ENDEMIC FLORA OF THE SOUTPANSBERG

by

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in the

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Preface

The observations, deductions and data described in this dissertation ('thesis' for MSc) were collected from the Soutpansberg and surrounding areas over a period of 15 years. Written up into this thesis, from November 1996– November 2002 under the supervision of Dr. T. Edwards, School of Botany and Zoology Faculty of Science and Agriculture, University of Natal, Pietermaritzburg.

These studies represent original work by the author and have not otherwise been submitted in any form for any degree or diploma to any University. Where use has been made of the work of others it is duly acknowledged in the text.

Norbert Hahn

November 2002

Norbert Hahn. Photo by Jerome Hutin May 2002.

Abstract

A survey of the endemic flora of the Soutpansberg is presented including a broad overview of biotic and physical aspects. 33 endemic taxa are described and selected vouchers are designated. Where possible, taxonomic alliances are outlined together with biogeographic aspects. The distribution, ecology, conservation status and uses of the endemics are outlined. We also provide a synthetic overview of the importance of the Soutpansberg as a centre of plant endemism in southern Africa.

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Acknowledgments

It would be impossible to mention all those who have assisted me with my research over the past years. To all those who have contributed to this thesis whom I have failed to mention, I would like to bestow a special word of thanks.

I would like to thank Dr. Trevor Edwards, my supervisor who had the arduous task of guiding me through the process of writing this thesis. In addition, I would like to thank Dr. Hennessy and Prof. Van Staden for their contribution as the research steering committee.

I am indebted to my friend Ernst van Jarsveld who set the initiative to have me present this thesis to the University of Natal. I would like to express gratitude to my friend and mentor Prof. Bram van Wyk for his inspiration and help over the years. I would like to thank my family, especially my dad, Dr. Hans Hahn, for their support. Many thanks to Dr. Jan Crafford for his help and support given over the years.

The following is a list of individuals and or organisations who have generously helped or supplied me with information.

- Cuénod, Pierre, for allowing me access to his family archive and giving me permission to reproduce some of their photographs.
- Giesekke, Helga for allowing me access to their family archive and giving me permission to reproduce of their photos.
- Hugh Exton Collection, Pieterburg Museums.
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- Scott, L. Prof. University of the OFS, for information given regarding palaeo-climate.

1 Introduction

1.1 Background

This thesis has come about because of a long and deep personal involvement with the Soutpansberg spanning a period of almost 30 years. About 14 years ago I moved permanently to the Soutpansberg and commenced the preliminary work on which this thesis is based. Much of the data and findings presented within this thesis is as a direct result of my long-standing interests involving all aspects of the natural history of the region.

During my life in the Soutpansberg I made a number of interesting observations, many of which have not been documented before. Gradually these observations began fitting together like pieces of a jigsaw puzzle.

> *'I am only that end of being where thought comes to flower…'*
> – Cheick Hamidon Kane

1.2 Motivation

As a biologist involved with documenting the botanical diversity of the Soutpansberg and as an active conservationist, I realized the need to record the unique flora of this region.

For millennia man has had an influence upon the region. The presence of hominoids within the area can be traced back to approximately 3·64 million years ago (Truswell 1977). From the beginning, man's influence irreversibly changed the world. This was a relatively slow process compared with the modern mass eradication of the biosphere. As a result, it is becoming urgent to document the Soutpansberg's rich biodiversity so that informed choices can be made on its management.

Economically, the Limpopo Province is one of the poorest provinces in South Africa supporting a large rural population that has one of the highest population growth rates in the country. To support these increasing masses, virgin habitat is being decimated at an unprecedented rate.

In the past, large tracts of grassland were exploited for the cultivation of exotic monocultures. These have depleted water resources and have destroyed most of this unique habitat. Water is a scarce commodity within the region, which is renowned for its severe periodic droughts. Agriculture is usually the first to suffer, resulting in increased pressure on the land.

