[PRE]; Bester 41, 212, 2218, 2227, 2343, 3606; Bigalke 228[PRE]; Flanagan 2659[PRE]; Marais 1374[PRE]; Van Wyk & Abbott 12178[PRU]; Zietsman & Zietsman 1467[PRE]) g,a,sa E-B 1500-2317

*Tritonia lineata* (Salisb.) Ker Gawl. var. *lineata* (Bester 704, 723, 930, 999, 1246, 2892, 3091; Theron 1546[PRE]) g,v,a E-B 1240-2100

### **Watsonia Mill.**

▲ *Watsonia confusa* Goldblatt (Bester 50, 3205; Zietsman & Zietsman 1418[PRE]) g E 1600-1710

▲ *Watsonia densiflora* Baker (Bester 1533, 2596; Marais 1030[PRE]; Strever 820[PRE]) g E-C 1400-1520

■ *Watsonia gladioloides* Schltr. (Acocks 12193[PRE]; Bester 577, 685, 793, 868, 905, 908, 983, 1029, 1069, 1159, 1231, 2879; Royffe TM25723[PRE]; Stewart 1866[PRE]) g,v M-E 1230-1677

*Watsonia pillansii* L.Bolus (Bester 835, 3082; Marais 1029[PRE]; Roux 1211[PRE]) g E 1410-1530

## **ISOËTACEAE**

### **Isoetes L.**

*Isoetes* sp. (Bester 2430) g C 1640

## **JUBULACEAE**

### **Frullania Raddi**

*Frullania* sp. (Bester 1792)

## **JUNCACEAE**

### **Juncus L.**

*Juncus* sp. (Bester 1495)

*Juncus acutus* L. subsp. *leopoldii* (Parl.) Snogerup cf. (Bester 3305) r T 1020

*Juncus dregeanus* Kunth (Bester 2543, 2617) g,a E-B 1410-2200

*Juncus effusus* L. (Bester 146, 1835, 2166) g,v M 1300-1320

*Juncus exertus* Buchenau subsp. *lesuticus* B.L.Burtt (Hilliard & Burtt 16435) 2624

*Juncus inflexus* L. (Phillipson 611[PRE])

*Juncus oxycarpus* E.Mey. ex Kunth (Acocks 20435[PRE]; Bester 1837, 2165, 2632, 2640) g M 1320-1495

*Juncus tenuis* Willd. (Bester 1760) g E 1340

### **Luzula DC.**

*Luzula africana* Drège ex Steud. (Acocks 20203[PRE]; Bester 2732, 2997, 3050, 3225; Phillipson 661) v,sa E-B 1320-2450

## **LAMIACEAE**

### **Ajuga L.**

*Ajuga ophrydis* Burch. ex Benth. (Bester 536, 1124, 1421, 1624; Zietsman & Zietsman 1434[PRE]) g,v M-E 1440-1700

**Becium Lindl.**

*Becium grandiflorum* (Lam.) Pic.Serm. var. *obovatum* E.Mey. ex Benth. (Bolus PRE40618[PRE]; Flanagan 2806A[PRE], 2806B[PRE])

**Leonotis (Pers.) R.Br.**

*Leonotis ocymifolia* (Burm.f.) Iwarsson var. *raineriana* (Vis.) Iwarsson (Bester 409, 2429, 2520, 2579, 2805) g,f M-E-C 1260-1640

**Mentha L.**

*Mentha aquatica* L. (Bester 145; Hilliard & Burtt 7318; Rattray 7318[PRE]) g M 1320-2135

*Mentha longifolia* (L.) L. subsp. *capensis* (Thunb.) Briq. (Bester 3516; Bigalke 220[PRE]; Hilliard & Burtt 3775[PRE]; Hutchinson & Dyer 3130[PRE]) g B-1840-2316

**Plectranthus L'Hérit.**

*Plectranthus fruticosus* L'Hér. (Bester 3460) se E 1250

*Plectranthus grallatus* Briq. (Abbott 5658[PRE]; Bester 4, 83; Galpin 6818[PRE]; Marais 869[PRE], 1384[PRE]; Strever 840[PRE]) r,f E 1420-1675

**Rabdosiella Codd**

*Rabdosiella calycina* (Benth.) Codd (Bester 456, 2428; Britten 7033[PRE]; Lewis 68175[PRE]) g,f M-C 1200-1640

**Salvia L.**

*Salvia aurita* L.f. var. *aurita* (Bester 444) sa C 1600

*Salvia repens* Burch. ex Benth. var. *keiensis* Hedge (Acocks 22106[PRE]) 1435

*Salvia repens* Burch. ex Benth. var. *repens* (Bester 609, 2013, 3347) a,g E-B-1350-1920

*Salvia stenophylla* Burch. ex Benth. (Hilliard & Burtt 6633[PRE])

*Salvia tysonii* Skan (Acocks 21900[PRE]; Flanagan 2797[PRE]) 915-1435

**Satureja L.**

*Satureia biflora* (Buch.-Ham. ex D.Don) Briq. (Acocks 21881[PRE], 21907[PRE]; Bester 612; Flanagan 2809[PRE]) g E 915-1495

**Stachys L.**

*Stachys aethiopicus* L. (Bester 801, 838, 1241, 1438, 1561, 2344, 2381, 2750, 3032; Pegler 1646[PRE]) g M-E 1300-1650

*Stachys cymbalaria* Briq. (Van Wyk & Abbott 12038[PRE]) 1960

*Stachys dregeana* Benth. (Stewart 1896[PRE]) 2580

*Stachys flexuosa* Skan cf. (Bester 2979) v M 1330

*Stachys grandifolia* E.Mey. ex Benth. (Bester 2694) g E 1400

*Stachys gracilliflora* C.Presl. (Bester 499) g E 1300

*Stachys nigricans* Benth. (Bester 362, 1668) g E 1440-1470

*Stachys obtusifolia* MacOwan (Bester 251) g M 1400

*Stachys sessilis* Gürke (Bester 1348) g E 1500

*Stachys tysonii* Skan (Acocks 20198[PRE]; Hilliard & Burtt 6672[PRE]; Roux 1734[PRE]) 2100-2315

**LAURACEAE**

**Cryptocarya R.Br.**

▲*Cryptocarya woodii* Engl. (Abbott 5617[PRE]; Bester 3142, 3288; Van Wyk & Abbott 12003[PRU]) f,s T-E 1020-1620



## LEJEUNACEAE

### Lejeuna Lib.

*Lejeuna eckloniana* Lindenb. (Sim CH2077[PRE]) 1524

*Lejeuna flava* Sw. (Sim 8574[PRE]) 1525

## LENTIBULARIACEAE

### Utricularia L.

*Utricularia livida* E.Mey. (Bester 149, 410, 2011, 2249, 2385, 3573) g,se,v M-1300-1340

*Utricularia subulata* L. cf. (Bester 2499)

*Utricularia subulata* L. (Bester 2248) g E 1290

## LINACEAE

### Linum L.

*Linum thunbergii* Eckl. & Zeyh. (Bester 112, 368, 2654; Strever 756[PRE]) g M-E 1340-1905

## LOBELIACEAE

### Cyphia Berg

*Cyphia assimilis* Sond. var. *assimilis* (Bester 39, 2312) g M-E 1300-1600

*Cyphia sylvatica* Eckl. var. *sylvatica* (Abbott 5644[PRE]; Bester 10; Van Wyk & Abbott 12030[PRE]) g M 1500-1900

▲*Cyphia longifolia* N.E.Br. var. *longifolia* (Bester 340, 1293, 1312, 1394, 1797, 1850, 3442; Van Wyk 6696[PRE]) g M-E 1330-1530

*Cyphia tysonii* E.Phillips (Strever 775[PRE]; Zietsman & Zietsman 1423[PRE])-1700-2012

### Lobelia L.

*Lobelia angolensis* Engl. & Diels (Bester 1180, 1297, 1499) v M-E 1200-1410

*Lobelia dregeana* (C.Presl.) A.DC. (Ratray 7306[PRE]) 2560

*Lobelia erinus* L. (Abbott 1515, 5656[PRE]; Bester 2419, 3090; Van Wyk & Abbott 12016[PRU]) a,r/f B 1500-2100

*Lobelia flaccida* (C.Presl.) A.DC. subsp. *flaccida* (Bester 42, 73, 138, 218, 352; Bigalke 208[PRE]; Strever 805[PRE]; Van Wyk & Abbott 12084[PRE]; Zietsman & Zietsman 1433[PRE]) g M-E 1320-2316

●*Lobelia galpinii* Schltr. (Brusse 655, 5873[PRE], 5876; Phillipson 655[PRE])-2450-2500

●*Lobelia laxa* MacOwan (Bester 423, 452, 1503; Comins 608[NU]; Hilliard & Burt 14606[NU]) g M-E 1200-1890

*Lobelia preslii* A.DC. (Bester 313, 580, 2003, 2740; Bigalke 206[PRE], 209[PRE]; Strever 839[PRE]; Zietsman & Zietsman 1449[PRE]) g,a,sa B 1670-2370

▲*Lobelia pteropoda* (Presl.) A.DC. (Bester 2454) g E 1420

●*Lobelia vanreenensis* (Kuntze) K.Schum. (Bester 219) g E 1500

### Monopsis Salisb.

*Monopsis decipiens* (Sond.) Thulin (Bester 46, 1019, 1148, 1173, 1253; Pegler 1682[PRE]) g M-E 1440-1650

*Monopsis scabra* (Thunb.) Urb. (Killick & Marais 2061[PRE]) 915

*Monopsis unidentata* (Dryand.) E.Wimm. subsp. *intermedia* Phillipson ined. (Bester

136) g M 1320

## LOGANIACEAE

### Buddleja L.

*Buddleja auriculata* Benth. (Abbott 5718[PRU], 5719[PRU]; Bester 516, 553; Story 510[PRE]) f 1400-1435

*Buddleja dysophylla* (Benth.) Radlk. (Pegler 1154A[PRE])

● *Buddleja loricata* Leeuwenb. (Bester 656; Hilliard & Burt 14616[NH], 16517[NU]; Story 496[PRE]; Van Wyk 6703[PRE]) g B 2200-2286

*Buddleja salviifolia* (L.) Lam. (Abbott 5666[PRU]; Bester 120, 738, 751; Bayliss 1441[PRE], BRIB1337[PRE]; Viljoen 706[PRE]) g,rs M-E 1320-1890

*Buddleja saligna* Willd. (Bester 624) g E 1420

### Gomphostigma Turcz.

*Gomphostigma virgatum* (L.f.) Baill. (Abbott 5670[PRE]; Bester 301, 2681) r 1450

### Nuxia Comm. ex Lam.

*Nuxia floribunda* Benth. (Bester 2795) r T 980

### Strychnos L.

*Strychnos henningsii* Gilg (Pegler 1277[PRE])

## LOMARIOPSIDACEAE

### Elaphoglossum Schott ex J.Sm.

*Elaphoglossum acrostichoides* (Hook. & Grev.) Schelpe (Bester 843, 2810, 2828, 3469) g,rl E 1250-1530

*Elaphoglossum hybridum* (Bory) Brack. (McLoughlin 106[PRE])

*Elaphoglossum spathulatum* (Bory) T.Moore (Bester 2591) f E 1500

## LORANTHACEAE

### Tapinanthus (Blume) Reichb.

*Tapinanthus kraussianus* (Meisn.) Tiegh. subsp. *transvaalensis* (Sprague) Wiens (Pienaar 169[PRE])

## LYCOPODIACEAE

### Lycopodium L.

*Lycopodium clavatum* L. (Bester 673) g E 1290

## MALVACEAE

### Anisodontea Presl

*Anisodontea* sp. (Galpin 5685[PRE]) 2360

*Anisodontea julii* (Burch. ex DC.) Bates subsp. *prostrata* (E.Mey. ex Turcz.) Bates (Bigalke 73[PRE]; Hilliard & Burt 12264[NU]; Viljoen 702[PRE]) 1737-1890

### Hibiscus L.

*Hibiscus aethiopicus* L. var. *aethiopicus* (Bester 3152) g M 1140

*Hibiscus aethiopicus* L. var. *ovatus* Harv. (Bester 189, 257, 937, 1321, 1337, 1469, 1477, 1660, 3029, 3076) g,v M-E 1200-1650

*Hibiscus microcarpus* Garcke (Bester 680) g M 1400

### Malva L.

*Malva parviflora* L. (Sim 2357[PRE])

**Pavonia Cav.**

*Pavonia burchellii* (DC.) R.A.Dyer (Flanagan 2804[PRE])

*Pavonia columella* Cav. (Bester 2456) g E 1420

**Sida L.**

*Sida chrysantha* Ulbr. (Bester 3197) g T 1020

*Sida ternata* L.f. (Bester 2576, 2577; Hutchings 1530[PRE]) f E 1500

**MENISPERMACEAE**

**Cissampelos L.**

*Cissampelos torulosa* L.f. (Bester 3141) f E 1620

**MELASTOMATACEAE**

**Memecylon L.**

▲*Memecylon natalense* Markgr. (Bester 771) f E 1410

**MESEMBRYANTHEMACEAE**

**Delosperma N.E.Br.**

*Delosperma* sp. (Bester 2109; Strever 401[PRE], 764[PRE])

*Delosperma clavipes* Lavis (Bester 3016) a B 2280

*Delosperma crassuloides* (Haw.) L.Bolus cf. (Bester 1354) sa C 2000

●*Delosperma deleewiae* Lavis (Hilliard & Burtt 14678[NU]) 2591

*Delosperma gracile* L.Bolus (Bester 3022) sa B 2400

*Delosperma herbeum* (N.E.Br.) N.E.Br. (Zietsman & Zietsman 1398[PRE]) 2200

●*Delosperma nubigenum* (Schltr.) L.Bol. (Hilliard & Burtt 12205[NU]) 2439

*Delosperma pilosulum* L.Bolus (Reynolds 2182[PRE])

*Delosperma prasinum* L.Bolus (Bester 1403, 2387) g M 1300-1380

*Delosperma subpetiolatum* L.Bolus (Bester 839; Van Wyk & Abbott 12001[PRE]) g E 1530-1900

**Ruschia Schwant.**

*Ruschia* sp. (Bester 1385) a B 2230

*Ruschia putterillii* (L.Bolus) L.Bolus (Bester 3021; Strever 414[PRE]) 2800

**MORACEAE**

**Ficus L.**

*Ficus burtt-davyi* Hutch. (Bester 2799) r T 980

*Ficus ingens* (Miq.) Miq. (Bester 807) g E 1420

*Ficus ingens* (Miq.) Miq. var. *ingens* (Bester 196, 475, 1161) g M-E 1200-1440

*Ficus sur* Forssk. (Flanagan 767[PRE]) 610

*Ficus thonningii* Blume (Flanagan 1312[PRE])

**MYRICACEAE**

**Myrica L.**

*Myrica pilulifera* Rendle (Acocks 13812[PRE]; Bester 944, 963, 3284) g M-E-1320-1560

*Myrica serrata* Lam. (Bester 294, 420, 731, 747, 958, 2749, 2837, 3259) g, sa M-E-B 1300-1920

## MYRSINACEAE

### Maesa Forssk.

*Maesa alnifolia* Harv. (Calet 291[PRE]; Flanagan 473[PRE]; Galpin 8241[PRE])-610-1370

### Myrsine L.

*Myrsine africana* L. (Abbott 5632[PRU]; Bester 483, 759, 2885, 2929, 2936, 3108; Theron 1534[PRE]; Van Wyk & Abbott 12002[PRU]) f,g M-E 1230-1800

### Rapanea Aubl.

*Rapanea melanophloeos* (L.) Mez. (Bester 495) g E 1300

## OCHNACEAE

### Ochna L.

*Ochna arborea* Burch. ex DC. var. *arborea* (De Vries 5[PRE]; Pegler 1216A[PRE]) 795

*Ochna holstii* Engl. (Flanagan 2696[PRE]) 1220

*Ochna serrulata* (Hochst.) Walp. (Bester 555, 728, 745, 1052, 1721, 2928; De Vries 4[PRE]; Flanagan 322[PRE]; Meuse 9695[PRE]; Royffe TM25719[PRE]; Wedermann & Oberdick 1187[PRE]) g M-E 795-1440

## OLEACEAE

### Chionanthus L.

*Chionanthus peglerae* (C.H.Wright) Stearn (Pegler 819[PRE])

### Olea L.

*Olea europaea* L. subsp. *africana* (Mill.) P.S.Green (Bester 603, 618, 2767; Muller 756[PRE]) g E 1420-1675

## OLINIACEAE

### Olinia Thunb.

*Olinea emarginata* Burt Davy (Bester 345, 484, 523, 2560, 2830, 2847; Ellis & Jarman 1080[PRE]) f E 1460-1600

## ONAGRACEAE

### Epilobium L.

*Epilobium capense* Burchinger ex Hochst. (Bester 1891; Bigalke B219[PRE]; Bolus s.n.; Phillipson 710[PRE]; Rattray 7299; Zietsman & Zietsman 1428[PRE]) 1700-2550

*Epilobium salignum* Hausskn. (Bester 210, 2410; Zietsman & Zietsman 1412[PRE]) g E 1500-1700

### Oenothera L.

*Oenothera erythrosepala* Borbás (Strever 774[PRE]) 2012

*Oenothera indicora* Cambess. subsp. *indicora* (Bester 70) g E 1330

*Oenothera laciniata* Hill (Bester 1062) v M 1300

*Oenothera rosea* L'Hér. ex Aiton (Bester 568) sa C 1980

*Oenothera stricta* Ledeb. ex Link (Bester 1061) v M 1300

*Oenothera tetraptera* Cav. (Bester 682, 1045, 1954) v,g E-B 1320-1680

## OPHIOGLOSSACEAE

**Ophioglossum L.**

*Ophioglossum polyphyllum* A.Braunx (Reid 1207[PRE])

**ORCHIDACEAE**

**Angraecum Bory**

*Angraecum sacciferum* Lindl. (McLoughlin TM12956[PRE])

**Brachycorythis Lindl.**

*Brachycorythis pubescens* Lindl. (Bester 3578) g M 1380

**Brownleea Harv. ex Lindl.**

*Brownleea coerulea* Harv. ex Lindl. (McLoughlin TM12757[PRE])

● *Brownleea macroceras* Sond. (Bester 2268, 2273, 2361, 2366; Bigalke 232[PRE]; Hilliard & Burt 6630[NU]; Van Wyk & Abbott 12146[PRE]) g,a,sa B 1900-2500

*Brownleea parviflora* Harv. ex Lindl. (Bester 337, 439, 2266, 2296, 2318, 2389; McLoughlin TM12755[PRE], PRE35252[PRE]) g,sa E-C 1460-1600

*Brownleea recurvata* Sond. (Bester 335, 387, 2232, 2235, 2299, 2328, 2405, 2407, 2434; Van Wyk & Abbott 12028[PRE], 12148[PRE]; Vet. Officer PRE35275[PRE]) g,sa E-B 1460-1900

**Corycium Swartz**

*Corycium dracomontanum* Parkman & Schelpe (Bester 2134, 2139, 2265, 2307, 2489, 3490, 3546, 3623, 3655) sa B 1900-2500

*Corycium flanaganii* (Bolus) Kurzweil & H.P.Linder (Bester 2356, 3472) sa,a B 2440-2500

*Corycium nigrescens* Sond. (Bester 2040, 2392, 3498) sa B 2370-2500

**Disa Berg.**

*Disa* sp. (Bester 2104)

*Disa cephalotes* Rchb.f. subsp. *cephalotes* (Flanagan 2710A[PRE], 2710B[PRE]) 1370-1525

*Disa chrysostachya* Sw. (Bester 1812, 1861, 1900, 2128, 3533, 3534, 3549, 3608) v,a,sa E-B 1360-2200

*Disa cooperi* Rchb.f. (Bester 2156, 2186, 3585, 3588) g,sa M-E 1300-1600

*Disa cornuta* (L.) Sw. (Bester 2104, 2280, 2390, 3406, 3407, 3528) g,sa B 1840-2100

■ *Disa crassicornis* Lindl. (Bester 2212, 2240, 2288) sa,a B 2040-2160

*Disa dracomontana* Schelpe ex H.P.Linder (Bester 1882) v 1360

*Disa fragans* Schltr. (Bester 2228, 2291, 2358, 2362, 2367, 2403, 2414, 2436, 3483; Bigalke B236[PRE], B237[PRE]; Galpin 6837[NH]; Strever 731[PRE]; Zietsman & Zietsman 1446[PRE]) g,a,sa E-B 1880-2561

■ *Disa galpinii* Rolfe. (Galpin 6838[PRE]; Gibson 6[NU]) 1705

*Disa montana* Sond. (Bester 1909, 2022, 2094, 2100, 2126, 2127, 2144, 2146, 2148) g,sa, a E-B 1900-1920

*Disa montana* Sond. cf. (Bester 2021; Stewart 1864[NU]) a B 1677-1920

*Disa nivea* H.P.Linder (Bester 2221, 2236, 2289, 2437; Gibson 4[NU], 9[NU]) g,a E-B 1880-2250

*Disa nivea* H.P.Linder cf. (Bester 2269, 3563) sa B 1900

■ *Disa oreophila* Bolus (Bester 3707)

■ *Disa oreophila* Bolus subsp. *erecta* H.P.Linder (Bester 2041, 2135, 2153, 3497, 3609; Bigalke B233[PRE]; Zietsman & Zietsman 1466[PRE]) g,sa E-B 2161-2500

- *Disa oreophila* Bolus subsp. *oreophila* (Acocks 21891[PRE]; Bester 2042, 2120, 3463, 3545, 3581; Flanagan 2765[PRE]) g,sa E-B 1250-2042
- Disa oreophila* Bolus subsp. *oreophila* cf. (Bester 2026) sa B 2370
- Disa patula* Sond. var. *transvaalensis* Summerh. (Bester 204, 324; Marais 1398[PRE]; McLoughlin TM12754[PRE]) g E 1500-1615
- Disa rhodantha* Schltr. (Bester 3394, 3662) g D 1400
- *Disa sankeyi* Rolfe (Bester 2402) sa B 2020
- Disa stachyoides* Rchb.f. (Bester 1820, 1842, 2005, 2154, 3434, 3584; Marais 1399[PRE]) g,v M-E 1300-1615
- Disa stricta* Sond. (Bester 2029, 2043, 2123, 3544, 3556) sa,g E-B 1900-2370
- Disa thodei* Schltr. ex Kraenzl. (Bester 1947, 3388, 3494, 3501, 3510, 3522; Bigalke 25[NU]; Marais 1376[PRE]; Rattray 7281[PRE]) g,sa B 1840-2600
- Disa versicolor* Rchb.f. (Bester 27, 2155, 2158, 2160, 2224, 2237, 2290, 3431, 3432, 3450, 3583, 3590, 3663; Strever 801[PRE]; Zietsman & Zietsman 1405[PRE]) g,sa,a E-B 1548-2100