There is a pressing need to conserve and properly manage the unique biodiversity of the Soutpansberg. I have collaborated with many organizations in conservation efforts pertaining to the region. As a result, I have realized that the most important aspect within a botanical sphere, is to describe the plants endemic to the region in a broad context, so that others may use this information in the establishment of management practices, education and the proclamation of conservation areas.

> *'The study and precise interpretation of the endemism of a territory constitute the supreme criterion, indispensable for arriving at any conclusions regarding the origin and age of its plant population. It enables us better to understand the past and the transformation that has taken place; it also provides us with a means of evaluating the extent of these transformations, the approximate epoch when they occurred, and the effects which they produced on the development of the flora and the vegetation.'*
> – Wulff (1950)

2 Conventions

2.1 Numerical convention

All numerical units represented within this thesis do not conform to the convention set forth within “Le Système international d’unités (SI)” (BIPM 1998). In numbers, the comma as stated by the “French practice” (BIPM 1998) (Government Notice 1974: R.1146 on 5) (SABS 1992) is not used to separate the integer part of numbers from the decimal part due to the infectious nature of global Americanization. Numbers, except for dates, are divided in groups of three in order to facilitate reading; neither dots nor commas are inserted in the spaces between groups.

2.2 Definitions

2.2.1 Types of Endemism

Within the context of this thesis, the plants endemic to the Soutpansberg can be categorized into four groups:

1. Plants endemic to the mountain, having no known relatives within or outside the Soutpansberg (*non-affines*).
2. Plants endemic to the mountain, with no known relatives within the Soutpansberg, but known to have relatives outside the range (extra-Soutpansberg allopatric).
3. Plants endemic to the mountain, with known relatives within the Soutpansberg not sharing the same habitat (inter-Soutpansberg allopatric).
4. Plants endemic to the mountain, with known relatives within the Soutpansberg, sharing the same habitat (sympatric).

2.2.2 Hypothetical types of endemics

Entities dealt with below, can for most be said to be hypothetical. Little is known of the evolution of the plants dealt with within this thesis as to assign them to one of the following categories:

- **Neoendemism**, from: (Gk. νεος, *neos*, new + *endemic*) referring to a recently evolved endemic taxon.
- **Palaeoendemism**, from: (Gk. παλαιος, *palaios*, old + *endemic*) referring to an endemic now restricted, but that once had a widespread distribution often has a disjunct distribution.
- **Holoendemic**, from: (Gk. ολος, *olos*, whole, entire + *endemic*) referring to an endemic, which has retained a narrow distribution throughout its evolution.

2.3 Endemic taxa

For purposes of this thesis, the study area comprising the Soutpansberg has an additional 50 km perimeter around it, within this expanse, all narrow endemics have been found.

3 Study Area

The Soutpansberg topographical zone lies between 23° 05’ S & 29° 17’ E and 22° 25’S & 31°20’ E (Figure 1). From east to west, the Soutpansberg spans approximately 210 km and from north to south it is 60 km at its widest and 15 km at its narrowest, covering an approximate surface area of 6 800 km^2. It ranges in altitude from 250 m above sea level, to Hanglip 1 719 m (second highest peak) and Lejuma 1 748 m (the highest peak) situated towards the western end of the mountain. Lejuma is not the highest point in the area however. About 40 km towards the west of the Soutpansberg lies another mountain range, the Blouberg, with an altitude of 2 050 m above sea level. Although the Blouberg belongs to the same geological system as the Soutpansberg, they are referred to as separate geographical entities. Within the context of this work, the Blouberg is seen as an extension of the Soutpansberg.