#### Disperis Swartz

- Disperis* sp. (Bester 2295, 2404)
- Disperis cardiophora* Harv. (Abernethy 1432[PRE]; Bester 2250, 2285, 2294, 2396, 2441; McLoughlin TM12758[PRE]) g,a,sa E-B 1290-2140
- Disperis fanninia* Harv. (Abbott 5657[PRE]; Bayliss 6956[PRE]; Bester 163; Flanagan 2762A[PRE], 2762B[PRE]) f E 1220-16775
- Disperis macowanii* H.Bol. (Bester 2334, 2357) g B 1800-1920
- Disperis oxyglossa* Bolus (Bester 380, 2395; McLoughlin TM12759[PRE]; Van Wyk & Abbott 12150[PRU]) g,sa B 1220-1900
- Disperis renibracteata* Schltr. (Bester 3656; Flanagan 2768[PRE]) 1370
- Disperis stenoplectron* Rchb.f. (Abernethy 1434[PRE]; Bester 2400) sa B 2020
- Disperis thorncroftii* Schltr. (Bester 2412) g E 1890
- Disperis thorncroftii* Schltr. (Bester 2270)
- Disperis tysonii* Bolus (Abbott 5704[PRU]; Bester 2336; Van Wyk & Abbott 12089[PRU]) g B 1920-2100
- Disperis wealii* Rchb.f. (Bester 3493; McLoughlin TM12760[PRE]) sa B 2500

#### Eulophia R.Br. ex Lindl.

- Eulophia aculeata* (L.f.) Spreng subsp. *aculeata* (Flanagan 2711[PRE]) 1370
- Eulophia aculeata* (L.f.) Spreng subsp. *huttonii* (Rolfe) A.V.Hall (Bester 934, 1168, 1518, 1519, 1569, 1587, 1588, 3217, 3246; Wedermann & Oberdick 1166[PRE]) v,g,sa E-C-B 1340-2010
- Eulophia clavicornis* Lindl. var. *clavicornis* (Bester 786, 935, 976, 1010, 1084, 1163, 1176, 1427, 1527, 1528, 1649, 1786, 1795, 2039, 2933, 3055, 3060, 3086, 3087, 3199) v,g M-E 1230-1710
- Eulophia clavicornis* Lindl. var. *inequalis* (Schltr.) A.V.Hall (Bester 889, 1047, 3066) g M-E 1380-1590
- Eulophia cliellifera* (Rchb.f.) Bolus (Bester 787, 1086, 1345, 2891) g M-E 1230-1380
- Eulophia foliosa* (Lindl.) Bolus (Bester 1571, 1644, 1648, 1761, 1785, 1852, 3335, 3446, 3462, 3569; McLoughlin TM12765[PRE]) g,v M-E-C 1200-1800
- Eulophia leontoglossa* Rchb.f. (Bester 3455, 3464) g,v E 1250
- Eulophia ovalis* Lindl. subsp. *ovalis* (Bester 2016) a B 1920



*Eulophia parviflora* (Lindl.) A.V.Hall (Bester 936, 943, 979, 989, 1081, 1088, 1167, 1204, 1650, 3007, 3135, 3200) g,v M-E 1300-1710

*Eulophia welwitschii* (Rchb.f.) Rolfe (Bester 3576, 3586) g M-E 1300-1320

*Eulophia zeyheriana* Sond. (Bester 1846, 3571, 3700) v,g M 1340-1360

**Habenaria Willd.**

*Habenaria arenaria* Lindl. (McLoughlin TM12764[PRE])

*Habenaria clavata* (Lindl.) Rchb.f. (Flanagan 2707[PRE]) 1220

*Habenaria cornuta* Lindl. (Galpin 6833[PRE]) 1706

▲*Habenaria dives* Rchb.f. (Abbott 5635[PRE]; Bester 159, 160, 325, 374, 2177, 2187, 2191, 2208, 2287; Britten 4576[PRE]; Flanagan 2870[PRE]; Strever 816[PRE], 865[PRE]) g E 1341-1670

*Habenaria falcicornis* (Burch. ex Lindl.) H.Bol. subsp. *caffra* (Schltr.) J.C.Manning (Bester 2383)

▲*Habenaria falcicornis* (Lindl.) H.Bol. var. *falcicornis* (Bester 2170, 2188, 2195) g E 1260-1500

*Habenaria laevigata* Lindl. (Bester 3512) g B 1840

*Habenaria lithophila* Schltr. (Bester 384, 2239, 2281, 2401, 2440, 3602; Galpin 6832[PRE]; Rattray 7319[PRE]) sa B 1387-1981

*Habenaria tridens* Lindl. (Pegler 1789[PRE]; Schlechter 1817[PRE]) 1097

**Holothrix L.C.Rich. ex Hook.**

●*Holothrix incurva* Lindl. (Hilliard & Burt 14650[NU]) 1890

*Holothrix scopularia* (Lindl.) Rchb.f. (Bester 1294, 1563, 1565, 1566, 1884, 2035, 3037, 3038, 3342, 3410, 3479, 3495, 3610; McLoughlin TM12762[PRE]; Stewart 1916[NU]) v,sa,g M-E-C-B 1330-2500

●*Holothrix thodei* Rolfe (Bester 2217, 2267, 2284, 2393, 2484, 3705; Van Wyk & Abbott 12168[PRU]) g,a,sa B 1960-2250

*Holothrix villosa* Lindl. var. *villosa* (Bester 2926, 3043) g M-E 1240-1410

**Huttonaea Harv.**

●/▲*Huttonaea fimbriata* Rchb.f. (Bester 2553; Flanagan 2767[PRE]) g E 1370-1400

■*Huttonaea grandiflora* (Schltr.) Rolfe (Bester 2272, 2388; Bigalke 231[PRE]; Hilliard & Burt 6721[PRE]) g,a B 1960-2500

●/▲*Huttonaea pulchra* Harv. (Bester 2326) f E 1420

**Liparis L.C.Rich.**

*Liparis bowkeri* Harv. (Bester 2556) g E 1400

**Monadenia Lindl.**

*Monadenia brevicornis* Lindl. (Bester 2413) g E 1890

**Neobolusia Schltr.**

*Neobolusia rysonii* (Bolus) Schltr. (Acocks 21906[PRE]; Bester 92, 206, 2335; Flanagan 2763[PRE]) g E-B 1340-1920

●*Neobolusia virginea* (Bolus) Schltr. (Acocks 12185[PRE]; Bester 3317; Bigalke 13[NU]; Hilliard & Burt 14720[NU]; Stewart 1912[NU]; Story 12185[PRE]; Wedermann & Oberdick 1102[PRE]) sa B 1980-2600

**Polystachya Hook.**

*Polystachya concreta* (Jacq.) Garay & Sweet (Flanagan 2794) 1065

**Pterygodium Swartz**

*Pterygodium hastatum* Bolus (Bester 310, 2333; McLoughlin TM12763[PRE]) g B 1920

● *Pterygodium leucanthum* Bolus (Bigalke B230[PRE]; Flanagan 2764B[PRE])-1370-2316

*Pterygodium magnum* Rechb.f. (Bester 3661; Flanagan 2654[PRE]) g B 1950

#### Satyrium Swartz

*Satyrium* sp. (Bester 2106, 2138)

*Satyrium cristatum* Sond. var. *cristatum* (Bester 304, 321, 382, 383, 397, 2184, 2305, 3643, 3644; Strever 783[PRE]; Van Wyk & Abbott 12143[PRE], 12149[PRE]) sa,g E-B 1500-1920

*Satyrium ligulatum* Lindl. (Bester 3408, 3499, 3520, 3535; Flanagan 2846[PRE]) g,se,sa B 1518-2500

*Satyrium lingulatum* Lindl. cf. (Bester 2099, 2125, 2136)

*Satyrium longicauda* Lindl. var. *jacottetianum* (Kraenzl.) A.V.Hall (Abbott 5703[PRU]; Bester 322, 400, 426, 2004, 2157, 2178, 2207, 2223, 2229, 2314, 2421, 2426, 3481, 3500, 3543, 3559, 3645, 3624, 3650; Dove 98[PRE]; Flanagan 2829[PRE]; Galpin 6836[PRE]; Marais 1397[PRE]; McLoughlin TM12761[PRE]; Strever 817[PRE], 885[PRE], 886[PRE]; Van Wyk & Abbott 12152[PRE]) g,sa,a-M-E-B 1300-2500

*Satyrium longicauda* Lindl. var. *longicauda* (Bester 3, 29, 60, 323, 1911, 1918, 2007, 2143, 2150, 2159, 2171, 2172, 2176, 2179, 2192, 2193, 2202, 2444, 3587; Marais 1387[PRE]) g,v,se M-E 1320-1500

*Satyrium membranaceum* Sw. (Bester 1314, 1428, 1431, 1568) g M-E-C 1300-1860

*Satyrium neglectum* Schltr. subsp. *neglectum* (Bester 398, 399, 3484, 3619, 3621; Marais 1375[PRE]; Ziesman & Zietsman 1442[PRE]) sa B 1900-2500

*Satyrium parviflorum* Sw. (Bester 440, 385, 2297, 2298, 2331, 2340, 2378, 2379, 2391, 2445, 2649, 2689, 3308; Galpin 6835[PRE]; Pegler 1788[PRE]; Strever 721[PRE]) sa,g M-C-B 1260-2686

▲ *Satyrium sphaerocarpum* Lindl. (Bester 190, 203, 320, 375, 433, 2183, 2190, 2327, 2380, 2443; Britten 4599[PRE]) g E 1340-1500

*Satyrium trinerve* Lindl. (Bester 3641; Flanagan 2769[PRE]) v 1366

#### Schizochilus Sond.

● *Schizochilus flexuosus* Harv. ex Rolfe (Bester 2226, 2233, 2234, 2241, 2292, 2397, 3548; Hilliard & Burtt 6588[NU]) sa B 1829-1900

●/▲ *Schizochilus zeyheri* Sond. (Acocks 21909[PRE]; Bester 22, 90, 2119, 2173, 2189, 2200, 2313, 2399, 3540, 3438, 3553; Galpin 6841[PRE]; Flanagan 2671[PRE], 2766[PRE]; Pegler 1431[PRE], 1607[PRE]; Rattray 7320[PRE]; Strever 802[PRE]) r,g,sa M-E-B 1340-2135

#### Stenoglottis Lindl.

*Stenoglottis fimbriata* Lindl. (Bester 164, 2323, 2324, 3292) f,s T-E 1020-1550

### ORTHOTRICHACEAE

#### Macrocoma (C.Müll.) Grout

*Macrocoma tenue* (Hook. & Grev.) Vitt subsp. *tenue* (Bester 181) f M 1550

### OSMUNDACEAE

#### Osmunda L.

*Osmunda regalis* L. (Young TM717[PRE], TM718[PRE], TM720C[PRE], NH1486[PRE]; Flanagan 2777[PRE]) 914



## OXALIDACEAE

### Oxalis L.

- Oxalis* sp. (Bester 110, 111, 125, 360)
- Oxalis bifurca* Codd. (Flanagan 2810[PRE]) 915
- Oxalis bifurca* Codd. var. *angustiloba* Sond. (Bester 2131) sa B 1920
- Oxalis corniculata* L. (Bester 2535) g M 1340
- Oxalis depressa* Eckl. & Zeyh. (Flanagan 2678[PRE]) 915
- Oxalis semiloba* Sond. cf. (Bester 359, 2699) g E 1400-1440
- Oxalis smithiana* Eckl. & Zeyh. (Bester 109, 361, 1442) g E-M 1340-1620
- Oxalis tysonii* E. Phillips (Reid 1208[PRE])

## PAPAVERACEAE

### Papaver L.

- Papaver aculeatum* Thunb. (Bester 1292, 1430; Rattray 7283[PRE]) g E-M 1330-2500

## PERIPLOCACEAE

### Raphionacme Harv.

- Raphionacme hirsuta* (E. Mey.) R.A. Dyer ex E. Phillips (Bester 3057) g M 1410
- Raphionacme palustris* Venter & Verhoeven (Hutchings & Plumstead 1589[PRE])

## PHYTOLACCACEAE

### Phytolacca L.

- Phytolacca heptandra* Retz. (Bayliss 1336[PRE]; Bester 2) g B 1525
- Phytolacca octandra* L. (Bester 389, 817) g, sa M-B 1350-1900

## PINACEAE

### Pinus L.

- Pinus pinea* L. (Henderson 1007[PRE]) 1600

## PIPERACEAE

### Peperomia Ruiz & Pav.

- Peperomia tetraphylla* (G. Forst.) Hook. & Arn. (Bester 776, 2320; Gibbs Russell 4504[PRE]) f E 1450-1981

## PITTOSPORACEAE

### Pittosporum Banks ex Gaertn.

- Pittosporum viridiflorum* Sims (Bester 421, 482, 487, 626, 911, 959, 1744, 2796; De Vries 53[PRE]; Flanagan 571[PRE]; Sim 1600[PRE]) g, f M-E 610-1800

## PLAGIOCHILACEAE

### Plachiogila (Dum.) Dum.

- Plachiogila* sp. (Bester 179.1)

## PLANTAGINACEAE

### Plantago L.

- Plantago lanceolata* L. (Bester 973, 974, 1226) v, g M 1290-1340

*Plantago virginica* L. (Bester 1474, 3143) v M 1290-1310

**POACEAE**

**Agrostis** L.

*Agrostis* sp. (Flanagan 2791[PRE])

*Agrostis barbuligera* Stapf var. *barbuligera* (Bester 1771, 3074, 3094) g E 1200-1340

*Agrostis bergiana* Trin. var. *bergiana* (Bester 2278, 2308; Strever 887[PRE]) sa, a B 1200-2120

*Agrostis lachnantha* Nees var. *lachnantha* (Bester 1839, 2862; Hart 9190[PRE]; Liebenberg 5463[PRE]; Spies 2524[PRE]) g M 1320-1750

**Alloteropsis** Persl

*Alloteropsis semialata* (R.Br.) Hitchc. subsp. *eckloniana* (Nees) Gibbs Russell (Godfrey 1512[PRE]; Ellis 2606[PRE]; Spies 2531[PRE]; Viljoen 193[PRE]) 1615

*Alloteropsis semialata* (R.Br.) Hitchc. subsp. *semialata* (Bester 378, 879) g E-1380-1615

**Andropogon** L.

*Andropogon amethystinus* Steud. (Strever 745[PRE]; Theron 2203[PRE]) 1830-1890

*Andropogon appendiculatis* Nees (Acocks 21911[PRE], 21921[PRE]; Bester 1079, 1483; Ellis 5691[PRE]; Strever 834[PRE], 863[PRE]) g E 1380-2600

*Andropogon distachyos* L. (Bester 1262) g E 1530

*Andropogon ravus* J.G.Anderson (Acocks 21930[PRE], 12191[PRE]) 1370-1435

**Anthoxanthum** L.

*Anthoxanthum ecklonii* (Nees ex Trin.) Stapf (Acocks 20194[PRE], 21910[PRE]; Bester 1463) f C 1495-2195

**Aristida** L.

*Aristida bipartita* (Nees) Trin. & Rupr. (Ellis 285[PRE], 291[PRE])

*Aristida canescens* Henrard subsp. *ramosa* De Winter (Ellis 303[PRE])

*Aristida congesta* Roem. & Schult. subsp. *congesta* (Bester 272) g M 1400

*Aristida difusa* Trin. subsp. *burkei* (Stapf) Melderis (Ellis 305[PRE]; Hilliard & Burt 16653[PRE]; Sim 2758A[PRE]) 1435-2164

*Aristida difusa* Trin. subsp. *difusa* (Van Zinderen Bakker 53[PRE]) 1435

*Aristida junciformis* Trin. & Rupr. subsp. *galpinii* (Stapf) De Winter (Bester 2310, 2856; Ellis 237B[PRE]; Ingpen 22[PRE]; Strever 830[PRE], 856[PRE]) g,sa M-B 1360-2120

*Aristida junciformis* Trin. & Rupr. subsp. *junciformis* (Bester 2243; Flanagan 2799[PRE]) v M 915-1320

**Arudinella** Raddi

*Arudinella nepalensis* Trin. (Bester 244, 2261, 2263) g M-E 1280-1320

**Brachiaria** (Trin.) Griseb.

*Brachiaria eruciformis* (Sm.) Griseb. (Ellis 1102[PRE])

*Brachiaria serrata* (Thunb.) Stapf (Bester 270, 2527; Ellis 260[PRE], 293[PRE]; Flanagan 2639[PRE]) g M 1340-1400

**Brachypodium** Beauv.

*Brachypodium bolusii* Stapf (Bester 2277; Galpin 6929[PRE]) 2485

*Brachypodium flexum* Nees (Acocks 21873[PRE]; Bester 347, 2580; Ellis 1105[PRE]; Strever 893[PRE]; Van Zinderen Bakker 50[PRE]) r E 1250-1555

**Bromus L.**

*Bromus catharticus* Vahl (Strever 398[PRE]) 2600

*Bromus speciosus* Nees (Bester 987, 1195, 1411, 1922; Ellis 5685[PRE], 5690[PRE]; Liebenberg 5460[PRE]) v,g M-E 1380-2600

**Catalepis Stapf & Stent**

*Catalepis gracilis* Stapf & Stent (Bester 2349; Ellis 5679[PRE]) 2100

**Chloris Swartz**

*Chloris gayana* Kunth (Ellis 288[PRE], 296[PRE]; Godfrey SH1518[PRE]; PRE Curator PRE36377[PRE]) 1615

**Cymbopogon Spreng.**

*Cymbopogon* sp. (Bester 351)

*Cymbopogon plurinodes* (Stapf) Stapf ex Burtt Davy (Ellis 304[PRE]; Gibbs Russell 4539[PRE]) 1973

*Cymbopogon prolixus* (Stapf) E.Phillips (Galpin 6897[PRE])

*Cymbopogon validus* (Stapf) Stapf ex Burtt Davy (Bester 2068, 2855) E

**Cynodon Rich.**

*Cynodon dactylon* (L.) Pers. (Watt & Brandwyk 1166[PRE])

**Digitaria Haller**

*Digitaria ciliaris* (Retz.) Koeler (Bester 75) g E 1330

*Digitaria diagonalis* (Nees) Stapf var. *diagonalis* (Acocks 21929[PRE]; Bester 2262) g E 1280-1370

*Digitaria flaccida* Stapf (Acocks 21922[PRE]; Bester 1508) g E 1480

*Digitaria monodactyla* (Nees) Stapf. (Bester 2306) g M 1320

*Digitaria setifolia* Stapf (Bester 1141, 1152, 1399) g M-E 1360-1440

*Digitaria ternata* (A.Rich.) Stapf. (Bester 2461, 2470) g,s E-B 1420-1960

*Digitaria tricholaenoides* Stapf (Bester 1485; Godfrey SH1517[PRE]) g E 1380-1615

**Diheteropogon (Hack.) Stapf**

*Diheteropogon amplexans* (Nees) Clayton (Bester 52, 2260, 2463; Galpin 6893[PRE]) g E 1280-1600

*Diheteropogon filifolius* (Nees) Clayton (Bester 1196, 1235, 1304) g,v M 1330-1400

**Ehrharta Thunb.**

*Ehrharta erecta* Lam. var. *erecta* (Ellis 292[PRE])

*Ehrharta erecta* Lam. var. *erecta* cf. (Bester 2514) g M 1320

● *Ehrharta longigluma* C.E.Hubb. (Ellis 5681[PRE]) 2500

**Eleusine Gaertn.**

*Eleusine coracana* (L.) Gaertn. subsp. *africana* (Kenn.-O'Bryne) Hilu & de Wet (Bester 2529)

**Elionurus Kunth ex Willd.**

*Elionurus muticus* (Spreng.) Kunth (Bester 880, 986; Spies 2520[PRE]) g E 1380-2100

**Eragrostis Wolf**

*Eragrostis* sp. (Ellis 286[PRE])

*Eragrostis annulata* Rendle ex Scott-Elliott (Brueckner 647[PRE])

*Eragrostis caesia* Stapf (Bester 2309; Strever 707[PRE], 736[PRE]; Gibbs Russell 4536[PRE]) sa B 2008-2622

*Eragrostis capensis* (Thunb.) Trin. (Bester 133, 339, 884, 1192; Ellis 284[PRE]; Phillipson 604[PRE]; Spies 2528[PRE]) g M-E 1320-2000

- Eragrostis chloromelas* Steud. (Gibbs Russell 4527[PRE]) 1973  
*Eragrostis curvula* (Schrud.) Nees (Bester 594; 1236; Ellis 307[PRE]; Galpin 6925[PRE]; Godfrey SH1515[PRE]; Vorster 342[PRE], 343[PRE], 344[PRE], 378[PRE], 379[PRE], 380, 381[PRE], 382, 383[PRE], 384[PRE], 385[PRE], 386[PRE], 387[PRE], 388[PRE], 389[PRE])g,v E-M 1360-1420  
*Eragrostis gummiflua* Nees (Bester 415; Ellis 262[PRE]) g M 1300  
*Eragrostis patentissima* Hack. (Bester 2316) g M 1300  
*Eragrostis planiculmis* Nees (Ellis 298[PRE]; Flanagan 2816[PRE]; Galpin 6921[PRE]; Liebenberg 5459[PRE]; Strever 708[PRE]) 915-2008  
*Eragrostis racemosa* (Thun.) Steud. (Bester 407, 1193; Ellis 306[PRE]; Strever 829[PRE]) f M-E 1300-1645
- Eulalia** Kunth  
*Eulalia villosa* (Thun.) Nees (Bester 1115, 1154, 1441; Strever 828[PRE], 832[PRE]) g M-E 1300-1640
- Festuca** L.  
*Festuca caprina* Nees (Bester 1212, 1494, 3426; Brusse 5596[PRE]; Ellis 5682[PRE], 5683[PRE]; Phillipson 702[PRE]) g,v,sa M-B 1200-2100  
*Festuca costata* Nees (Bester 1114, 1564; Du Toit PRE34160[PRE]; Spies 2530[PRE]; Story 471[PRE]; Wedermann & Oberdick 1130[PRE], 1138[PRE]) g E 1200-1675  
*Festuca elatior* L. (Bester 3124; Gary 8170[PRE]) g E 1350  
*Festuca longipes* Stapf (Ellis 1103[PRE]; Killick & Marais 2055[PRE]) 915  
*Festuca scabra* Vahl (Bester 1410; Gary 8170[PRE]; Turner 16691[PRE]) v M 1380  
*Festuca vulpioides* Steud. (Acocks 20228[PRE]) 2034
- Fingerhutia** Nees  
*Fingerhutia sesleriiformis* Nees (Galpin 6919[PRE]; Gibbs Russell 4520[PRE])-1973-2410
- Harpochloa** Kunth  
*Harpochloa falx* (L.f.) Kuntze (Ellis 5686[PRE]; Spies 2523[PRE]) 1750-2500
- Helictotrichon** Schult.  
*Helictotrichon* sp. (Muller 759[PRE]) 1980  
 ● *Helictotrichon galpinii* Schweick. (Hilliard & Burt 16478[NU], 16565[NU])-2546-2927  
*Helictotrichon hirtulum* (Steud.) Schweick. (Ellis 5678[PRE]) 2100  
*Helictotrichon longifolium* (Nees) Schweick. (Ellis 5676[PRE], 5677[PRE]) 2100  
*Helictotrichon turgidulum* (Stapf) Schweick. (Bester 1475; Flanagan 2817[PRE]; Killick & Marais 2054[PRE]; Liebenberg 5462[PRE]) v M 915-1310
- Hemarthria** R.Br.  
*Hemarthria altissima* (Poir.) Stapf & C.E.Hubb. (Bester 3636) v E 1300
- Heteropogon** Pers.  
*Heteropogon contortus* (L.) Roem. & Schult. (Bester 241, 1197, 1224; Ellis 287[PRE]) g M 1320-1400
- Holcus** L.  
*Holcus lanatus* L. (Ingpen 21[PRE]) 1800
- Hyparrhenia** Fourn.  
*Hyparrhenia aramesa* Clayton (Bester 957, 1238; Galpin 6892[PRE]) v,g M-E-1360-1560

- Hyparrhenia dregeana* (Nees) Stapf (Bester 2462; Van Zinderen Bakker 49[PRE]) g E 1420-1525  
*Hyparrhenia dregeana* (Nees) Stapf cf. (Bester 2831) g M 1180  
*Hyparrhenia filipendula* (Hochst.) Stapf var. *pilosa* (Hochst.) Stapf (Bester 3640)  
*Hyparrhenia hirta* (L.) Stapf (Bester 2824, 2859, 3301; Galpin 6894[PRE]; Strever 757[PRE]) g,r T-M-E-B 1020-1905
- Imperata** Cirillo  
*Imperata cylindrica* (L.) Raeusch. (Bester 827, 1346, 3079) g M-E 1230-1380
- Koeleria** Pers.  
*Koeleria capensis* (Steud.) Nees (Bester 1237, 1239; Brusse 5595[PRE]; Phillipson 678[PRE]) v M 1360-2500
- Leersia** Swartz  
*Leersia hexandra* Sw. (Bester 2528) g M 1340
- Lolium** L.  
*Lolium multiflorum* X *L. perenne* (Bester 1828) v M 1320
- Melinis** Beauv.  
*Melinis nerviglumis* (Franch.) Zizka (Bester 271, 1194; Ellis 261[PRE], 302[PRE]) g M 1400  
*Melinis repens* (Willd.) Zizka subsp. *repens* (Bester 898) g E 1570
- Merxmuellera** Conert  
*Merxmuellera* sp. (Van Wyk & Abbott 12129[PRU]) g  
*Merxmuellera disticha* (Nees) Conert (Bester 2489; Brusse 5876[PRE]; Ellis 5689[PRE]) sa B 1900-2600  
 ● *Merxmuellera drakensbergensis* (Schweick.) Conert (Hilliard & Burt 16440[NU], Viljoen 194[PRE]) 1830  
*Merxmuellera macowanii* (Stapf) Conert (Bester 1032; Spies 2518[PRE]; Story 476[PRE]) g E 1470  
*Merxmuellera stricta* (Schrud.) Conert (Bester 1557, 2198, 2373, 2446, 3262; Rattray 7333[PRE]) g,sa E-C-B 1420-2260
- Microchloa** R.Br.  
*Microchloa caffra* Nees (Bester 1278, 1330; Flanagan 2831[PRE]) g M-E 1340-1360
- Miscanthus** Andress.  
*Miscanthus capensis* (Nees) Anderson (Ellis 1100[PRE]; Galpin 6890[PRE]) g E 1500  
*Miscanthus capensis* (Nees) Anderson var. *capensis* (Bester 2202)
- Nasella** Desv.  
*Nasella tenuissima* (Trin.) Barkworth (Van Graan 411[PRE]; Viljoen 196[PRE])  
*Nasella trichoma* (Nees) Hack. & Arech. (Terbianche PRE57264[PRE]; Viljoen 58064[PRE])
- Panicum** L.  
*Panicum aequinerve* Nees (Ellis 283[PRE], 1101[PRE])  
*Panicum deustum* Thunb. (Ellis 1104[PRE])  
*Panicum ecklonii* Nees (Bester 885, 1153, 1772) g E 1340-1440  
*Panicum natalense* Hochst. (Bester 333, 2315, 2423; Flanagan 2728[PRE], 2775[PRE]) g E 1160-1525  
*Panicum subalbidum* Kunth (Bester 2162) v M 1300
- Paspalum** L.  
*Paspalum dilatatum* Poir. (Bester 242, 1655) g M-E 1320-1530

- Paspalum distichum* L. (Ellis 1106[PRE])  
*Paspalum urvillei* Steud. (Bester 2163) v M 1300
- Pennisetum** Rich.  
*Pennisetum macrourum* Trin. (Ellis 299[PRE])  
*Pennisetum sphacelatum* (Nees) T.Durand & Schinz (Godfrey 1519[PRE], SH1525[PRE]; Liebenberg 5461[PRE]; Sim 2756[PRE]) 1675  
*Pennisetum thunbergii* Kunth (Acocks 20412[PRE]; Bester 826, 1155, 1306; Spies 2525[PRE]; Strever 776[PRE]) v,g M-E 1230-1920
- Pentaschistis** (Nees) Spach  
*Pentaschistis airoides* (Nees) Stapf subsp. *jugorum* (Stapf) H.P.Linder (Ellis 5680[PRE], 5695[PRE]) 2100-2600  
 ● *Pentaschistis galpinii* (Stapf) McClean (Bester 1942, 2670, 2671; Ellis 5694[PRE]; Hilliard & Burtt 16392[NUJ]) a B 2520-2561  
*Pentaschistis pallida* (Thunb.) H.P.Linder (Ellis 5693[PRE]) 2600  
*Pentaschistis setifolia* (Thunb.) McClean (Acocks 21901[PRE]; Bester 1787; Ellis 308[PRE], 5684[PRE], 5692[PRE]) g E 1435-2600  
*Pentaschistis tysonii* Stapf (Acocks 21890[PRE]; Bester 2276, 2283; Ellis 5687[PRE], 5688[PRE]) a B 1465-2600
- Phacelurus** Griseb.  
*Phacelurus franksiae* (J.M.Wood) Clayton (Bester 1156, 1303, 1350) v,g M-E-1330-1500
- Poa** L.  
*Poa annua* L. (Strever 394[PRE], 894[PRE]) 1300-2600  
*Poa binata* Nees (Spies 2527[PRE]; Strever 395[PRE]) 1750-2600  
*Poa pratensis* L. (Spies 2517[PRE]) 2100
- Polypogon** Desf.  
*Polypogon monspeliensis* (L.) Desf. (Ellis 1108[PRE])
- Rendlia** Chiov.  
*Rendlia altera* (Rendle) Chiov. (Bester 985; Spies 2532[PRE]; Theron 1541[PRE]) g E 1410
- Schizachyrium** Nees  
*Schizachyrium sanguineum* (Retz.) Alston (Acocks 20414[PRE]) 1340
- Setaria** Beauv.  
*Setaria* sp. (Galpin 6888[PRE]) 1385  
*Setaria nigrirostris* (Nees) T.Durand & Schinz (Bester 1307; Godfrey 1513[PRE]; Killick & Marais 2052[PRE]) v M 915-1615  
*Setaria pallide-fesca* (Schumach.) Stapf & C.E.Hubb. (Bester 67) g E 1330  
*Setaria sphacelata* (Schumach.) Moss var. *sericea* (Stapf) Clayton (Bester 1240; Godfrey 1514[PRE]) v,g M 1320-1360  
*Setaria sphacelata* (Schumach.) Moss var. *sphacelata* (Bester 3281; Ellis 290[PRE])  
*Setaria sphacelata* (Schumach.) Moss var. *torta* (Stapf) Clayton (Godfrey 1514) 1615
- Sorghum** Moench  
*Sorghum bicolor* (L.) Moench. subsp. *arudinaceum* (Desv.) de Wet & Harlan (Bester 3639) g
- Sporobolus** R.Br.  
*Sporobolus* sp. (Killick & Marais 2072[PRE])  
*Sporobolus africanus* (Poir.) Robyns & Tournay (Bester 1233, 2259; Britten



- 4554[PRE]; Ellis 263[PRE]; Spies 2529[PRE]) v M 1341-17750  
*Sporobolus centrifugus* (Trin.) Nees (Strever 862[PRE]) 1670  
*Sporobolus discosporis* Nees (Bester 414) g M 1300  
*Sporobolus pyramidalis* P.Beauv. (Ellis 289[PRE])  
*Sporobolus subulatus* Hack. (Bester 1507, 2515) g M-E 1320-1450
- Stiburus Stapf**  
*Stiburus alopecuroides* (Hack.) Stapf (Bester 393; Galpin 6927[PRE]; Ingpen 23[PRE]; Rattray 7332[PRE]; Royffe 25725[PRE]) sa B 1800-1980  
*Stiburus conrathii* Hack. (Bester 811; Van Wyk & Abbott 12176[PRE]) v E 1320-1400
- Stipa L.**  
*Stipa clandestina* Hack. (Viljoen 195[PRE])  
*Stipa dregeana* Steud. var. *elongata* (Nees) Stapf (Ellis 1107[PRE])
- Styppeiochloa De Winter**  
*Styppeiochloa gynoglossa* (Gooss.) De Winter (Acocks 21912[PRE]; Bester 1400) g 1380-1585
- Tetrachne Nees**  
*Tetrachne dregei* Nees (Sim 27588[PRE])
- Thamnocalamus Munro**  
*Thamnocalamus tessellatus* (Nees) Soderstr. & R.P.Ellis (Abbott 5639[PRE]; Galpin 6931[PRE]; Van Wyk & Abbott 12142[PRE], 12180[PRE]) 1500-2485  
*Thamnocalamus tessellatus* (Nees) Soderstr. & R.P.Ellis cf. (Bester 481) f E 1500
- Themeda Forssk.**  
*Themeda triandra* Forssk. (Bester 243; Ellis 295[PRE]; O'Brien 244[PRE], TM25727[PRE]) g M 1220-1320
- Trachypogon Nees**  
*Trachypogon spicatus* (L.f.) Kuntze (Galpin 6895[PRE]; Strever 833[PRE], 855[PRE]) 1660-1890
- Tragus Haller**  
*Tragus berteronianus* Schuit. (Baur 979[PRE]; Ellis 294[PRE]; Pegler 1630[PRE])
- Tribolium Desv.**  
*Tribolium hispidum* (Thunb.) Desv. (Hilliard & Burt 14563[PRE]; Rattray 7331[PRE]) 1950-1981
- Tristachya Nees**  
*Tristachya leucothrix* Nees (Bester 1033; Spies 2533[PRE]) g E 1470

## PODOCARPACEAE

### Podocarpus L'Hérit. ex Pers.

- Podocarpus falcatus* (Thunb.) R.Br. ex Mirb. (Abbott 5638[PRU]; Bester 3661; Cochrane PRF3467[PRE]; Flanagan 1179[PRE]; Ryan PRF4469[PRE]; Van der Merwe 2268[PRE], PRF2268[PRE], 2269[PRE], PRF2269[PRE]; Van Zinderen Bakker 61[PRE]) f 1160-1500  
 ▲*Podocarpus henkelii* Stapf ex Dallim. & Jacks. (Bester 344) f, st M-E 1250-1460  
*Podocarpus latifolius* (Thunb.) R.Br. ex Mirb. (Bester 459, 490, 2559, 3105; Galpin 6831[PRE]; Van der Merwe 2266[PRE], 2267[PRE]) g, f M-E 1200-1720

## POLYGALACEAE

### Muraltia Juss.

- Muraltia alticola* Schltr. (Bester 102, 668, 904, 2895; Gibbs Russell 4555[PRE]; Pegler 1647[PRE]; Van Wyk & Abbott 12036[PRE]) g M-E 1320-1900  
*Muraltia alticola* Schltr. cf. (Bester 907) g E 1500  
*Muraltia flanaganii* Bolus (Bester 2957; Strever 431[PRE]) a B 2550-2670  
*Muraltia macrocarpa* Eckl. & Zeyh. (Sim 20379[PRE]) 915  
*Muraltia saxicola* Chodat (Bester 846, 2948) a,sa B 2160-2340

### Polygala L.

- Polygala* sp. (Brusse 4605[PRE])  
*Polygala amatymbica* Eckl. & Zeyh. (Bester 255, 1742; Flanagan 2676[PRE], 2808[PRE]; Pegler 1709[PRE]) g M 915-1400  
*Polygala confusa* MacOwan (Bester 2555; Flanagan 2794[PRE]) g E 1065-1400  
*Polygala ephedroides* Burch. (Abbott 5699[PRU]) 2100  
*Polygala gerrardii* Chodat (Bester 259, 3101) g M-C 1400-1550  
*Polygala gymnoclada* MacOwan (Bester 1342, 2345; Royffe TM25716[PRE]) g,sa E-B 1380-1980  
*Polygala gracilifolia* Burtt Davy (Bester 1209, 1217) g M-D 1340-1380  
*Polygala hispida* Burch. (Bester 3616; Phillipson 694[PRE]; Van Wyk 6707[PRU]; Zietsman & Zietsman 1451[PRE]) sa B 2161-2650  
*Polygala hottentotta* C.Presl. (Bester 186, 250, 2077, 2595; Galpin 1680, 6580[PRE]; Strever 747[PRE]; Zietsman & Zietsman 1425[PRE]) g M-E-C 1340-2505  
*Polygala ohlendorffiana* Eckl. & Zeyh. (Acocks 20222[PRE]; Bester 425, 437, 921, 1129, 1214, 1216, 1254, 1299, 1395, 2942, 2977) g,sa,v M-E-C 1220-1650  
*Polygala rehmannii* Chodat (Bester 1007) g E 1560  
● *Polygala rhinostigma* Chodat (Bester 872, 1676, 1988; Hilliard & Burtt 16644[PRE]) g,sa,a E-B 1380-2370  
*Polygala serpentaria* Eckl. & Zeyh. (Bester 1658) g E 1440  
*Polygala uncinata* E.Mey. ex Meissn. (Bester 62, 147, 230, 353) v,g M-E 1320-1500  
*Polygala uncinata* E.Mey. ex Meissn. cf. (Bester 721) g E 1470  
*Polygala virgata* Thunb. var. *decora* (Sond.) Harv. (Bester 2107, 2760; Flanagan 2785[PRE]) g,sa E-C 915-1860

## POLYGONACEAE

### Persicaria Mill.

- Persicaria attenuata* (R.Br.) Soják (Bester 605) g E 1420  
*Persicaria lapathifolia* (L.) Gray (Bester 2164; Gibbs Russell 4031[PRE]; Strever 709[PRE]) v M 1300-2008  
*Persicaria serrulata* (Lag.) Webb & Moq. (Bester 2575) f E 1500

### Polygonum L.

- Polygonum aviculare* L. (Bester 2757) sa E 1860

### Rumex L.

- Rumex acetosella* L. subsp. *angiocarpus* (Murb.) Murb. (Bester 94, 809, 1439; Strever 393) g,v M-E 1300-2600  
*Rumex dregeanus* Meisn. subsp. *dregeanus* (Zietsman & Zietsman 1429[PRE]) 1700  
*Rumex dregeanus* Meisn. subsp. *montanus* B.L.Burtt (Bester 681, 1982; Hilliard & Burtt 16687[E]) sa,a B 1900-2280  
*Rumex lanceolatus* Thunb. (Bester 1625, 3417; Reid 1211[PRE]) g,sa E-B 1600-2100



*Rumex woodii* N.E.Br. (Bester 1023, 2906) g E 1400-1470

### POLYPODIACEAE

**Pleopeltis** H.B.K. ex Willd.

*Pleopeltis macrocarpa* (Bory ex Willd.) Kaulf. (Bester 173, 343) f M-E 1460-1550

*Pleopeltis schraderi* (Mett.) Tardieu (Acocks 21885[PRE]; Bester 548, 2540; Van Wyk & Abbott 12005[PRE]) g E 1435-1900

**Polypodium** L.

*Polypodium polypodioides* (L.) Hitchc. subsp. *ecklonii* (Kunze) Schelpe (Flanagan 2716[PRE]; McLoughlin 75[PRE], CH7675[PRE]; Pegler 1638[PRE]) 130

*Polypodium vulgare* L. (Bester 2669) a B 2500

### PORTULACACEAE

**Anacampseros** L.

*Anacampseros telephiastrum* DC. (Bester 3196) g T 1020

### POTTIACEAE

**Barbula** Hedw.

*Barbula crinita* Schultz (Anderson 1247[PRE])

**Syntrichia**

*Syntrichia fragilis* (Taylor) Ochyra (Ellis 3095[PRE]) (Not listed on PSA)

**Tortella** (Lindb.) Limpr.

*Tortella fragilis* (Hook. & Wilson) Limpr. (Hilliard & Burt 13146[PRE]) 2347

*Tortella muralis* Hedw. (Ellis 3102[PRE])

**Trichostomum** Burch

*Trichostomum brachydontium* Burch ex F.A.Müll. (Anderson 1246[PRE], 1265[PRE])

### PRIMULACEAE

**Anagallis** L.

*Anagallis huttonii* Harv. (Bester 148, 2002; Flanagan 2727[PRE]; Phillipson 672[PRE]) v,a M-B 1320-2450

**Lysimachia** L.

*Lysimachia ruhmeriana* Vatke (Acocks 21918[PRE]) 1585

### PROTEACEAE

**Protea** L.

*Protea* sp. (Britten 7041[PRE])

*Protea caffra* Meisn. cf. (Bester 727) g E 1470

*Protea caffra* Meisn. subsp. *caffra* (Bester 54, 1060; Pegler 274A[PRE]) g E-1500-1600

*Protea muitibracteata* Phill. (Baur 4839) [= *Protea caffra* Meisn. subsp. *caffra*]

*Protea roupelliae* Meisn. (Baur 4975)

*Protea roupelliae* Meisn. subsp. *roupelliae* (Bester 55, 233; Bayliss 1442[PRE]; Galpin 6822[PRE]; Skead PRE52724[PRE]; Strever 827[PRE], 849[PRE]) g E-1500-1740

*Protea simplex* E.Phillips (Bester 25, 3440, 3568; Britten 7042[PRE]; Galpin 6823[PRE]; Marais 1405[PRE]; Pegler 1651[PRE]) g M-E 1340-1740

*Protea subvestita* N.E.Br. (Bester 139, 388; Comins 1894[PRE]; Galpin 6824[PRE]; Pegler 1650[PRE]; Skead PRE32284[PRE]; Van Wyk & Abbott 12043[PRU], 12044[PRU]) g, sa 1220-1900

### PTAEROXYLACEAE

*Ptaeroxylon* Eckl. & Zeyh.

*Ptaeroxylon obliquum* (Thunb.) Radkl.

### PTYCHOMITRIACEAE

*Ptychomitrium* Fuernr.

*Ptychomitrium cucullatifolium* (C.Muell.) Jaeg. (Hilliard & Burt 13144[PRE], 13147[PRE]; Russel 2794[PRE]) 2347

### RANUNCULACEAE

*Anemone* L.

*Anemone caffra* Eckl. & Zeyh. (Bester 1546, 1579, 1754, 2702; Pegler 847[PRE]) g,sa M-C-B 1220-2010

*Anemone fanninii* Harv. ex Mast. (Bester 1271, 2935) sa,g E-B 1600-2010

*Clematis* L.

*Clematis brachiata* Thunb. (Abbott 5619[PRE]; Bayliss BRIB1331[PRE]; Bester 167, 2658; Strever 889[PRE]) g E 1250-1560

*Ranunculus* L.

*Ranunculus baurii* MacOwan (Bester 1268, 1377, 3257; Phillipson 708[PRE]) a,sa B 2010-2550

*Ranunculus meyerii* Harv. (Galpin 6565[PRE]; Phillipson 673[PRE], 709[PRE])-2450-2550

*Ranunculus multifidus* Forssk. (Bester 1229, 2727, 3255; Strever 905[PRE]) a,sa M-B 1250-2040

*Thalictrum* L.

*Thalictrum minus* L. (Hilner 384[PRE])

*Thalictrum rhynchocarpum* Dill. & Rich. (Story 448[PRE]) 1372

### RESTIONACEAE

*Ischyrolepis* Steud.

*Ischyrolepis schoenoides* (Kunth) H.P.Linder (Gibbs Russell 4547[PRE])

*Restio* Rottb.

*Restio* sp. (Phillipson 670[PRE])

● *Restio galpinii* Pillans (Bester 3097, 3626, 3629; Galpin 6871[PRE]; Hilliard & Burt 16673[NU], 16676[PRE]) a,sa B 2195-2560

### RHAMNACEAE

*Phyllica* L.