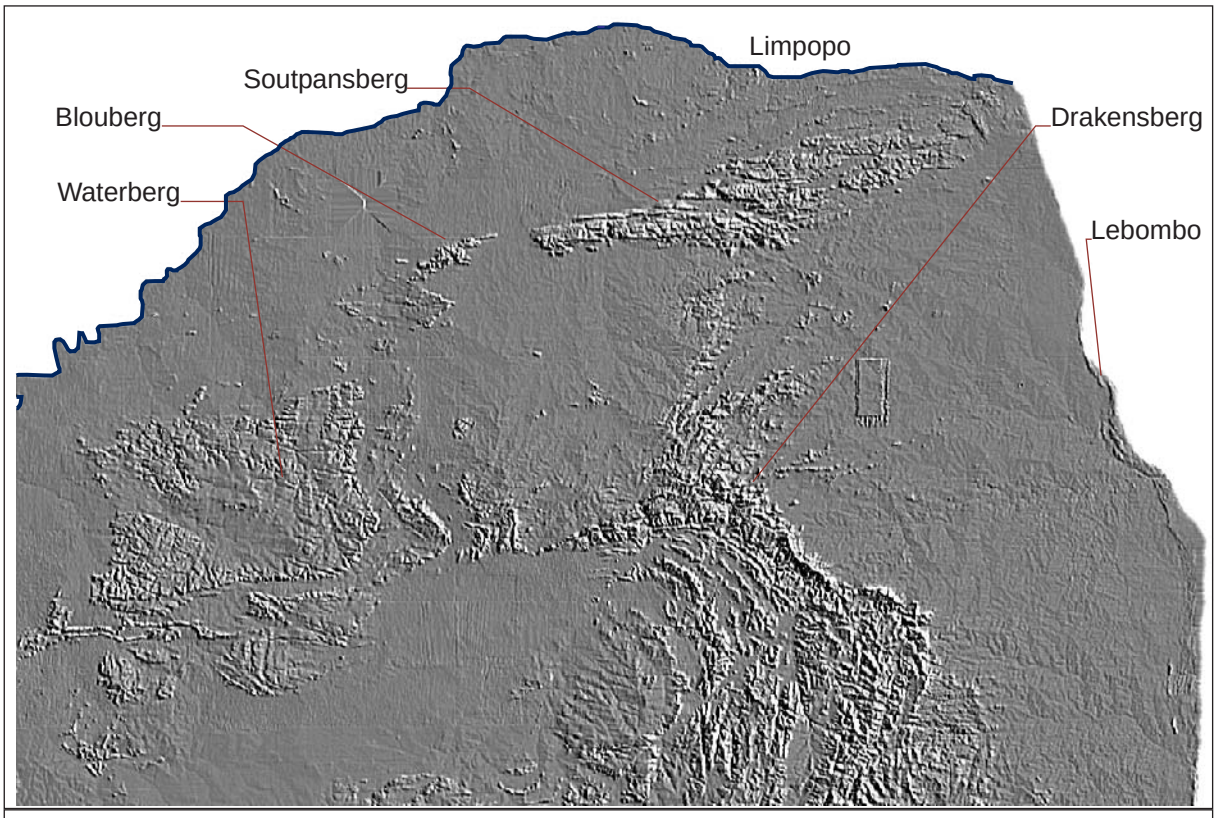


Figure 1: Relief map of Mapumalanga and the Northern Province. This image was compiled from data supplied by the CSIR.