*Phyllica chionocephala* Schltr. (Acocks 20429[PRE]) 1858

*Phyllica paniculata* Willd. (Bester 416, 2871, 3355) g M 1250-1300

● *Phyllica thodei* E.Phillips (Bester 1263, 2047, 2051) g E 1570

*Phyllica tysonii* Pillans var. *brevifolia* Pillans (Bester 2449) g E 1880

**Rhamnus L.**

*Rhamnus prinoides* L'Hér. (Abbott 5716[PRU]; Bester 522, 527, 528, 529, 531; Bayliss 1343[PRE]) f E 1400-1830

**Scutia (Comm. ex DC.) Brongn.**

*Scutia myrtina* (Burm.f.) Kurz (Bester 518) f E 1250

**Ziziphus Mill.**

*Ziziphus mucronata* Willd. (Bester 3453) v E 1250

*Ziziphus mucronata* Willd. subsp. *rhodesica* R.B.Drumm. (Bester 2763) sa E 1860

**RICCIACEAE**

**Riccia L.**

*Riccia albolimbata* S.W.Arnell (Thompson 261B[PRE]) 2250

*Riccia bulbosa* Link ex Lindenb. (Thompson 266[PRE], 267[PRE]) 2500

*Riccia montana* Perold (Glen 1728[PRE]; Smook 3240[PRE]) 2200

**ROSACEAE**

**Agrimonia L.**

*Agrimonia bracteata* E.Mey. ex C.A.Mey. (Bester 169, 268) f,g M-E 1400-1550

*Agrimonia procera* Wallr. (Gibbs Russell 4033[PRE])

**Alchemilla L.**

*Alchemilla* SP. (Hilliard & Burt 16656[NU])

● *Alchemilla colura* Hilliard (Hilliard 5188[PRE]; Hilliard & Burt 6607[PRE])-2439-2500

*Alchemilla elongata* Eckl. & Zeyh. var. *elongata* (Flanagan 2700A[PRE]) 1295

● *Alchemilla galpinii* Haum. & Balle (Hilliard 5202[NU]; Hilliard & Burt 14664[NU]) 2622

*Alchemilla hirsuto-petiolata* (De Wild.) Rothm. (Bester 3253; Hilliard 5202[PRE]; Phillipson 691[PRE]) sa B 2040-2650

*Alchemilla woodii* Kuntze (Beter 1228, 1424, 1481; Flanagan 2700B[PRE]; Hilliard & Burt 16693[PRE]) v,g M-C 1340-2194

**Cliffortia L.**

*Cliffortia liniarifolia* Eckl & Zeyh. (Bester 1210; Hilliard & Burt 14538[PRE]) g M 1340-1448

● *Cliffortia nitidula* (Engl.) R.E. & T.C.E.Fr. subsp. *pilosa* Weim (Hilliard & Burt 16489[E], 14609[NU], 14613[NU], 16379[NU], 1486[NU], 16489[NU], 16502[NU]; Viljoen 704[PRE]; Von Gadow 337[PRE]) 1890-8700'

*Cliffortia paucistaminea* Weim (Bester 915, 2551) g,f E 1400-1800

*Cliffortia serpyllifolia* Cham. & Schlecht. (Flanagan 1451[PRE])

**Cotoneaster Medik.**

*Cotoneaster pannosus* Franch. (Van Wyk & Abbott 12027[PRE]) 1900

**Cydonia Mill.**

*Cydonia* sp. (Van Wyk & Abbott 12132[PRU]) g

**Geum L.**

*Geum capensis* Thunb. (Bester 1360, 2974) sa B 2000-2010

**Leucosidea Eckl. & Zeyh.**

*Leucosidea sericea* Eckl. & Zeyh. (Abbott 5662[PRE]; Bester 760; Gibbs Russell 4564[PRE]; PRE Curator 2627[PRE]) f E 1410-1973

**Prunus L.**

*Prunus africana* (Hook.f.) Kalkman (Acocks 12169[PRE]; Bester 2791; Pegler 904[PRE]; Sim 2124[PRE], 2178[PRE]) 915-1370 r T 915-1370

*Prunus salicifolia* (Bester 2918) (Not listed on PSA)

**Pyracantha M.J.Roem**

*Pyracantha angustifolia* (Franch.) Schneid. (Abbott 5715[PRE]; Van Wyk & Abbott 5715[PRE]) 1400

**Rosa L.**

*Rosa eleganteria* L. (Spies 2521[PRE]) 1750

*Rosa odorata* Sweet (Theron 1530[PRE])

**Rubus L.**

*Rubus immixtus* Gust. (Strever 891[PRE]) 1250

*Rubus ludwigii* Eckl. & Zeyh. subsp. *spatiosus* C.H.Stirt. (Bester 2682)

*Rubus rigidus* Sm. (Bester 107) g M 1340

*Rubus X proteus* (Bester 1459) g E 1500

**RUBIACEAE**

**Anthospermum L.**

*Anthospermum* sp. (Bester 267; Puff 84092321[PRE], 84092331[PRE])

● *Anthospermum basuticum* Puff (Story 495[PRE]; Van Wyk & Abbott 12098[PRE]) 1900-2286

*Anthospermum herbaceum* L.f. (Bester 1220, 1251; Pegler 1254[PRE]) g M-E-1340-1620

*Anthospermum monticola* Puff (Bester 1375, 1981, 2964, 3015, 3099) a,sa B-2220-2400

*Anthospermum paniculatum* Cruse (Pegler 1613[PRE])

*Anthospermum rigidum* Eckl. & Zeyh. subsp. *pumilum* (Sond.) Puff (Bester 1808, 2568; Puff 84092311[PRE]) g E 1530-1550

*Anthospermum rigidum* Eckl. & Zeyh. subsp. *rigidum* (Flanagan 2675[PRE])

*Anthospermum streyi* Puff. (Bester 2620)

**Burchellia R.Br.**

*Burchellia bubalina* (L.f.) Sims (Bester 463, 676) g M 1200-1300

**Canthium Lam.**

▲ *Canthium ciliatum* (Klotzsch) Kuntze (Abbott 5652[PRU], 5710[PRE]; Bester 175, 346) f,g M-E 1400-1550

*Canthium inerme* (L.f.) Kuntze (Pegler 809[PRE])

**Coddia Verdc.**

*Coddia rudis* (E.Mey. ex Harv.) Verdc. (Pegler 590B[PRE])

**Conostomium Cuf.**

▲ *Conostomium natalense* (Hochst.) Bremek. var. *glabrum* Bremek. (Bester 466) g M 1200

**Galium L.**

*Galium* sp. (Bester 642, 3327; Flanagan 2801[PRE]) sa,g E-B 915-2200

*Galium capense* Thunb. subsp. *capense* (Bigalke 242[PRE]; Story 500[PRE])-1830-2316

*Galium capense* Thunb. subsp. *garipense* (Sond.) Puff (Bester 1596, 1700, 1871, 1897, 2697, 3269, 3416, 3452; Brusse 5874[PRE]; Van Wyk & Abbott 12055[PRU],

12166[PRU] sa,v,a,g E-C-B 1250-2500

*Galium thunbergianum* Eckl. & Zeyh. var. *hirsutum* (Sond.) Verdc. (Abbott 5664A[PRU]; Bester 2454) g E 1420-1500

*Galium thunbergianum* Eckl. & Zeyh. var. *thunbergianum* (Bester 91) g E 1340

**Galopina** Thunb.

*Galopina circaeoides* Thunb. (Abbott 5624[PRU]) 1500

**Gardenia** Ellis

▲*Gardenia thunbergia* Thunb. (Liebenberg 3129[PRE]) 795

**Kohautia** Cham. & Schlechtd.

*Kohautia amatymbica* Eckl. & Zeyh. (Bester 86, 703, 725, 967, 1022, 1051, 1645) g E 1340-1550

**Pachystigma** Hochst.

*Pachystigma* sp. (Pegler 702B[PRE])

*Pachystigma macrocalyx* (Sond.) Robyns (Bester 417, 3378) g M-E 1300-1680

**Pavetta** L.

*Pavetta capensis* (Houtt.) Bremek. subsp. *capensis* (Bester 20, 293, 2853) r,g M 1360-1400

▲*Pavetta cooperi* Harv. & Sond. (Bester 1738) g M 1360

*Pavetta inandensis* Bremek. (Bester 3113) f E 1720

*Pavetta kotzei* Bremek. (Acocks 13813[PRE]; Bester 761, 913, 914) f,s E 1230-1800

*Pavetta lanceolata* Eckl. (Clarke 506[PRE], 507[PRE]; Herman 31[PRE]; Mauve 4878; Miller FD3087[PRE]) 1145

**Pentania** Harv.

*Pentania angustifolia* (Hochst.) Hochst. (Bester 61) g E 1400

*Pentania prullenoides* (Klotzsch ex Eckl. & Zeyh.) Walp. (Bester 700) g E 1400

*Pentania prullenoides* (Klotzsch ex Eckl. & Zeyh.) Walp. subsp. *prullenoides* (Strever 897[PRE]) 1250

**Psychotria** L.

*Psychotria capensis* (Eckl.) Vatke (Bester 729) g E 1380

**Richardia** L.

*Ricardia brasiliensis* Gomes (Bester 2493) g M 1320

**Rothmannia** Thunb.

*Rothmannia capensis* Thunb. (Bayliss 2697[PRE]; Bester 677; Flanagan 2861[PRE]) g M 1220-1525

**RUTACEAE**

**Agathosma** Willd.

*Agathosma ovata* (Thunb.) Pillans (Bayliss 1551[PRE]; Bester 225, 549, 901; Gill 17[PRE]) g M-E-C 1065-1800

**Clausena** Burm.f.

*Clausena anisata* (Willd.) Hook.f. ex Benth. (Abbott 5641[PRU]; Bester 524) s,r E 1500-1600

**SALICACEAE**

**Populus** L.

*Populus X canescens* (Ait.) J.E.Sm. (Henderson 1010[PRE]) 1700

**Salix L.**

*Salix lasiandra* Benth. (Henderson 1004[PRE]) 1800

*Salix mucronata* Thunb. subsp. *capensis* (Thunb.) Immelman (Bester 3183) g T 1020

*Salix caprea* L. (Bester 1001) sa B 1860

**SANTALACEAE**

**Osyris L.**

*Osyris lanceolata* Hochst. & Steud. (Bester 733, 1452, 2848) g,f M-E-C 1180-1680

*Osyris schimperianus* (Hochst. ex A.Rich.) A.DC. (Bester 519, 762) f E 1250-1410

**Thesium L.**

*Thesium* sp. (Bester 2952, 3014, 3153) g,sa M-B 1140-2400

● *Thesium acutissimum* A.DC. (Hilliard & Burtt 14627[NU], 16540[NU]; Stewart 1890[NU]) 1890-2439

*Thesium asterias* A.W.Hill (Bester 3311) sa B 1980

*Thesium costatum* A.W.Hill var. *costatum* cf. (Bester 717) g E 1440

*Thesium costatum* A.W.Hill var. *juniperinum* A.W.Hill (Bester 871) g E 1380

● *Thesium durum* Hilliard & B.L.Burtt (Bester 3013; Hilliard & Burtt 13136[PRE], 16360[NU]; 16621[NU]) sa B 1769-2400

*Thesium galioides* A.DC. (Bester 1351) g E 1500

*Thesium galioides* A.DC. cf. (Bester 895) g E 1500-1680

*Thesium griseum* Sond. cf. (Bester 1044) g E 1500

*Thesium imbricatum* Thunb. (Bester 669, 847, 1205, 1376, 2949) g,sa,a E-B 1340-2340

*Thesium pallidum* A.DC. (Bester 950) g E 1620

*Thesium scirpioides* A.W.Hill (Bester 919, 951, 980, 1048, 1069, 2030, 3296, 3612) g,sa T-E-B 1020-2370

**SAPINDACEAE**

**Hippobromus Eckl. & Zeyh.**

*Hippobromus pauciflorus* (L.f.) Radlk. (Bester 619) g E 1420

**SAPOTACEAE**

**Sideroxylon L.**

*Sideroxylon inerme* L. (Pegler 882B[PRE])

**SCHIZACEAE**

**Mohria Swartz**

*Mohria caffrorum* (L.) Desv. (Bester 403) g E 1300-1500

*Mohria caffrorum* (L.) Desv. var. *caffrorum* (Abbott 5660; McLoughlin 87[PRE]; Young TM703C[PRE])

**Schizaea J.E.Sm.**

*Schizaea tenella* Kaulf. (Flanagan 2755[PRE])

**SCROPHULARIACEAE**

**Alectra Thunb.**

*Alectra capensis* Thunb. (Bester 2111; Hilliard & Burtt 12239[E], 12310[E], 16646[E]) g C 1800-2287

*Alectra sessiliflora* (Vahl) Kuntze var. *sessiliflora* (Bester 115, 239, 2254; Strever 753[PRE]) g M-E 1280-1340

*Alectra sessiliflora* (Vahl) Kuntze var. *sessiliflora* forma *barbata* (Hiern.) Hilliard & Burt (Bester 2409, 2420, 2432, 2561, 2562) g E 1400-1890

*Alectra thyrsoidea* Melch. (Bester 1967) a B 1860

**Bartsia L.**

*Bartsia trixago* L. (Bester 2055, 3504; Flanagan 2633[PRE]) g E-B 1220-1840

**Bowkeria Harv.**

▲*Bowkeria verticilata* (Eckl. & Zeyh.) Schinz (Acocks 12172[PRE]; Bester 601; Steiner 1111[PRE]) g E 900-1420

**Buchnera L.**

*Buchnera dura* Benth. (Bester 63, 280, 1784, 2417, 2627, 2728) g,v M-E 1280-1440

*Buchnera glabrata* Benth. (Bester 372, 386, 1419, 1539, 1912) sa,v,g M-E-B-1380-1900

**Cycnium Benth. emmend Engl.**

*Cycnium adonense* E.Mey. ex Benth. (Bester 1281, 1653) v,g E 1360-1530

*Cycnium adonense* E.Mey. ex Benth. subsp. *adonense* (Bester 3140) g E 1620

*Cycnium racemosum* Benth. (Bester 300, 1789, 1908, 1956, 2017, 3139; Marais 1380[PRE]; Van Wyk & Abbott 12079[PRU]; Zietsman & Zietsman 1437[PRE]) g,a E-B 1530-1920

**Diascia Link & Otto**

*Diascia* sp. (Bester 1698; Steiner 538[PRE])

*Diascia capsularis* Benth. (Steiner 527[PRE]) 1540

■*Diascia fetcaniensis* Hilliard & B.L.Burt (Batten 647[NU]; Bester 1686, 1714, 1934, 1958, 2036, 2100, 2137, 2271, 2708, 3370, 3398, 3476, 3496, 3529, 3536, 3657; Galpin 6784[NH], 6785[NH]; Hilliard & Burt 3935[NU], 12318[PRE], 16375[NU], 16700[PRE]; Matthews 809[PRE], 824[PRE], 827[NU]; Roux 1155[NU], 1175[NU], 1176[NU], 1190[NU], 1743[PRE]; Strever 728[PRE]; Steiner 537[PRE]; Van Wyk & Abbott 12085[PRU]) g,a,sa E-B 1400-2561

*Diascia integerrima* Benth. (Bester 476; Chadman, Edwards & Norris 3169[NU]; Hilliard 3962[NU]; Hilliard & Burt 12128[NU], 12150[NU], 12249[NU], 14569[NU], 14591[NU], 16557[NU], 16632[NU]; Matthews 926[NU], 932[NU]; Roux 1122[NU], 1205[NU]; Steiner 528[PRE]; Stewart 1876[NU]) sa B 1500-2287

■*Diascia lilacina* Hilliard & B.L.Burt (Hilliard & Burt 12297[E]) 2105

*Diascia rigescens* Benth. (Bolus 8765[PRE]) 1220

■*Diascia stachyoides* Hiern. Hilliard & B.L.Burt (Bester 424; Hilliard & Burt 14554[PRE]; Matthews 905[NU]; Steiner 534[PRE]) g M 1500-1981

■*Diascia stricta* Hilliard & B.L.Burt (Batten 265[NU]; Bester 2348, 3382; Hilliard & Burt 14705[E], 16374[NU], 16631[NU], 16589[PRE]; Matthews 802[NU], 842[NU]; Stewart 1897[NU]) sa B 1769-2591

*Diascia transkeiana* Hilliard & B.L.Burt (Esterhuysen 29250; Hilliard & Burt 18779; Hutchings 2108)

**Diclis Benth.**

*Diclis reptans* Benth. (Bester 996, 1128, 1270, 1313, 1369, 1577, 2415, 2507, 2756) g,sa,v M-E-B 1260-2180

▲*Diclis rotundifolia* (Hiern) Hilliard & B.L.Burt (Bester 144, 782) g M-E 1260-1500



**Glekia Hilliard**

*Glekia krebsiana* (Benth.) Hilliard (Hilliard & Burtt 16636[PRE]) 2134

**Glumicalyx Hiern**

*Glumicalyx apiculatus* (E.Mey.) Hilliard & B.L.Burtt (Galpin 6812; Hilliard & Burtt 16666[PRE]; Rattray 7313[PRE]) 2210-2500

● *Glumicalyx flanaganii* (Hiern) Hilliard & B.L.Burtt (Galpin 6792; Hilliard & Burtt 16450[PRE]) 2866-2927

● *Glumicalyx montanus* Hiern (Acocks 12336; Bester 1931, 1932, 2359, 3479; Brusse 5100[PRE], 5101[PRE]; Hilliard & Burtt 6706[PRE], 6707; Stewart 1913[NU]) a,sa B 2260-2520

● *Glumicalyx nutans* (Rolfe) Hilliard & B.L.Burtt (Acocks 12335, 20175; Batten 525[NU]; Bester 1960, 2079, 3478; Brusse 5592[PRE]; Hilliard & Burtt 12180[NU], 12258[NU], 12315[NU]; Rattray 7314; Zietsman & Zietsman 1447[PRE]) g,a,sa E-B 1890-2500

**Graderia Benth.**

*Graderia scabra* (L.f.) Benth. (Bester 684, 702, 1083, 1255, 1327, 2877) g M-E 1230-1650

**Halleria L.**

*Halleria lucida* L. (Abbott 5654[PRU]; Bester 449, 559, 695; Britten 4665[PRE]; Gill 16[PRE]; Lewis 5095[PRE]; Viljoen 705[PRE]) g,s,f,rs M-E-C 1331-1600

**Harveya Hook.**

*Harveya* sp. (Bester 3399)

● *Harveya leucopharynx* Hilliard & B.L.Burtt (Hilliard & Burtt 6613[NU]) 2441

● *Harveya leucopharynx* Hilliard & B.L.Burtt cf. (Bester 2062) g E

● *Harveya pulchra* Hilliard & B.L.Burtt (Bester 297, 2230, 2286; Hilliard & Burtt 16504[E], 18684[NU]) g,a,sa B 1982-2685

*Harveya pumila* Schltr. (Rattray 7312[PRE]) 2440

*Harveya scarlatina* (Benth.) Hiern (Bester 1989; Hilliard 2515[E], 5215[NU]; Stewart 1914[K]; Van Wyk & Abbott 12141[PRE]) a B 2364-2441

*Harveya speciosa* Bernh. ex Krauss (Bester 298, 1976, 3496; Hilliard 3946[E]; Roux 1740[PRE]; Strever 715[PRE]; Van Wyk & Abbott 12078[PRE]; Zietsman & Zietsman 1390[PRE]) g,sa,a B 2134-2500

**Hyobanche L.**

*Hyobanche fulleri* E.Phillips (Bester 1383) a B 2230

*Hyobanche rubra* N.E.Br. (Hilliard & Burtt 5199[PRE], 13150[E], 14696[E], 14722[E], 16458[E]) 2135-2624

*Hyobanche rubra* N.E.Br. cf. (Bester 1990)

**Jamesbrittenia**

*Jamesbrittenia breviflora* (Schltr.) Hilliard (Bester 574, 1974) a B 1940—2280

*Jamesbrittenia multisepta* Hilliard (Bester 2058) g E

*Jamesbrittenia pristisepala* (Hiern) Hilliard (Bester 3412) sa B 2100

**Limosella**

*Limosella inflata* Hilliard & B.L.Burtt (Bester 2498) g M 1320

*Limosella maior* Diels (Bester 3020)

● *Limosella vesiculosa* Hilliard & B.L.Burtt (Bester 3521; Hilliard & Burtt 6612[E]) g B 1840-2441

## Manulea

*Manulea* sp. (Bester 2854; Phillipson 716[PRE])

*Manulea buchneroides* Hilliard & B.L.Burt (Hilliard & Burt 12165; 13162) 2135

*Manulea crassifolia* Benth. (Batten 689[NU]; Hilliard & Burt 1217B, 6704, 12263, 16398[NU]) 2105-2624

*Manulea crassifolia* Benth. subsp. *crassifolia* (Bester 1679, 1687, 1718, 1959; Hilliard & Burt 16688[PRE]; Rattray 7311[PRE]; Van Wyk & Abbott 12046[PRE]) a,sa B 1890-2440

*Manulea dregei* Hilliard & B.L.Burt (Bester 1937; Drege 7191D; Galpin 6805; Hilliard & Burt 6671, 12175, 16378[NU]) a B 2288-2561

*Manulea paniculata* Benth. (Bolus 8762[PRE]; Flanagan 2624[PRE]) 1525

● *Manulea platystigma* Hilliard & B.L.Burt (Stewart 1893[E]) 2280

*Manulea rhodantha* Hilliard (Hilliard & Burt 14706) 1769

## Melasma Berg.

*Melasma scabrum* P.J.Bergius (Bester 2475, 3375) g,sa B 1840-1960

## Mimulus L.

*Mimulus gracilis* R.Br. (Bester 3208; Bolus PRE40948[PRE]) g 915-1710

## Nemesia Vent.

*Nemesia* sp. (Bester 2485)

*Nemesia* sp. A (Batten 684[E]; Galpin 6787[PRE], 6788[PRE]; Hilliard & Burt 12189[E], 16396[PRE]; Stewart 1887[E]) 2287-3020

*Nemesia albiflora* N.E.Br. (Bester 672, 692, 1711, 2539, 2698) g,sa E-B 1290-2060

● *Nemesia caerulea* Hiern (Bester 431, 478, 749, 1352, 1364, 1465, 2341; Edwards 93[NU]; Hilliard & Burt 16599, 18660[NU]; Strever 726[PRE], 803[PRE]; Van Wyk & Abbott 12175[PRE]) g,sa,f E-B 1320-2561

*Nemesia caerulea* Hiern cf. (Bester 309) g

*Nemesia denticulata* (Benth.) Fourc. (Bester 1073, 1107; Galpin 6789[PRE]; Van Wyk 6699[PRE]) g E 1620-2165

*Nemesia umbonata* (Hiern) Hilliard & B.L.Burt (Bester 3429; Chadman, Edwards & Norris 3165[NU]) sa B 2100

## Phygelius E.Mey. ex Benth.

*Phygelius aequalis* Harv. ex Hiern (Bester 1573, 1874, 2472) v,g C 1360-1800

▲ *Phygelius capensis* E.Mey. ex Benth. (Galpin 6790[PRE]; Hilliard 3934[NU]; Hilliard & Burt 12323[NU], 16384[NU]; Phillipson 719[PRE]; Van Wyk & Abbott 12067[PRE]; Zietsman & Zietsman 1470[PRE]) 1900-2744

## Sopubia Buch.-Ham. ex D.Don

*Sopubia cana* Harv. var. *cana* (Bester 319, 1955) g M-E 1340-1500

*Sopubia simplex* (Hochst.) Hochst. (Bester 772, 1145, 1841; Strever 120A[PRE]) g,v E 1360-1520

## Striga Lour.

*Striga bilabiata* (Thunb.) Kuntze (Bester 256, 279, 473, 3631, 3633, 3647, 3701) g M 1200-1400

*Striga elegans* Benth. (Bester 317, 2301, 2786, 3056, 3353, 3648, 3664) g E-1350-1500

## Sutera Roth

*Sutera* sp. (Bester 909, 1098; Hilliard & Burt 16615[PRE], 16696[PRE]; Story 475[PRE]) g,a M-E-B 1380-2286

- Sutera aurantiaca* (Burch.) Hiern (Flanagan 2821[PRE])  
*Sutera breviflora* N.E.Br. (Bester 1693; Van Wyk & Abbott 12051[PRE], 12072[PRU]) a,g B 1900-2100  
*Sutera crassicaulis* (Benth.) Hiern (Sim 2755[PRE]; Van Wyk & Abbott 12063[PRU])  
 g  
*Sutera floribunda* (Benth.) Kuntze (Bester 2452, 2538, 2651; Van Wyk & Abbott 12020[PRE]) g E 1410-1900  
*Sutera griquensis* Hiern (Strever 773[PRE]) 1908  
*Sutera mollis* (Bent.) Hiern (Flanagan 2821[PRE]; Hilliard & Burt 14560[PRE])-915-1676  
*Sutera pallescens* Hiern (Bester 35) g E 1500  
*Sutera patriotica* Hiern (Bigalke 243[PRE]) 2316  
 ● *Sutera polelensis* Hiern (Hilliard 3907[NU]; Hilliard & Burt 14575[NU]) 1829-1890  
 ● *Sutera polelensis* Hiern subsp. *polelensis* (Gibbs Russell 4548[PRE]) 1981  
 ● *Sutera pristisepala* Hiern (Bester 1675, 1968; Strever 720[PRE]) a,sa B 1860-2439

**Walafrida** E.Mey.

- Walafrida* sp. (Bester 1035, 1172, 1618) g E 1470-1590  
*Walafrida densiflora* (Rolfe) Rolfe (Bester 72, 1957) g E 1330  
*Walafrida saxatilis* (E.Mey.) Rolfe (Bester 1978, 1980, 2347; Bigalke B248[PRE]; Van Wyk & Abbott 12060[PRE]) sa,a B 1900-2560  
 ● *Walafrida witbergensis* (E.Mey.) Rolfe (Hilliard & Burt 16383[E]; Van Wyk & Abbott 12052[PRU], 12056[PRU]) g 2563

**Zaluzianskya** F.W.Schmidt

- Zaluzianskya* sp. (Bester 296, 307, 1938, 3594, 2653)  
*Zaluzianskya angustifolia* Hilliard & B.L.Burt (Strever 763[PRE]) 1908  
*Zaluzianskya crocea* Schltr. (Bester 2371; Bigalke B245[PRE]; Brusse 5598[PRE]; Roux 1751[PRE]; Strever 408[PRE]) a B 2316-2700  
 ▲ *Zaluzianskya elongata* Hilliard & B.L.Burt (Bester 1794; Van Wyk & Abbott 12090[PRE]) g E 1530-1900  
*Zaluzianskya glareosa* Hilliard & B.L.Burt (Bester 2438; Zietsman & Zietsman 1406[PRE]) g E 1700-1880  
*Zaluzianskya microsiphon* (Kuntze) K.Schum. (Bester 305, 2018, 2019, 2102, 2231, 2330 2482, 2703, 2709, 3537, 3555, 3592, 3614; Strever 762[PRE]) g,a,sa E-B 1400-2250  
 ● *Zaluzianskya oreophila* Hilliard & B.L.Burt (Bigalke 9[NU], 18[NU]) 2600  
*Zaluzianskya ovata* (Benth.) Walp. (Bester 1269, 1949, 2439; Bigalke 17[NU]; Hilliard & Burt 12188[NU], 12288[NU], 13122[NU], 14596[NU]; Matthews 775[NU]; Stewart 1922[NU]; Van Wyk 6706[PRE]) g,a,sa E-B 2010—2520  
*Zaluzianskya pulvinata* Killick (Bester 1672, 1941, 1943; Story 482[PRE]) a,sa B 2010—2520  
 ● *Zaluzianskya rubrostellata* Hilliard & B.L.Burt (Bigalke 15[NU]; Galpin 6794[PRE]; Hilliard & Burt 14674[NU]) 2250-2600  
*Zaluzianskya schmitziae* Hilliard & B.L.Burt (Bester 643, 1790, 1879, 2199, 2346) g,sa E-B 1530-2200  
*Zaluzianskya spathacea* (Benth.) Walp. (Bester 1875, 2020, 2038, 2044, 3615; Strever 809[PRE]; Van Wyk & Abbott 12160[PRE]) sa,v B 1360-2200

*Zaluzianskya spathacea* (Benth.) Walp. cf. (Bester 373) g E 1440

## SELAGINACEAE

### Hebenstretia L.

*Hebenstretia* sp. (Hilliard & Burt 14679[NU], 16400[NU], 16407[NU]; Stewart 1920[NU])

*Hebenstretia comosa* Hochst. (Bester 1443, 1552, 1983) f,g,a C-B 1600-2280

*Hebenstretia dura* Choisy (Bester 302, 390, 796, 1946, 3470, 3471; Galpin 6810[PRE]; Rattray 7315[PRE]; Royffe 228[PRE]; Strever 752[PRE]; Van Wyk & Abbott 12136[PRE]) g,v,sa,se M-E-B 1140-2428

*Hebenstretia integrifolia* L. (Zietsman & Zietsman 1457[PRE]) 2161

### Selago L.

*Selago* sp. (Bester 1678; Strever 943[PRE])

*Selago albida* Choisy (Roux 1722[PRE]) 1560

*Selago barbula* Harv. (Van Wyk & Abbott 12102[PRE]) 1900

*Selago corymbosa* L. (Abbott 5693[PRE]; Brusse 4601[PRE]; Dove 99[PRE]; Van Wyk & Abbott 12174[PRU]) g 2100-2500

● *Selago flanaganii* Rolfe (Bester 2674; Hilliard & Burt 14669[NU], 16367[NU], 16598[PRE], 18722[NU]; Phillipson 714[PRE]; Stewart 1904[NU], 1905[NU]; Van Wyk 6712[PRE]) a B 2256-2600

● *Selago galpinii* Schltr. (Bester 651, 2550, 2593, 2601; Hilliard 3961[NU]; Hilliard & Burt 6644[NU], 12332[NU], 13133[NU], 16575[NU]; Van Wyk & Abbott 12120[PRE]) g E-C-B 1440-2348

*Selago griquana* Hilliard (Bester 2350) a B 2480

*Selago longipedicellata* Rolfe cf. (Bester 3266) sa B 2040

● *Selago melliadora* Hilliard (Batten 668[NU]; Galpin 6816[PRE]; Hilliard & Burt 16534[NU]) 2470-2500

## SELAGINELLACEAE

### Selaginella Beauv.

*Selaginella mittenii* Baker (Bester 2590) f E 1500

## SOLANACEAE

### Lycium L.

*Lycium cinereum* Thunb. sensu lato (Muller 757[PRE]) 1525

### Nierembergia

*Nierembergia hippomanica* Miers (Bester 1816) g E 1340

### Solanum L.

*Solanum aculeastrum* Dunal (Flanagan 1290[PRE], 1165[PRE]; Stirton 6273[PRE]; Forest Officer 2[PRE]) 610

*Solanum capense* L. (Bester 265) g M 1400

*Solanum giganteum* Jacq. (Flanagan 472[PRE]; Pegler TM2890[PRE]; Forest Officer 4[PRE]) 365-610

*Solanum gracile* Dunal (Bester 1809) g E 1530

*Solanum linnaeanum* Hepper & Jaeger (Forest Officer 1[PRE])

*Solanum nigrum* L. (Flanagan 293[PRE]; Pegler 479[PRE]) 610

*Solanum retroflexum* Dunal (Bester 2634; Strever 892[PRE]) g E 1250-1380

*Solanum rigescens* Jacq. (Stirton 6290[PRE])

### STERCULIACEAE

#### Hermannia L.

*Hermannia* sp. (Flanagan 2636[PRE]; Rattray 7286[PRE])

*Hermannia cernua* Thunb. (Strever 1470[PRE]) 2030

*Hermannia cernua* Thunb. subsp. *erodoides* (Van Wyk & Abbott 12077[PRE]) (Not listed on PSA)

*Hermannia coccocarpa* (Eckl. & Zeyh.) Kuntze (Bester 264) g M 1400

*Hermannia erodoides* (Burch. ex DC.) Kuntze (Hilliard & Burt 6700[NU], 12245[NU], 18744[NU]) 2073-2622

*Hermannia gerrardii* Harv. (Bester 436, 468, 953, 2656, 3280) g M-E 1200-1590

*Hermannia parviflora* Eckl. & Zeyh. (Bester 252, 1344, 2806, 3063, 3030; Van Wyk & Abbott 12124[PRE]; Zietsman & Zietsman 1472[PRE]) g M-E 1200-2161

*Hermannia woodii* Schinz (Bester 108, 227, 430, 534, 1137, 1120, 1184, 1815; Hutchings 1258[PRE]; Zietsman & Zietsman 1436[PRE]) g M-E 1200-1700

### TECOPHILAEACEAE

#### Cyanella L.

*Cyanella lutea* L.f. (Royffe TM25721[PRE])

### THAMNOBRYACEAE

#### Porotrichum (Brid.) Hampe

*Porotrichum madagassum* Kiaer ex Besch. (Sim CH9917[PRE]) 1525

### THELYPTERIDACEAE

#### Thelyptis Schmidel

*Thelyptis bergiana* (Schlecht.) Ching (McLoughlin TM1027C[PRE])

*Thelyptis pozoi* (Lag.) Morton (McLoughlin 90)

### THUIDIACEAE

#### Thuidium B.S.G.

*Thuidium matarumense* Besch. (Hilliard & Burt 13141[PRE]) 2347

### THYMELAEACEAE

#### Englerodaphne Gilg

*Englerodaphne pilosa* Burt Davy (Marais 1393[PRE]) 1525

#### Gnidia L.

*Gnidia* sp. (Bester 744; Strever 403[PRE])

● *Gnidia abberans* C.H.Wr. (Hilliard & Burt 6709[NU], 14670[NU]) 2530-2591

▲ *Gnidia albosericea* Moss ex B.Peterson (Bester 561, 584, 3023) sa C-B 1980-2400

*Gnidia albosericea* Moss ex B.Peterson cf. (Bester 2914) sa B 1840

*Gnidia anthylloides* (L.f.) Gilg (Bester 1745, 2832, 2954) g,a M-B 1180-2550

*Gnidia baurii* C.H.Wright (Bester 1446, 1690) f,a C-B 1680-2100

*Gnidia burchellii* (Meisn.) Gilg (Strever 422[PRE]) 2650

▲ *Gnidia canoargentea* (C.H.Wright) Gilg (Bester 837) g E 1530

*Gnidia capitata* L.f. (Bester 3175) g T 1020

- Gnidia fastigiata* Rendle (Bester 878, 931, 932, 1780) g,v M-E 1320-1380  
*Gnidia gymnostachya* (C.A.Mey.) Gilg (Van Wyk 6694[PRE], 6695)  
*Gnidia kraussiana* Meisn. var. *kraussiana* (Bester 705, 713, 833, 1590; Sim 19640[PRE]; Theron 1533[PRE]; Wedermann & Oberdick 1096[PRE]) g,sa M-E-C 1230-1680  
*Gnidia nodiflora* Meisn. (Bester 1177, 2981, 3294, 3299) v,g T-M-E 1020-1410  
*Gnidia phaeotricha* Gilg (Bester 1870, 1979, 2460) g,v,a E-B 1360-2280  
*Gnidia phaeotricha* Gilg cf. (Bester 1620, 2835) g M-E 1180-1590  
▲*Gnidia polyantha* Gilg (Bester 665, 757, 758, 1371, 2718) f,g,a M-E-B 1200-2280  
*Gnidia polystachya* P.J.Bergius var. *congesta* C.H.Wright (Bester 1961) a B 1890

**Passerina L.**

- Passerina* sp. (Bester 197)  
*Passerina comosa* C.H.Wright (Pegler 1273[PRE])  
*Passerina filiformis* L. (Bester 3243, 3244, 3293) g,s T-A 1020-1410  
*Passerina filiformis* L. cf. (Bester 2849)  
*Passerina montana* Thoday (Abbott 6704[PRE]; Bester 1382, 1770, 1930, 3240, 3206, 3316, 3318; Van Wyk 6704[PRE]) a,g,sa E-B 1340-2520  
*Passerina rigida* Wikstr. cf. (Bester 741) g M 1300

**TILIACEAE**

**Grewia L.**

- Grewia occidentalis* L. (Abbott 5636[PRE]; Bester 274, 1401, 2770, Ferreira 7B) g M-E 1340-1500

**Sparmannia L.f.**

- Sparmannia ricinocarpa* (Eckl. & Zeyh.) Kuntze (Britten 7023[PRE])

**ULMACEAE**

**Celtis L.**

- Celtis africana* Burm.f. (Bester 526, 3106) s,f E 1600-1720

**URTICACEAE**

**Parietaria L.**

- Parietaria micrantha* Ledeb. (Hilliard & Burt 16590) 2438

**Urtica L.**

- Urtica dioica* L. (Van Wyk & Abbott 12066[PRE]) 1900

**VALERIANACEAE**

**Valeriana L.**

- *Valeriana capensis* Thunb. subsp. *lanceolata* N.E.Br. (Bester 1701, 3503; Hilliard & Burt 7292[NU], 18677[NU]) a,sa B 2012-2500  
*Valeriana capensis* Thunb. subsp. *capensis* (Bester 1151, 1542, 3084) g E 1400-1440  
*Valeriana capensis* Thunb. subsp. *nana* B.L.Burt (Bester 1996; Hilliard 5182[E]; Phillipson 658[PRE]; Stewart 1926[E]) a B 2370-2501

**VERBENACEAE**

**Clerodendrum L.**

- Clerodendrum pilosum* H.Pearson (Pegler 164B[PRE])



**Lantana L.**

*Lantana rugosa* Thunb. (Bester 262, 1092, 2638) g M 1350-1400

**Lippia L.**

*Lippia javanica* (Burm.f.) Spreng. (Bester 454; Watt & Barndwyk 1164[PRE]) g M 1200

*Lippia wilmsii* H.Pearson (Bester 3174) g T 1020

**Verbena L.**

*Verbena bonariensis* L. (Gibbs Russell 4035[PRE])

*Verbena brasiliensis* Vell. (Gibbs Russell 4034[PRE])

*Verbena venosa* Gill. & Hook (Ziesman & Zietsman 1439[PRE]) 1700

**VIOLACEAE**

**Hybanthus Jacq.**

*Hybanthus capensis* (Thunb.) Engl. (Acocks 12271[PRE]; Flanagan 2692[PRE]) 1220

*Hybanthus enneaspermus* (L.) F.Muell. (Bester 892, 1750) g M 1220-1230

**VISCACEAE**

**Viscum L.**

*Viscum continuum* E.Mey. ex Sprague (Wiens 5371[PRE]) 825

*Viscum obscurum* Thunb. (Wiens 5367[PRE], 5369[PRE]) 795-1160

**VITACEAE**

**Rhoicissus Planch.**

*Rhoicissus digitata* (L.f.) Gilg & M.Brandt (Bester 2794) r T 980

*Rhoicissus revoilii* Planch. (Van Zinderen Bakker 69[PRE]) 1130

*Rhoicissus tridentata* (L.f.) Wild & R.B.Drum. subsp. *cuneifolia* (Eckl. & Zeyh.)  
Urton (Abbott 5620[PRE]; Bester 815, 948, 2821; Van Wyk & Abbott 12011[PRE])  
g M-E 1260-1900

*Rhoicissus tridentata* (L.f.) Wild & R.B.Drum. subsp. *tridentata* (Bayliss 1552[PRE];  
Galpin 6598[PRE]) 1065-1675

**XYRIDACEAE**

**Xyris L.**

*Xyris capensis* Thunb. (Bester 113, 150, 3572; Flanagan 2673[PRE]) g,v M 1220-1340

**ZYGOPHYLLACEAE**

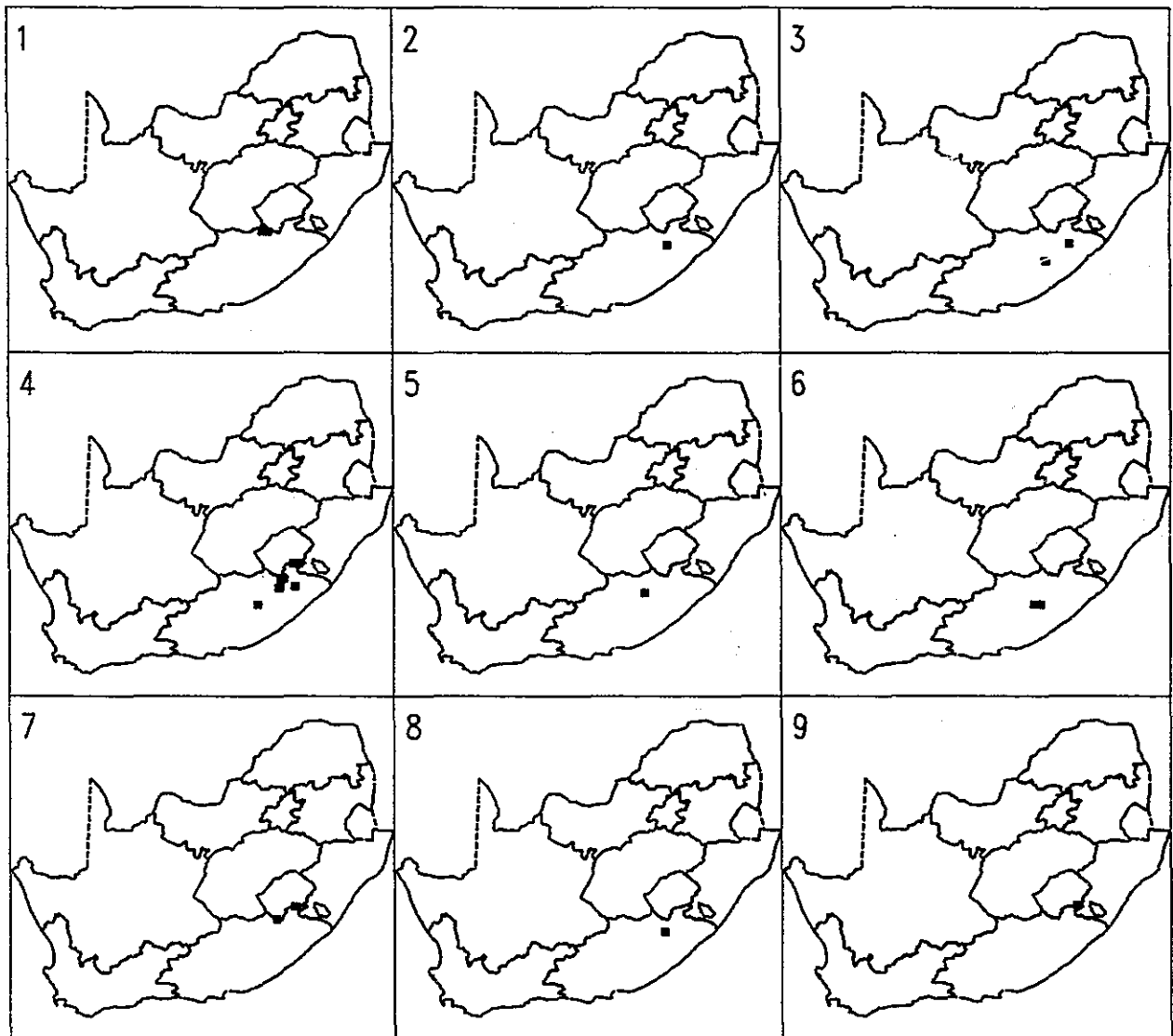
**Tribulus L.**

*Tribulus terrestris* L. (Pegler 1666[PRE])