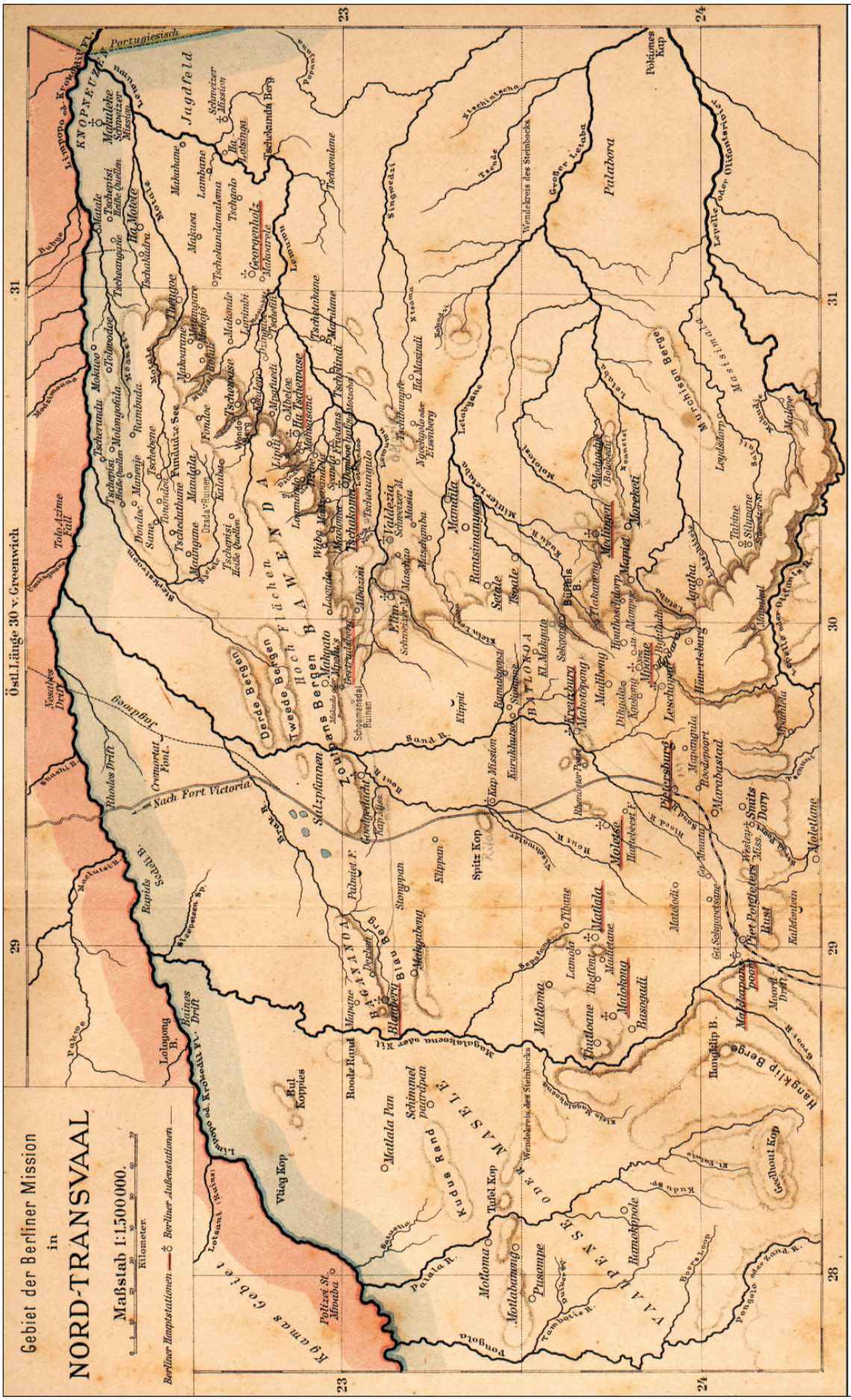


Figure 2: Map of the Soutpansberg area, from D.A. Merensky 1900.

3.1 Environment

3.1.1 Geology and Geography

The Soutpansberg Group occupies a graben within the Limpopo belt situated on the northern rim of the Kaapvaal Craton. The Soutpansberg geological system has an approximate age of 1 700 million years. The mountain was created by successive ESE–WSW faulting, ranging over a distance of 560 km. This faulting was caused by the action of the Limpopo mobile belt (2 700 million years old) (Truswell 1977) — a weak zone in the earth's crust where there is seismic movement. Through the action of the mobile belt, parallel faulting occurred to the north and south, giving rise to the Soutpansberg fault zone. This faulting caused the strata to dip to the north and rise in the south, thus forming the main cliff lines which are south-facing with the northern side dipping at an incline of approximately 45° (Figure 3).