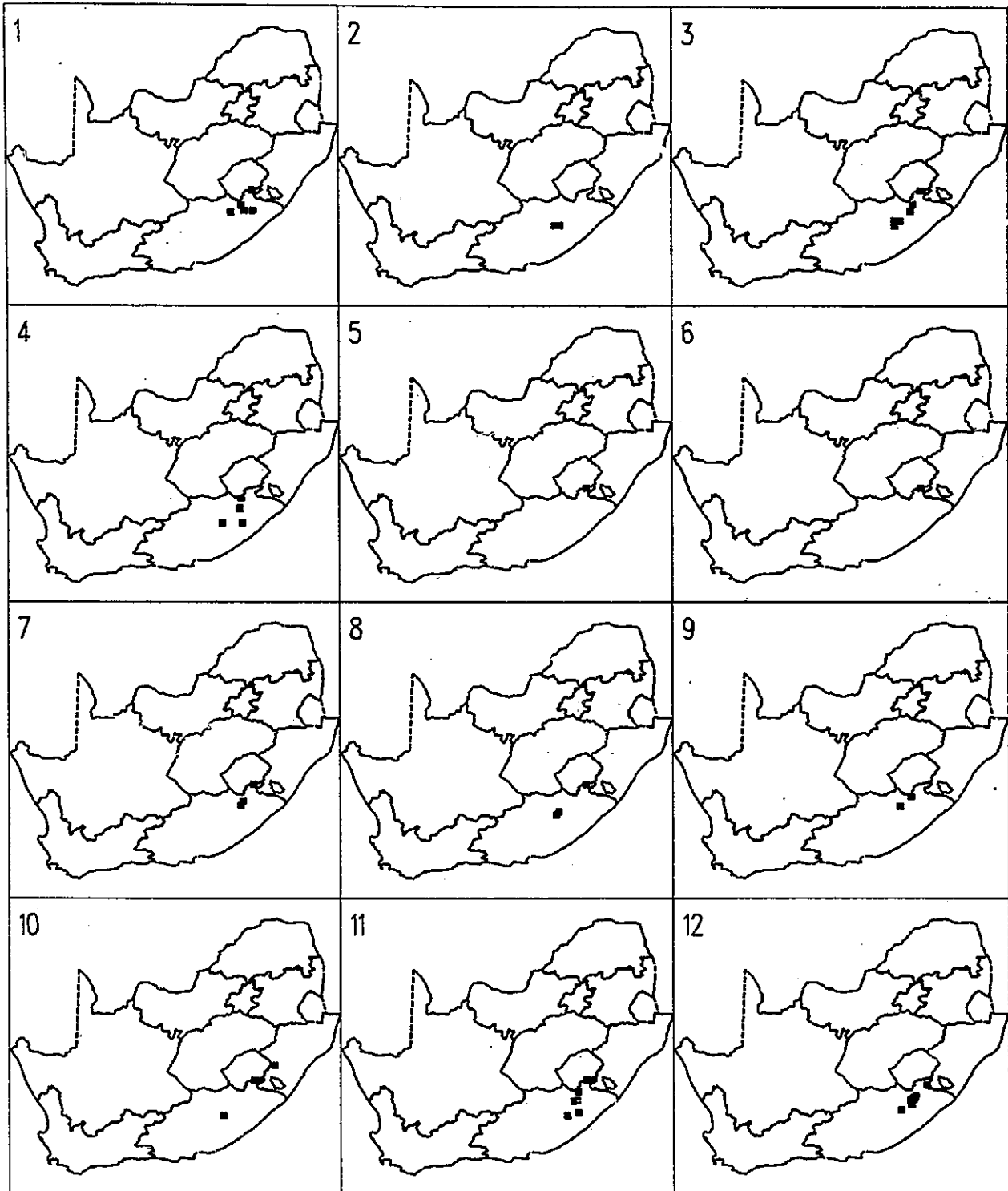


## APPENDIX 4

### DISTRIBUTION MAPS FOR THE LOCAL ENDEMIC SPECIES



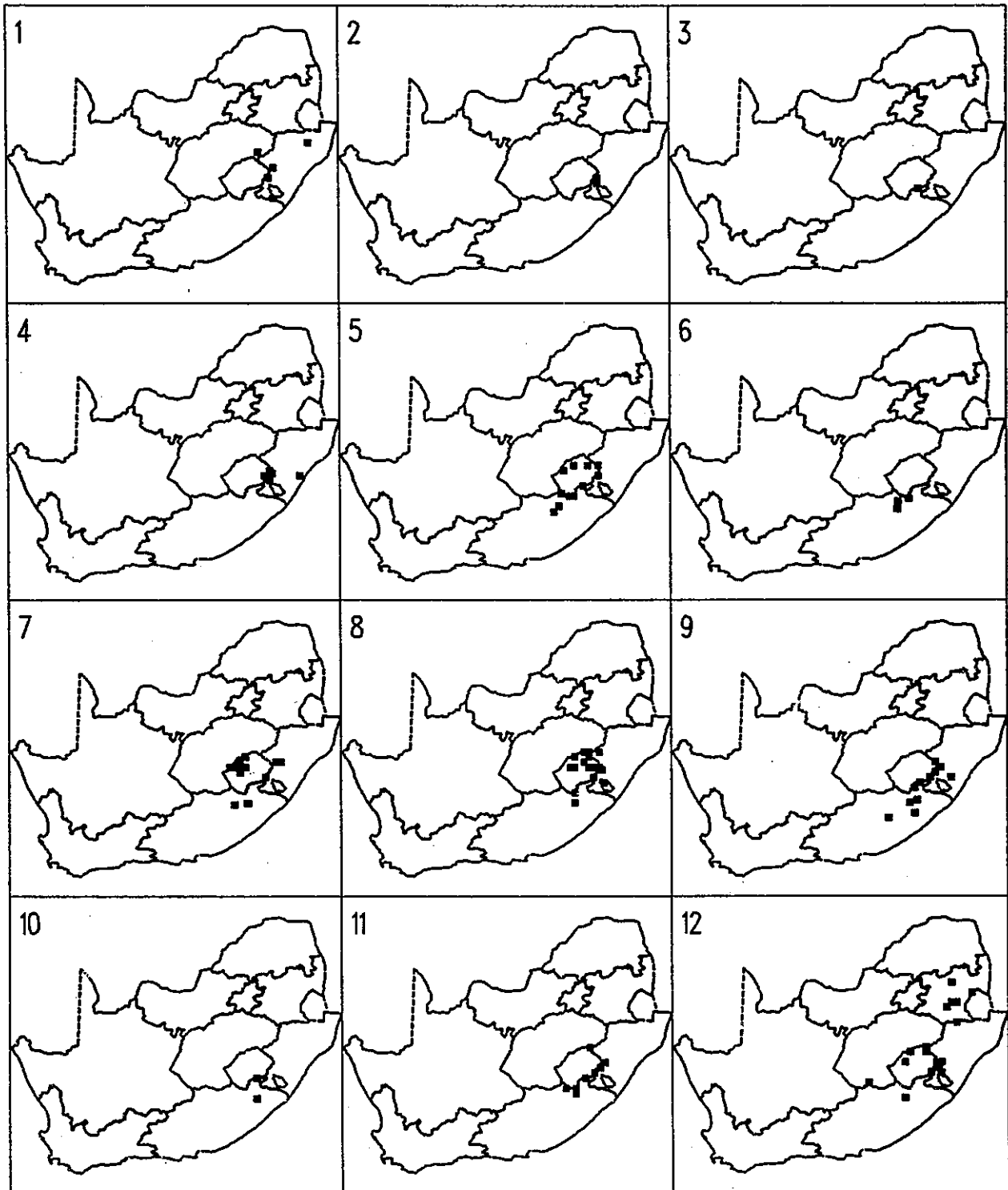
(1) *Albuca xanthocodon*, (2) *Berkheya* sp.nov., (3) *Crocoshia masonorum*, (4) *Diascia fetcaniensis*, (5) *Diascia lilacina*, (6) *Diascia stachyoides*, (7) *Diascia stricta*, (8) *Disa crassifolius* and (9) *Disa galpinii*.



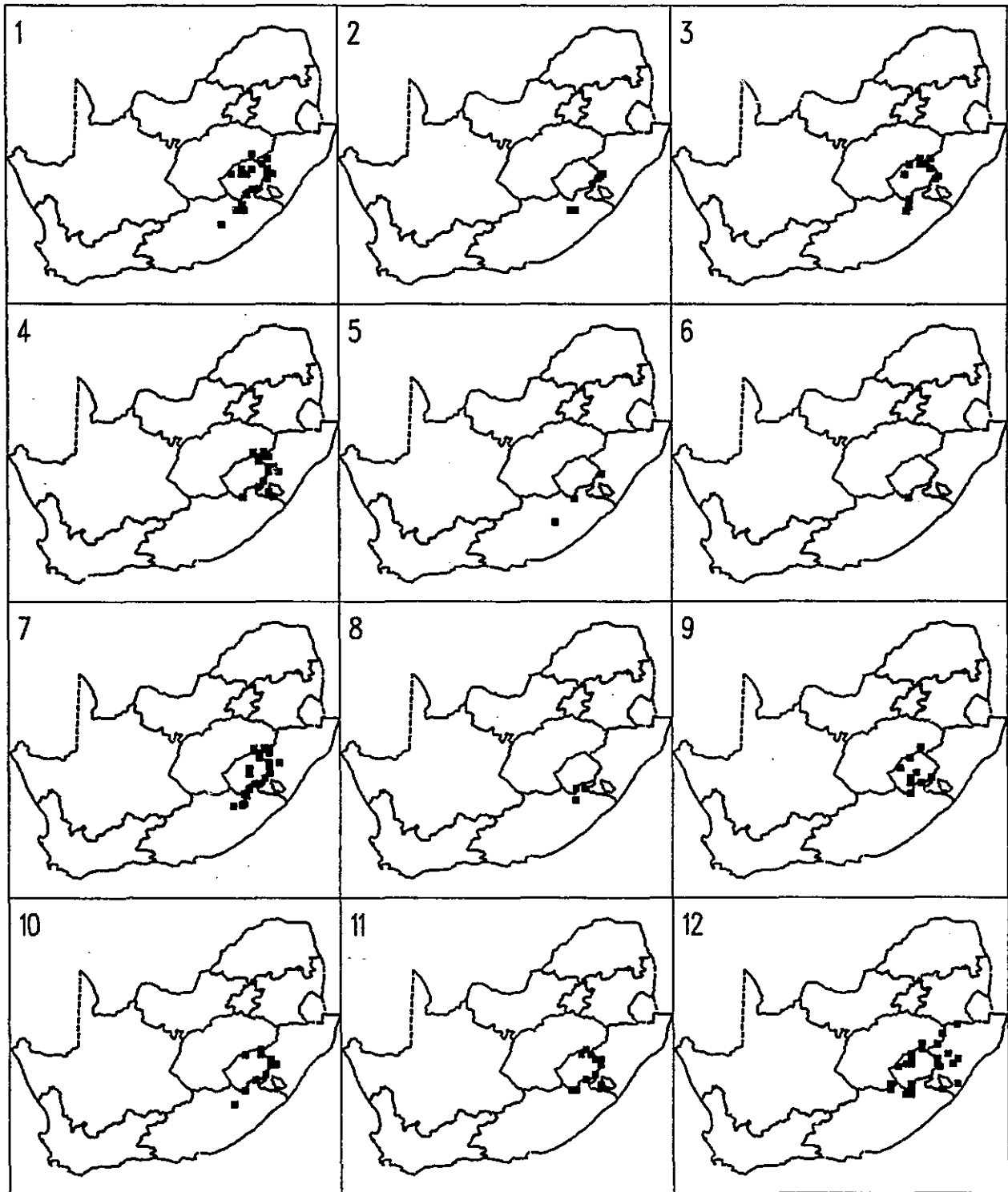
(1) *Disa oreophila* subsp. *erecta*, (2) *Disa stachyoides*, (3) *Erica ooperi* var. *missionis*, (4) *Erica hillburtii*, (5) *Eucomis humilis*, (6) *Felicia caespitosa*, (7) *Huttonaea grandiflora*, (8) *Protasparagus stellatus*, (9) *Schizoglossum* sp.nov., (10) *Trachyandra smalliana*, (11) *Tritonia drakensbergensis* and (12) *Watsonia gladioloides*.

## DISTRIBUTION MAPS FOR SELECTED DRAKENSBERG ALPINE REGION ENDEMIC/NEAR-ENDEMIC SPECIES

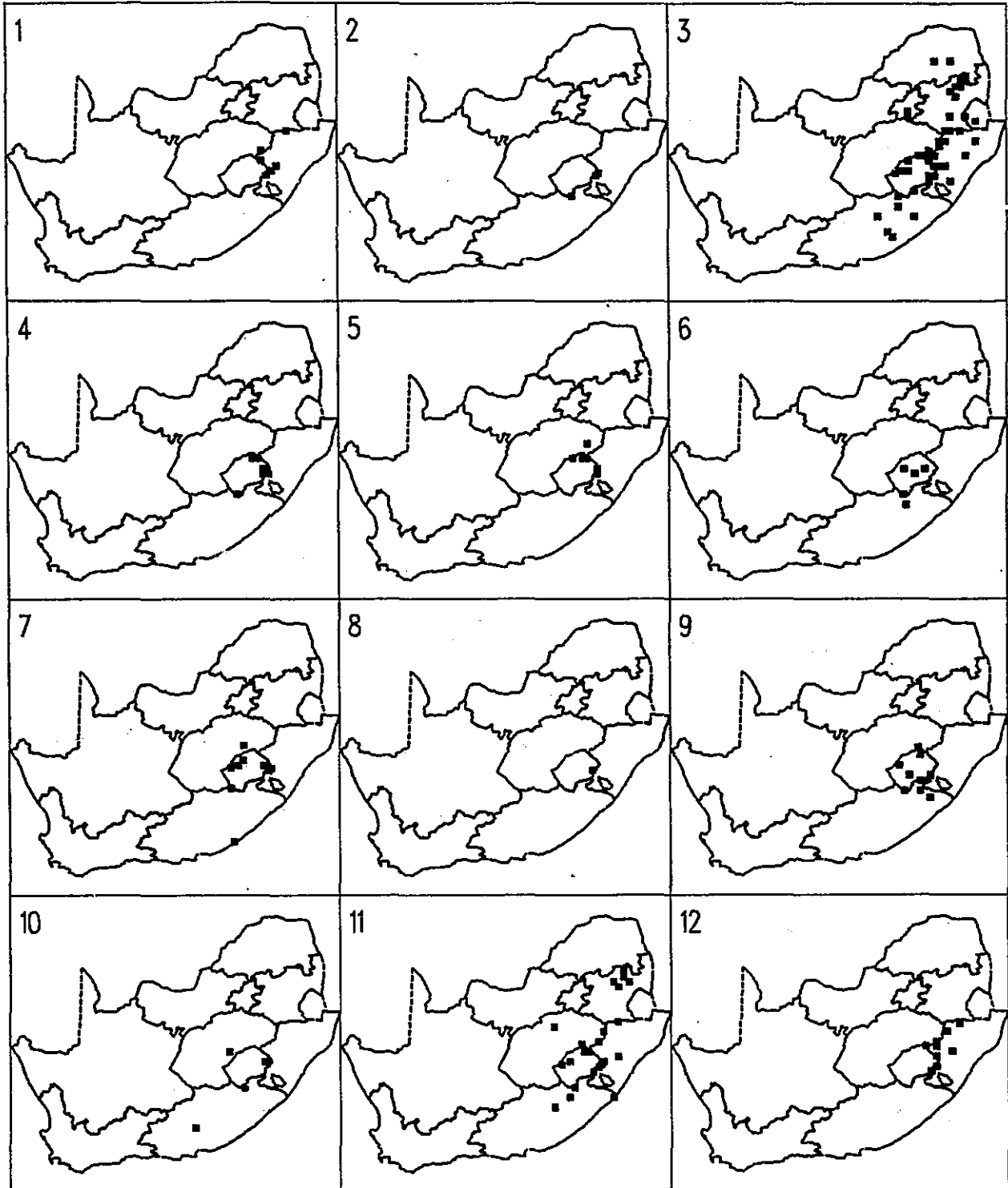
(Based mainly on specimens housed in NH, NU, PRE and PRU of taxa on the main  
Drakensberg Escarpment)



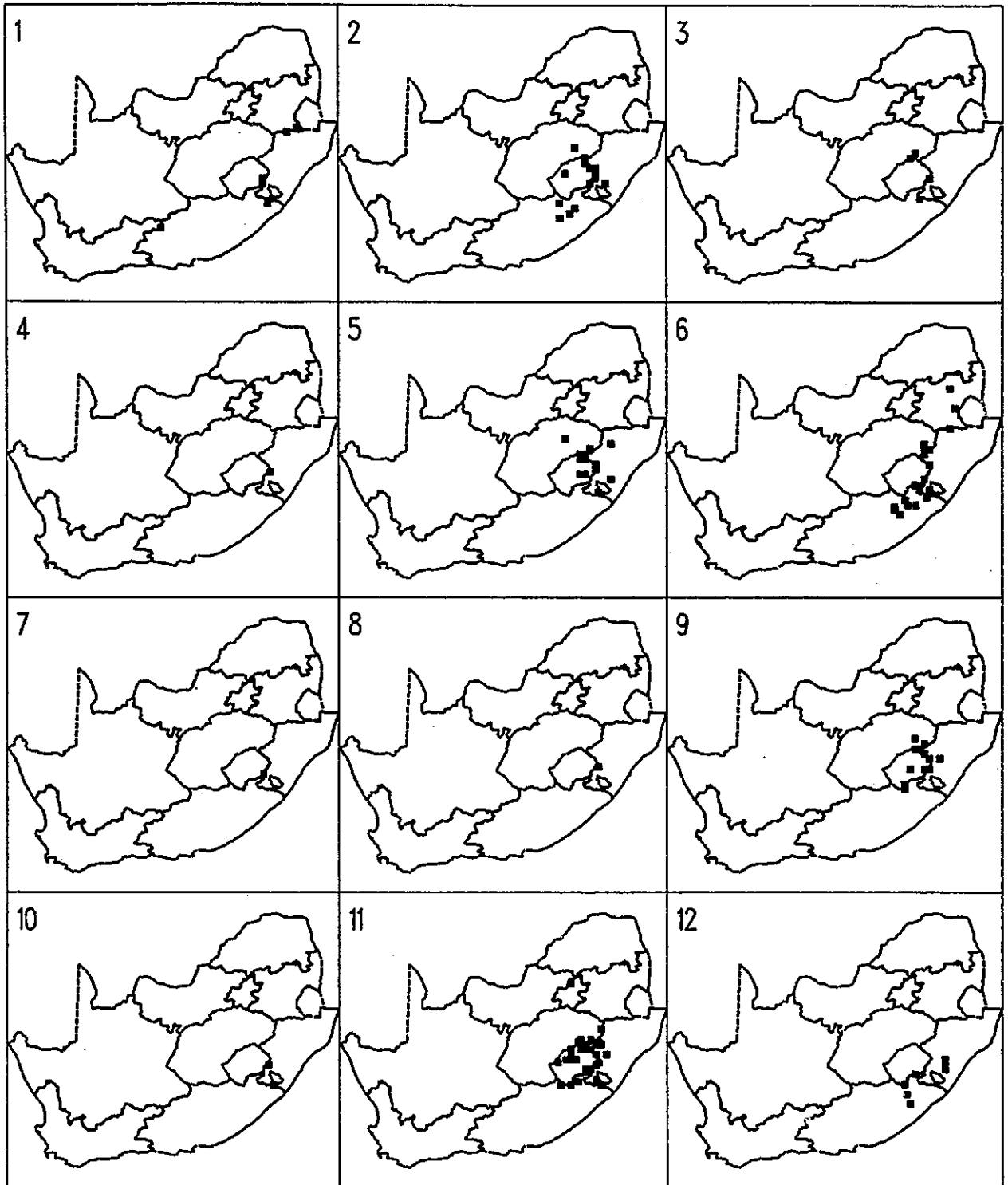
(1) *Albuca humilus*, (2) *Albuca rupestris*, (3) *Alchemilla colura*, (4) *Aristea grandis*,  
 (5) *Alepidea pusillus*, (6) *Alepidea galpinii*, (7) *Alepidea pilifera*, (8) *Alepidea thodei*,  
 (9) *Alepidea woodii*, (10) *Anthospermum basuticum*, (11) *Argyrolobium tysonii* and  
 (12) *Argyrolobium variophile*.