Figure 3: The above photo looking west with Hanglip in the background clearly shows the south E–W faulting of the Soutpansberg. Photo taken July 1999.

During the Phanerozoic era the Soutpansberg became covered by Karroo Sequence sediments (Figure 4). The landscape then was featureless until 40–50 million years ago when the Karroo

Figure 4: A Levhuvhu Gorge is beautiful example of some of the remaining Karroo Sequence sediments to be found on the north eastern end of the Soutpansberg.

sediments eroded away to expose the harder Soutpansberg strata. To the north of the mountain, remnants of the Karroo system can still be found. Within them, one finds various coal deposits. The formation of the Sandrivier Gorge, occurred during Karroo times (Figure 5). The Sandrivier probably ran along a fault in the Karroo strata. After eroding its way through the strata it came upon the harder Soutpansberg strata, it could not deviate its course so it started to cut through the harder underlying rock. As the Karroo sediment was eroded away the river maintained its course through the mountain.

The main rock formations off the mountain comprise of sandstone, quartz sandstone and quartzite, with a couple of igneous intrusions consisting mainly of dolerite. The main soils of the area

are derived from weathered sandstone and quartzite, giving rise to sandy soils. In general these soils are relatively acidic and nutrient poor. The weathered lava, derived from weathered dolerite intrusions give rise to rich clay soils.

Figure 5: Looking south across the Sand River Gorge. Photo taken July 1999.

Mineral-rich areas are found both north and south of the mountain, whereas the mountain itself is relatively poorly mineralized. The most abundant mineral is quartz, but of poor quality. Other minerals are: iron, copper, refractory flint, salt, sillimanite, gold and coal. Circa 300 AD metals were extracted from the mountain range. Diggings were proclaimed in the early part of this century, however gold deposits were found to be uneconomical. Massive coal beds stretch along the northern perimeter of the range.

All the rivers that flow through, or originate in the mountain, are tributaries of the Limpopo River Basin. The main river systems are:

- Luvuvhu, originating due east of Louis Trichardt.
- Mutale, originating in Thathe Vondo.

- Mutamba, originating on the farm Bluegum Poort.
- Nwanedzi, originating near Mavhode.
- Nzhelele, originating in Thathe Vondo.
- Sandrivier originating between Potgietersrus and Pietersburg.

3.1.2 Climate

3.1.2.1 Rainfall[1]

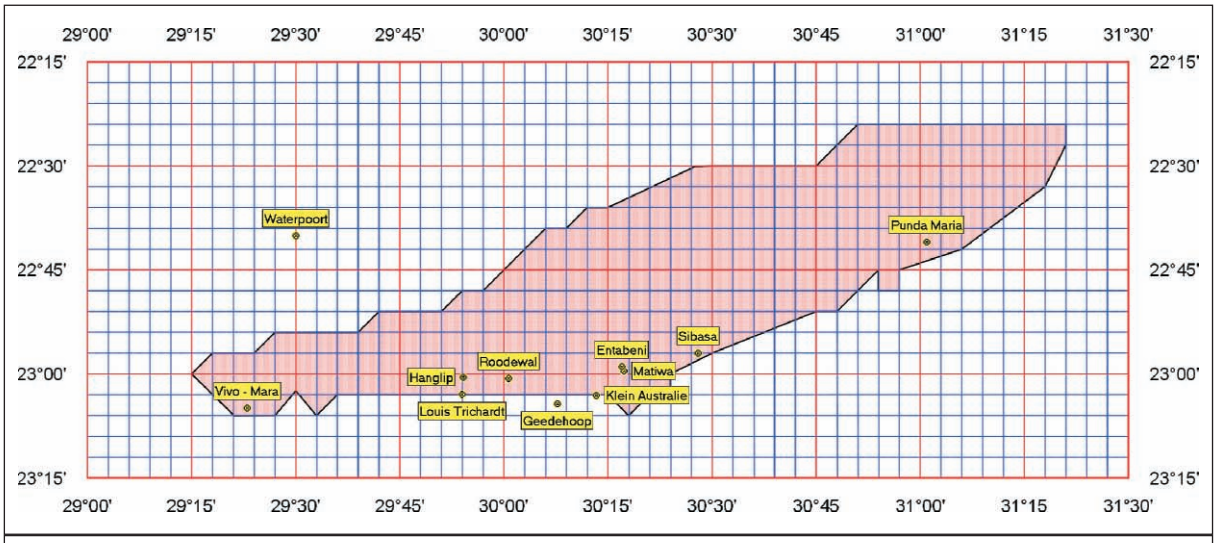


Figure 6: Rainfall stations used to compile data.

The orographic rainfall of the Soutpansberg, is mainly as a result of moisture precipitating against the eastern Drakensberg and southern Soutpansberg slopes. The moisture-laden air is usually blown from the east and south-east, where it is wedged between the two mountain ranges in the form of mists and light rainfall. Entabeni, situated at the intersection of the two mountains, has the highest average annual rainfall in the Soutpansberg of 1 874 mm (Figure 8). The rainfall steadily diminishes from Entabeni eastwards with Punda Maria receiving 545 mm. The rain

1 The data from which the below results were derived came from Department of Forestry and the South African Weather Services Pretoria, directly, and through their web pages (http://www.weathersa.co.za/).

shadow of the Drakensberg causes Louis Trichardt's rainfall to drop to 618 mm. The combined rain shadows cause Waterpoort to have the lowest recorded rainfall of 367 mm.