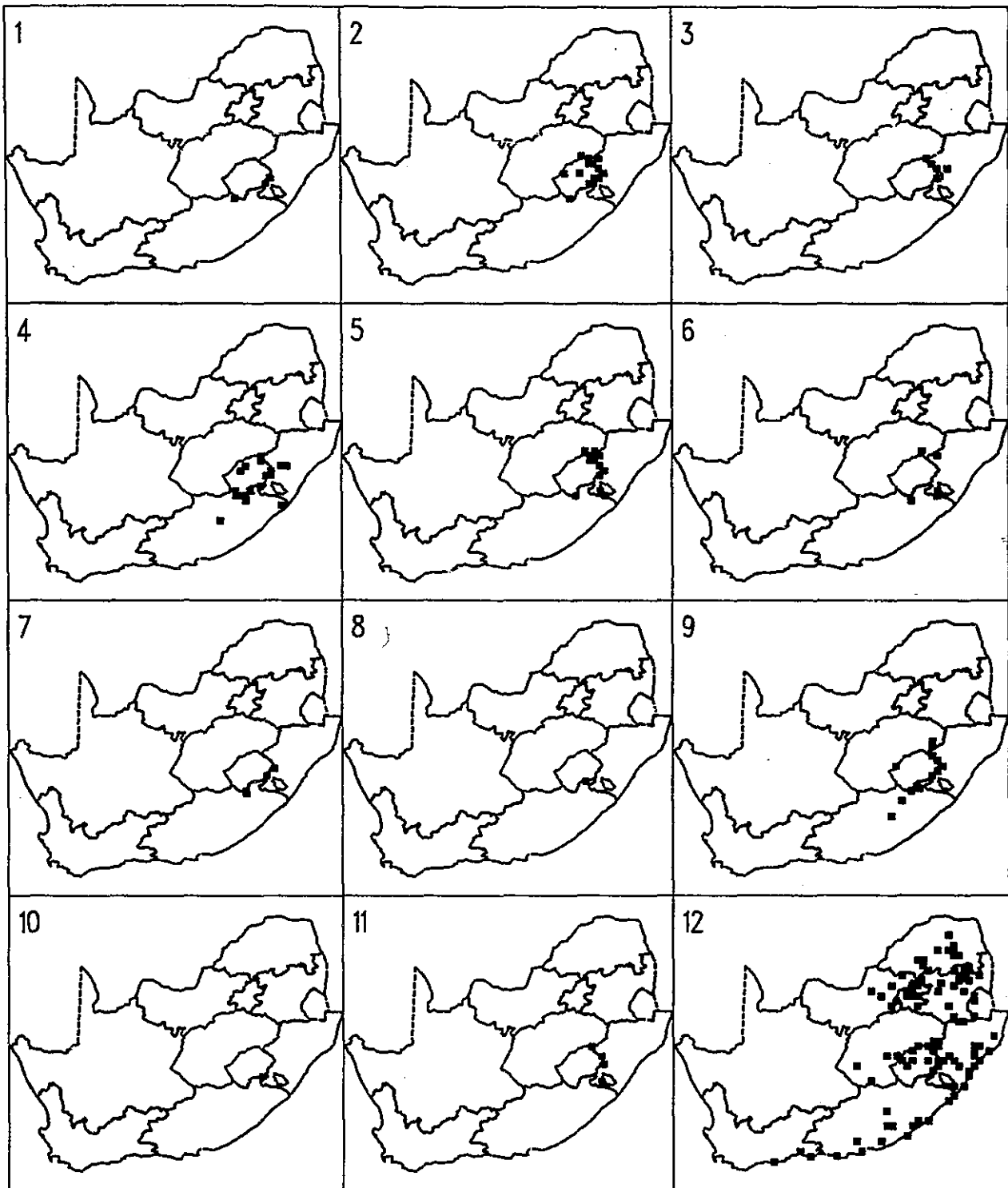
(1) *Asclepias humilus* (2) *Aster ananthocladus* (3) *Aster erucifolius* (4) *Aster perfoliatus*  
 (5) *Athanasia grandiceps* (6) *Athanasia thodei* (7) *Athrixia angustissima* (8) *Athrixia*  
*pinifolia* (9) *Berkheya cirsiifolia* (10) *Berkheya multijuga* (11) *Brownleea macroceras*  
 (12) *Buddleja loricata*



(1) *Carpha filifolia* (2) *Cephalaria galpiniana* subsp. *simplicior* (3) *Cliffortia nitidula* (4) *Clutia nana* (5) *Cotula paludosa* (6) *Conium fontanum* var. *alticola* (7) *Cotula lineariloba* (8) *Conula membranifolia* (9) *Cotula socialis* (10) *Crassula gemmifera* (11) *Crassula natlensis* (12) *Crassula umbraticola*

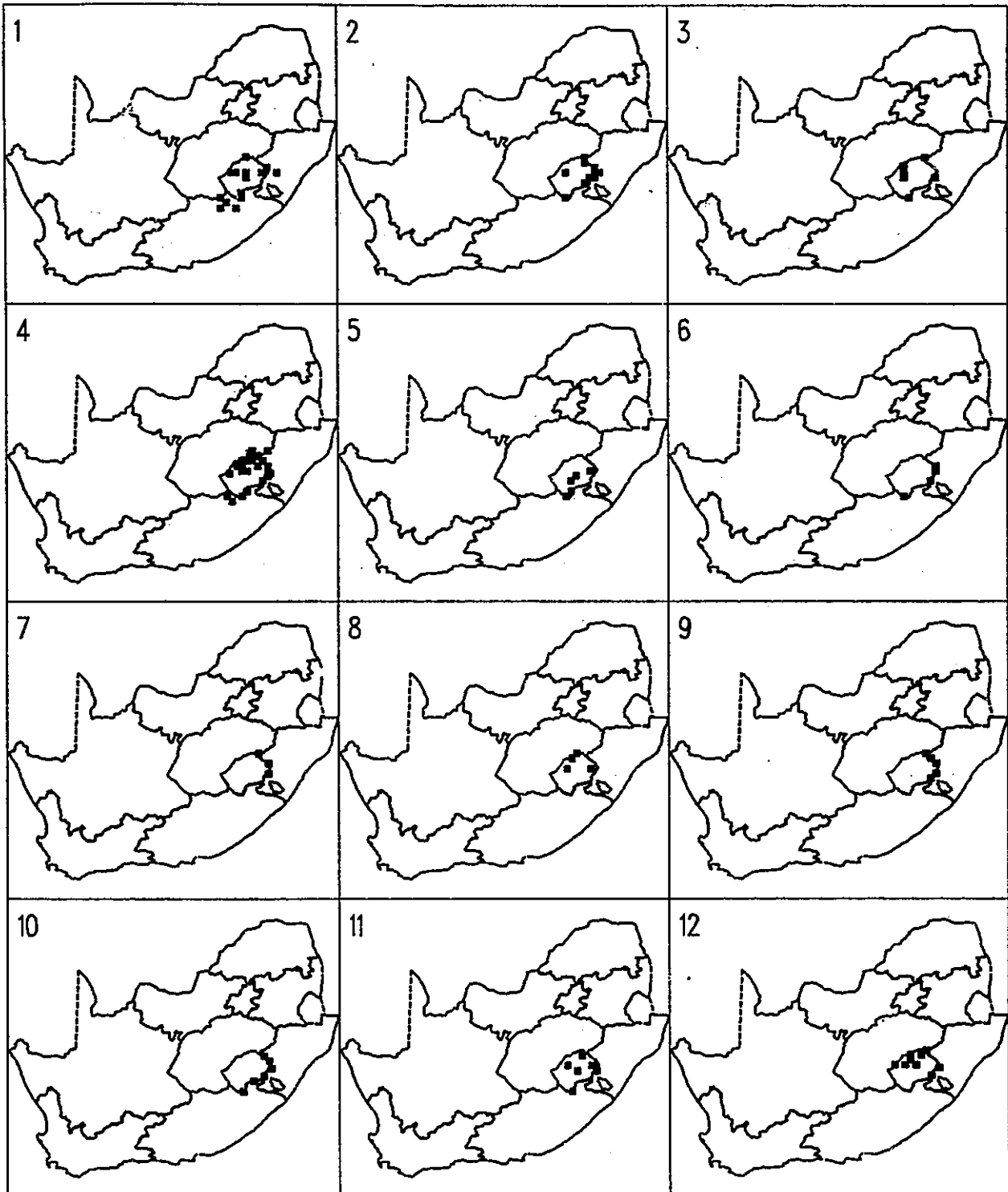


(1) *Cyrtanthus epiphyticus* (2) *Cyrtanthus flanagani* (3) *Delosperma deleewiae* (4) *Delosperma nubigenum* (5) *Diospyros autro-africana* subsp. *rubriflora* (6) *Disa oreophila* subsp. *oreophila* (7) *Disa sankeyi* (8) *Dryopteris esterhuyseniae* (9) *Ehrharta longigluma* (10) *Erica albospicata* (11) *Erica algida* (12) *Erica cooperi* var. *cooperi*

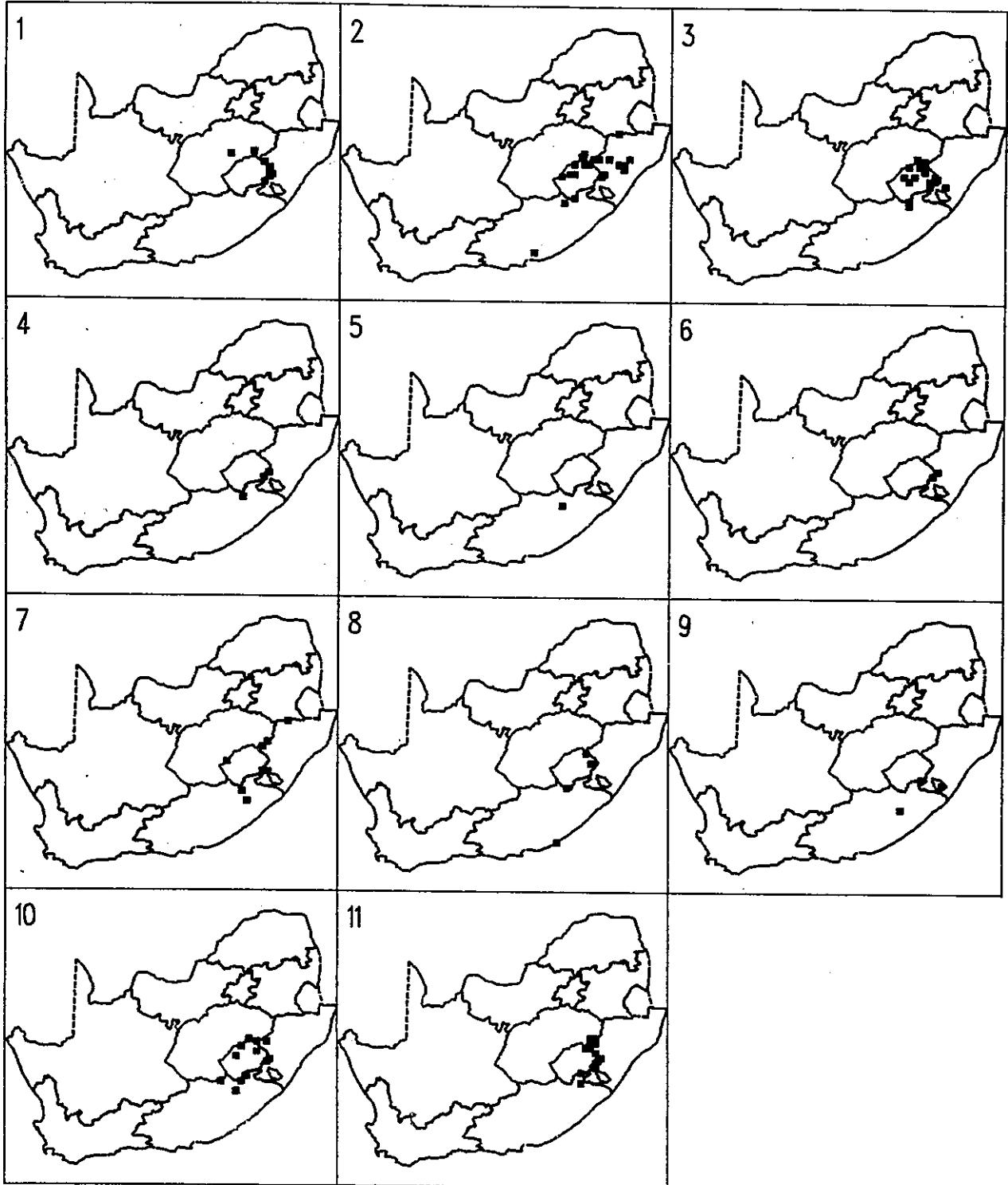


(1) *Erica dissimulans* (2) *Erica dominans* (3) *Erica reenensis* (4) *Erica schlechteri* (5) *Erica thodei* (6) *Erica tysoni* var. *tysoni* (7) *Eumorphia prostrata* (8) *Euryops montanus* (9) *Euryops tysoni* (10) *Ficinia filiculmea* (11) *Geranium pulchrum* (12) *Gerbera piloselloides* (a local DAR endemic form)

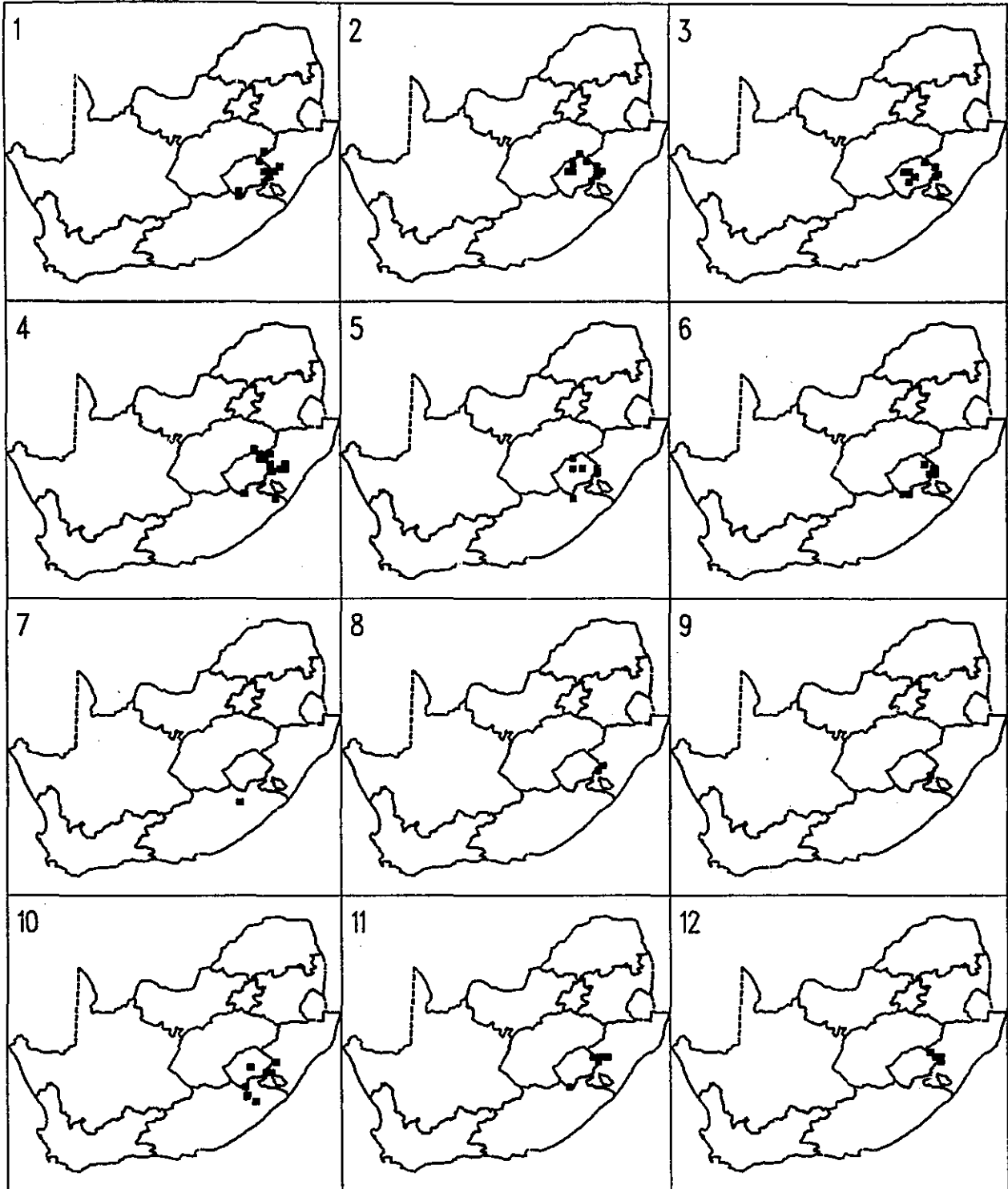




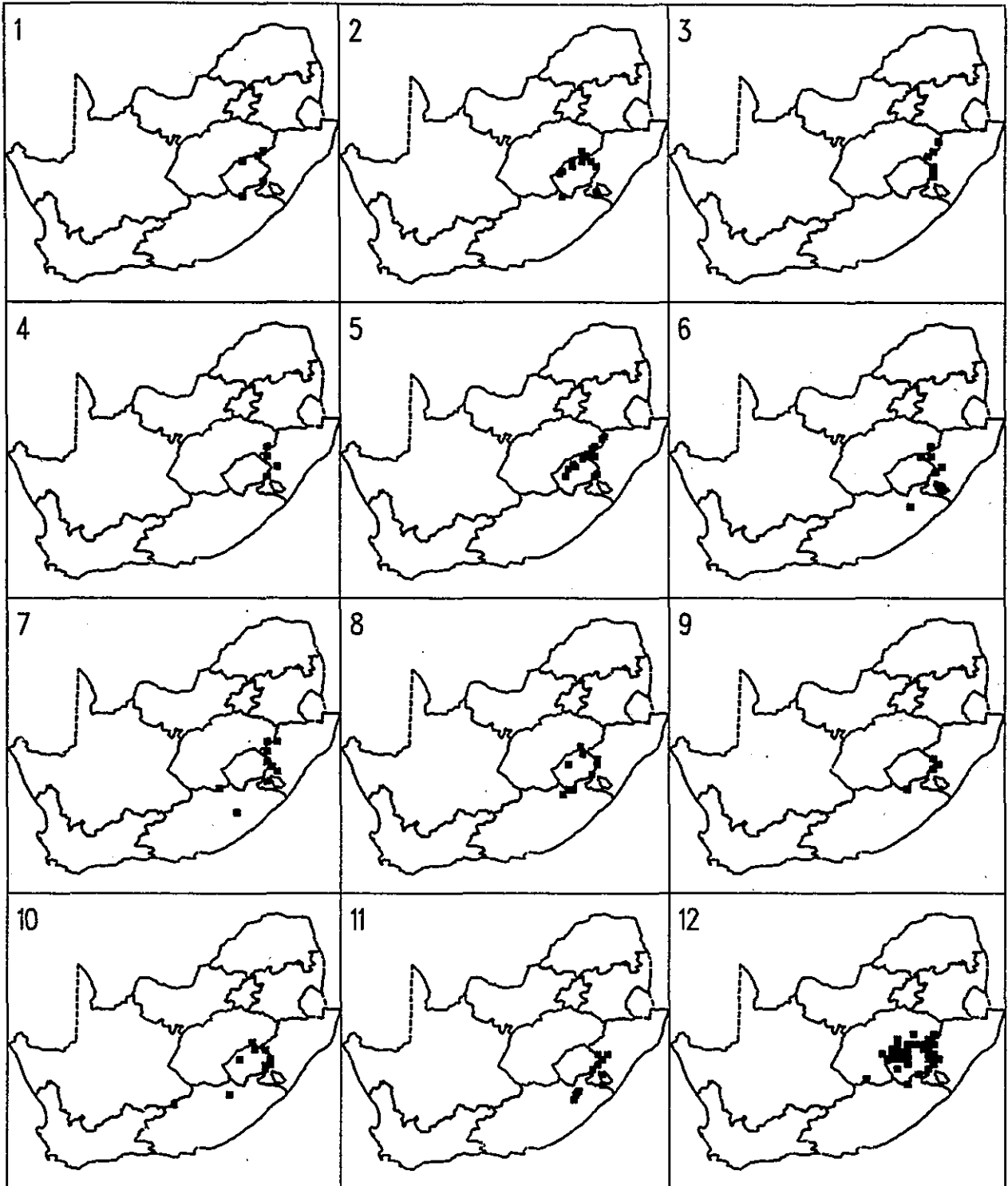
(1) *Gladiolus saundersii* (2) *Glumicalyx flanagani* (3) *Glumicalyx montanus* (4) *Glumicalyx nutans* (5) *Gnaphalium limicola* (6) *Gnidia abberans* (7) *Harveya leucopharynx* (8) *Harveya pulchra* (9) *Helichrysum albirosulatum* (10) *Helichrysum aureum* (11) *Helichrysum basalticum* (12) *Helichrysum bellum*



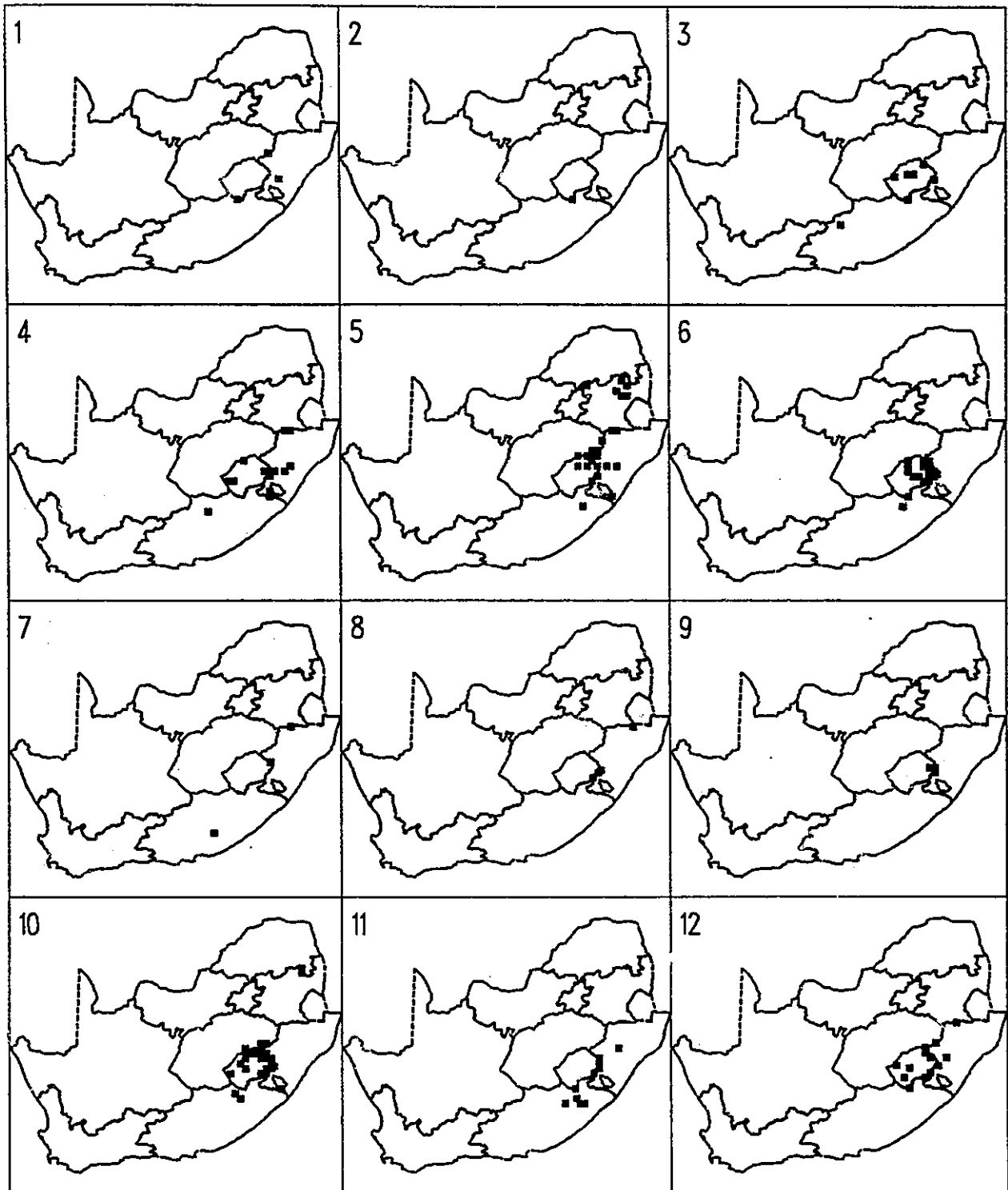
(1) *Helichrysum confertum* (2) *Helichrysum cymosum* (3) *Helichrysum jlanaganu*  
 (4) *Helichrysum glaciale* (5) *Helichrysum heterolasium* (6) *Helichrysum inornatum*  
 (7) *Helichrysum krookii* (8) *Helichrysum lineatum* (9) *Helichrysum lingulatum*  
 (10) *Helichrysum marginatum* (11) *Helichrysum nanum*



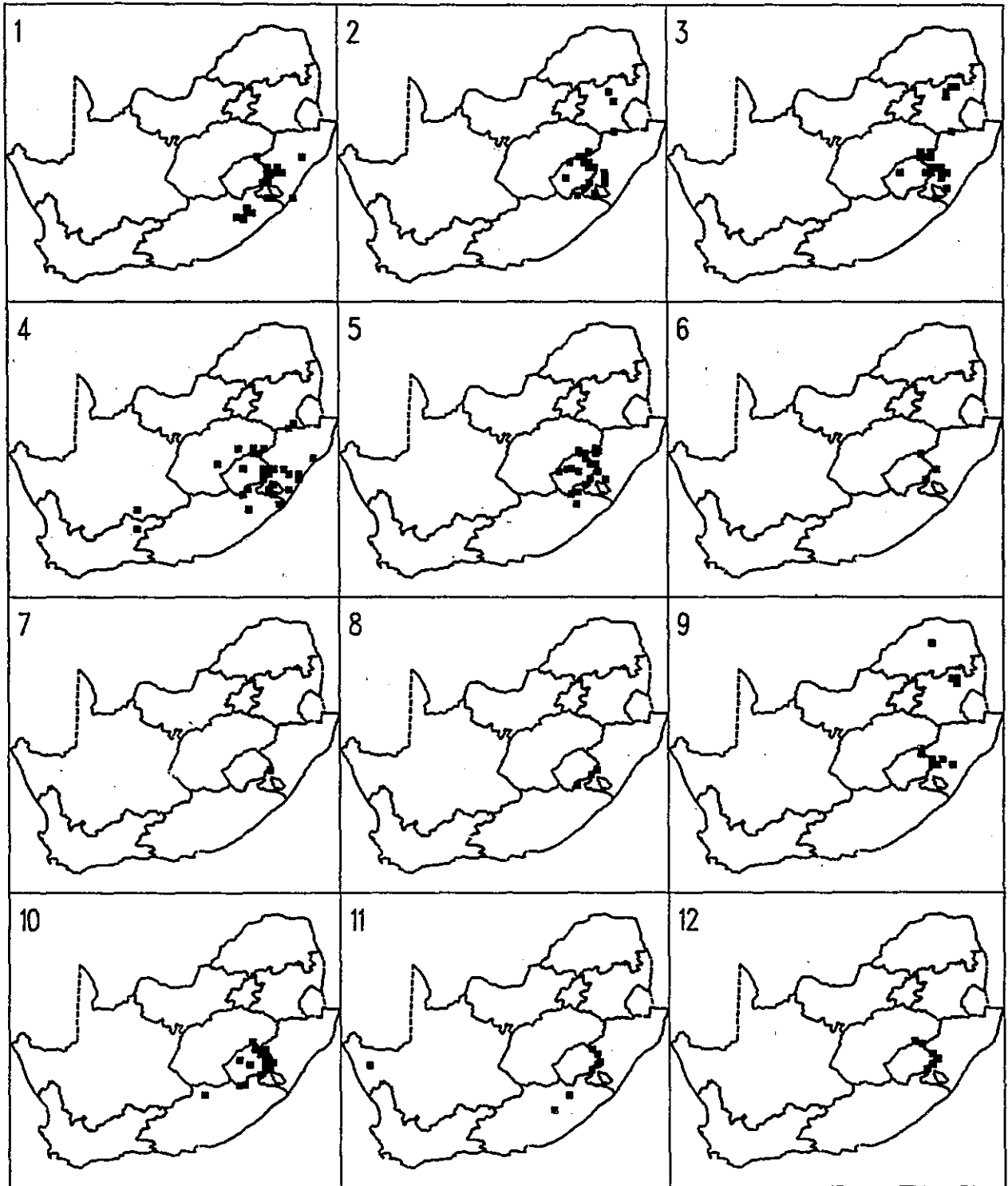
(1) *Helichrysum palustre* (2) *Helichrysum retortoides* (3) *Helichrysum sessiloides*  
 (4) *Helichrysum venum* (5) *Helichrysum witbergensis* (6) *Heliophila alpina*  
 (7) *Hesperantha alborosea* (8) *Hesperantha baurii* var. *formosa* (9) *Hesperantha crocopsis*  
 (10) *Hesperantha grandiflora* (11) *Hesperantha schelpeana* (12) *Hesperantha scopulosa*



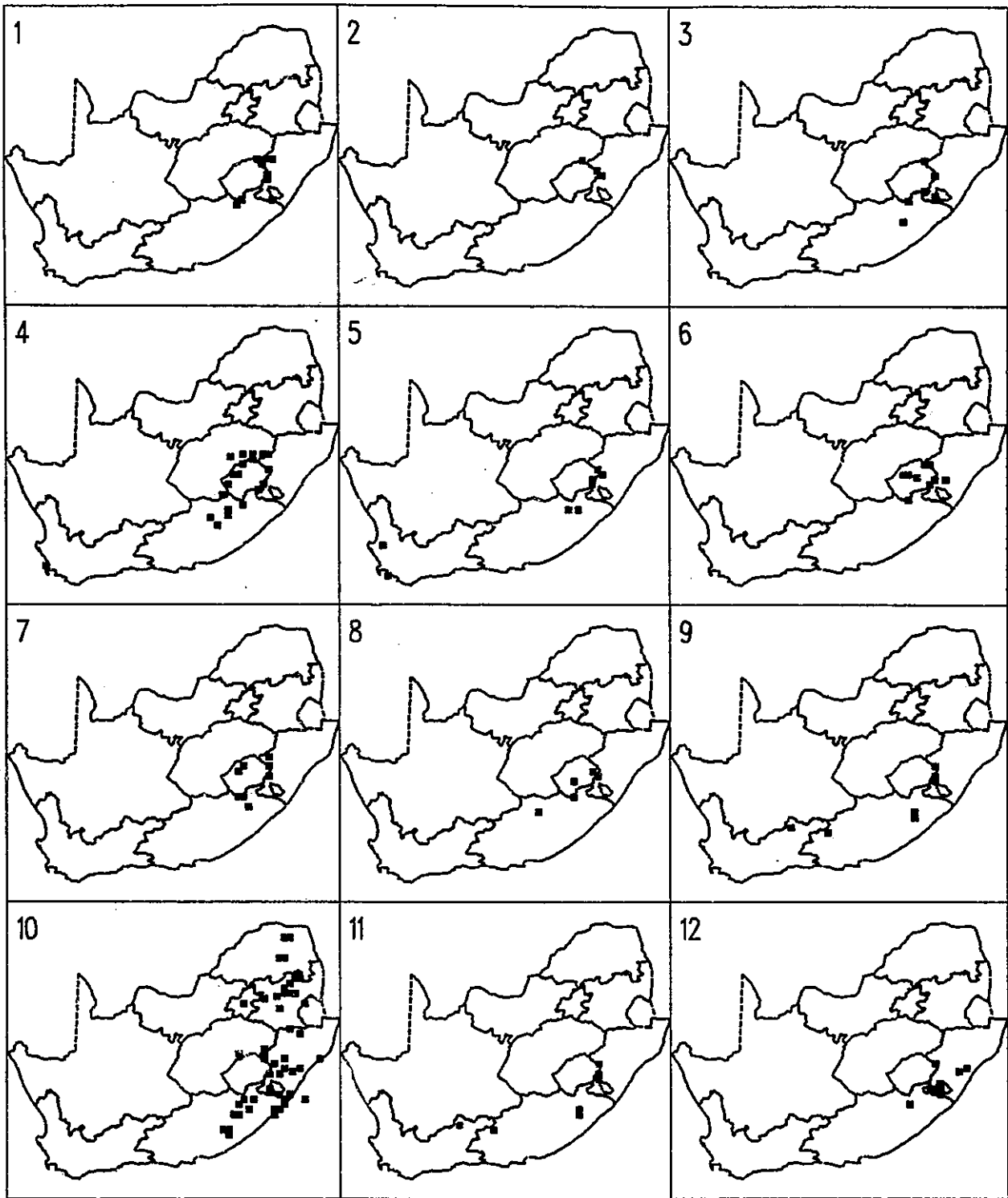
(1) *Hesperantha vernails* (2) *Heteromma decurrens* (3) *Heteromma simplicifolium*  
 (4) *Holothrix thodei* (5) *Holothrix incurva* (6) *Huttonaea fimbriata* (7) *Huttonaea pulchra*  
 (8) *Inulanther thodei* (9) *Inulanthera tridens* (10) *Isolepis angelica* (11) *Kniphofia*  
*brachystachya* (12) *Kniphofia ritualis*



(1) *Lepidium basuticum* (2) *Limosella vesiculosa* (3) *Lobelia galpinii* (4) *Lobelia laxa*  
 (5) *Lobelia vanreenensis* (6) *Lotononis galpinii* (7) *Lotononis trisegmentata* (8) *Macowanica*  
*sororis* (9) *Manulea platystigma* (10) *Merxmuellera drakensbergensis* (11) *Moraea*  
*albicuspa* (12) *Moraea alticola*

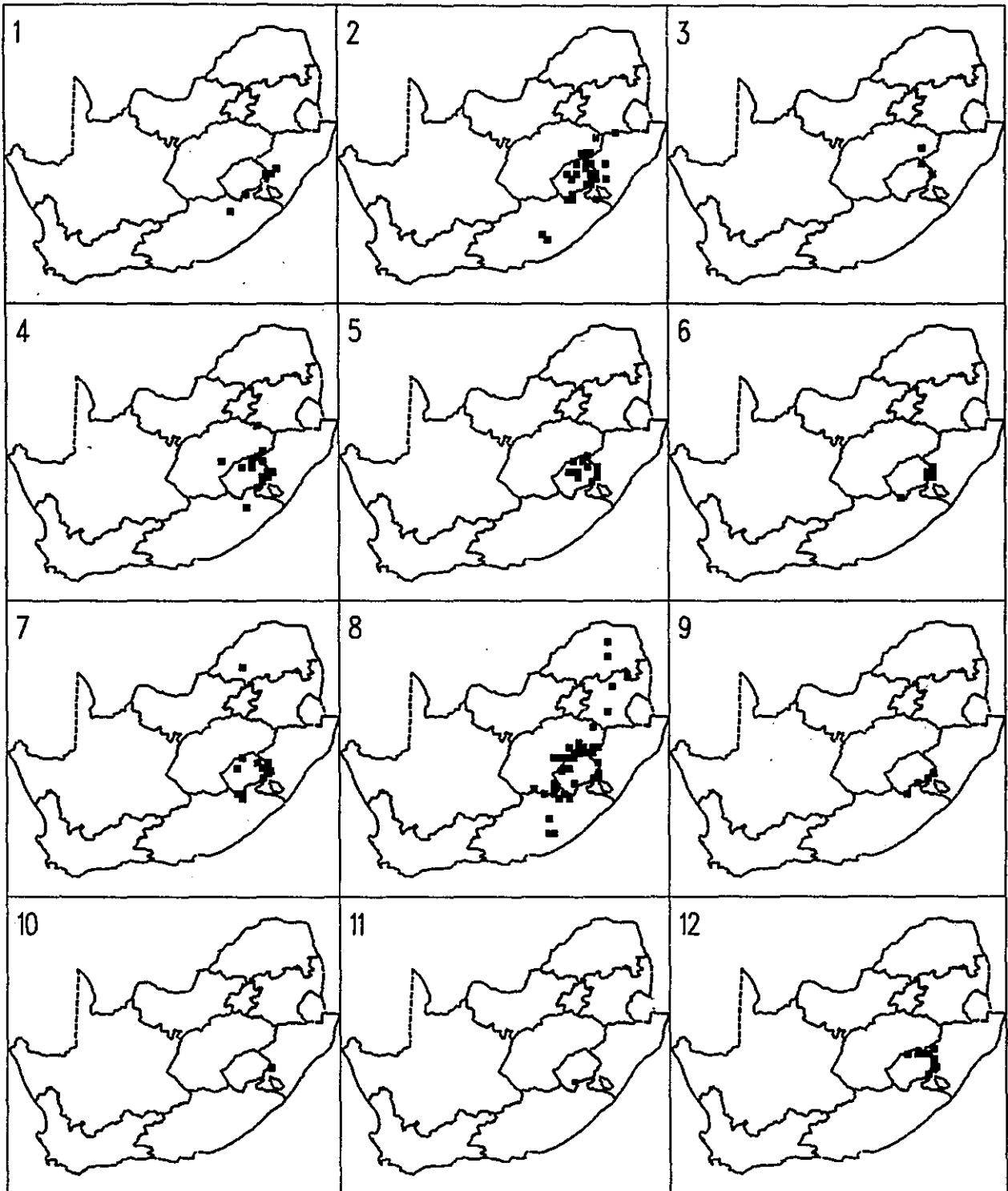


(1) *Moraea inclinata* (2) *Moraea modesta* (3) *Moraea trifida* (4) *Nemesia caerulea*  
 (5) *Neobolusia virginea* (6) *Nidorella agria* (7) *Osteospermum attenuatum* (8) *Othonna burttii*  
 (9) *Pelargonium dispar* (10) *Pentaschistis galpinii* (11) *Peucedanum thodei*  
 (12) *Phyllica thodei*

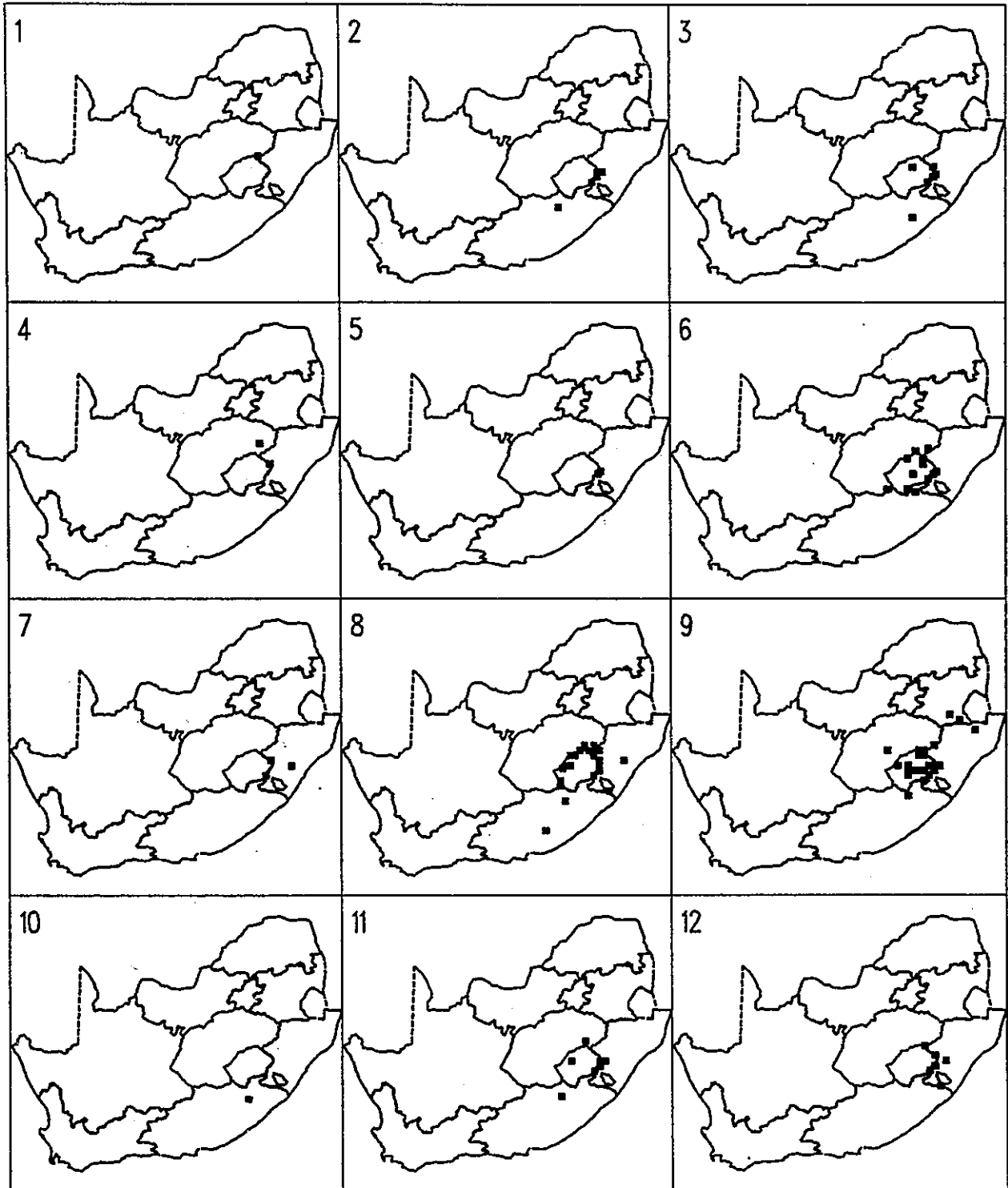


(1) *Polygala rhinostigma* (2) *Printzia nutans* (3) *Pterygodium leucanthum* (4) *Relhania acerosa* (5) *Restio galpinii* (6) *Rhodohypoxis deflexa* (7) *Rhodohypoxis rubella* (8) *Romulea macowania* var. *oreophila* (9) *Schizochilus flexuosis* (10) *Schizochilus zeyheri* (a local DAR endemic form) (11) *Schizoglossum bidens* subsp. *atrorubens* (12) *Schizoglossum flavum*

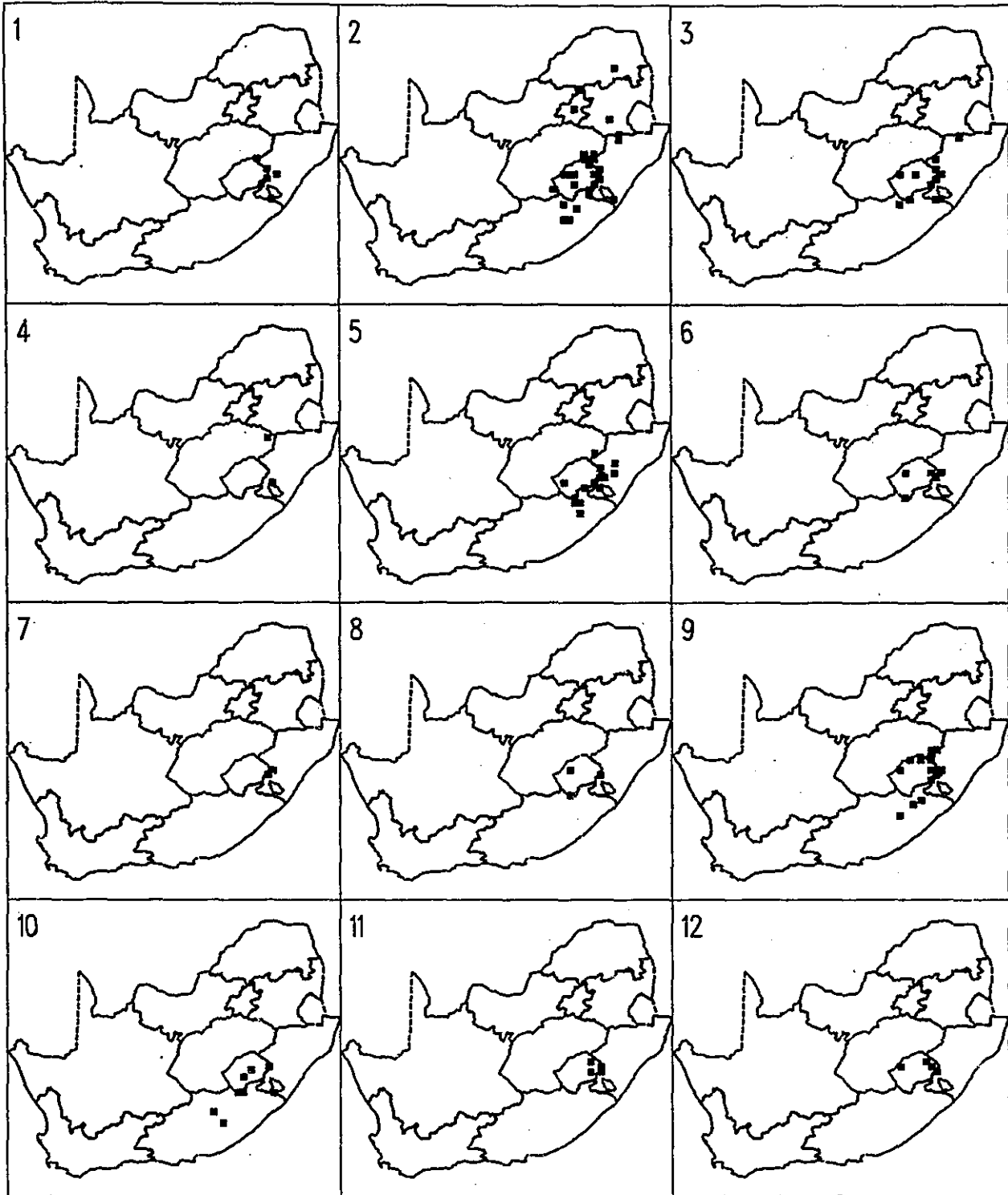




(1) *Schizoglossum hilliardiae* (2) *Scirpus falsus* (3) *Sebaea marlothii* (4) *Sebaea procumbens* (5) *Sebaea spathulata* (6) *Sebaea thodeana* (7) *Selago flanagani* (8) *Selago galpinii* (9) *Selago melliodora* (10) *Senecio austromontanus* (11) *Senecio caloneotes* (12) *Senecio cryptolanatus*



(1) *Senecio dissimulans* (2) *Senecio ingeliensis* (3) *Senecio macrospermus* (4) *Senecio praeteritus* (5) *Senecio qathlambanus* (6) *Senecio seminiveus* (7) *Senecio submontanus* (8) *Sutera polelensis* (9) *Sutera pristisepala* (10) *Thesium acutissimum* (11) *Thesium durum* (12) *Urginea tenella*



(1) *Urginea tenella* (2) *Ursinia montanus* subsp. *lanceolata* (3) *Valeriana capensis* subsp. *lanceolata* (4) *Wahlenbergia capillacea* subsp. *capillacea* (5) *Wahlenbergia fasciculata* (6) *Wahlenbergia lobulata* (7) *Wahlenbergia polytrichifolia* subsp. *dracomontana* (8) *Walafrida witbergensis* (9) *Wurmbea angustifolia* (10) *Wurmbea elatior* (11) *Zaluzianskya oreophila* (12) *Zaluzianskya rubrostellata*