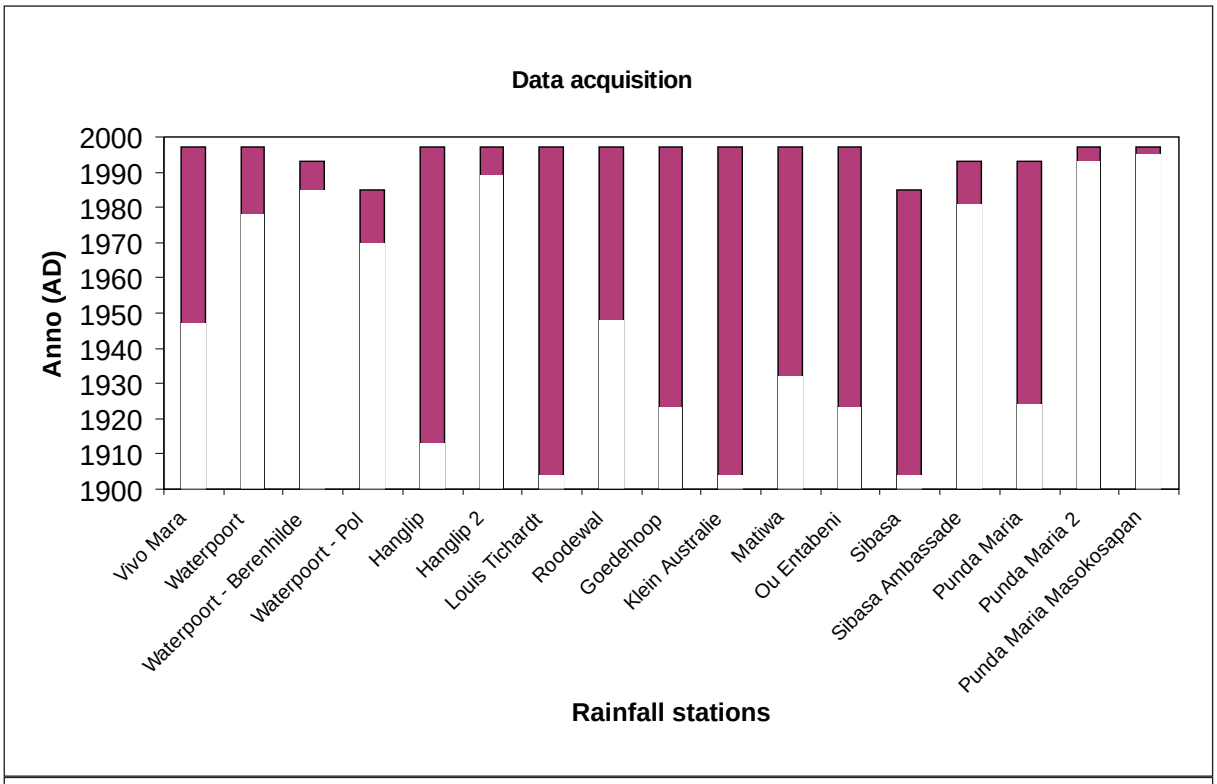


Figure 7: The above chart shows the various rainfall stations and period of data acquisition.

The Soutpansberg range, in general, is relatively arid and experiences periodic droughts caused by the El Niño effect which can last for over 10 years. These droughts have a crippling effect on the agricultural economy. However, most of the natural vegetation is relatively drought-resistant.

The aridity towards the north of the Soutpansberg is caused by a climatic anomaly known as the Dry Zone of the Limpopo Valley (Harrison 1984). To date, no satisfactory explanation of its origin has been found.

In times of drought, a large percentage of the high altitude mountain flora survives on mist precipitation. Very little is known about mist and its interaction with the environment. At Entabeni, mist precipitation has been measured at an average of 1 366 mm per annum (Department of En-

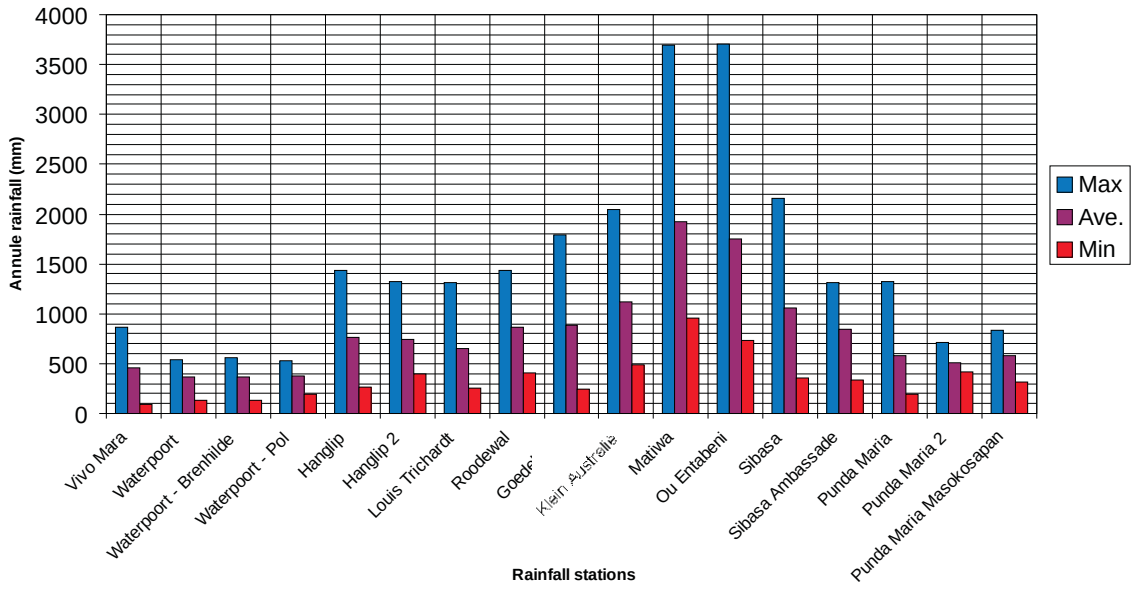


Figure 8: Maximum, average and minimum rainfall figures for the various weather-stations in and around the Soutpansberg, measured in mm.

vironmental Affairs 1988). Taking into account Entabeni's average annual rainfall of 1 867 mm, the average total meteorological precipitation is 3 233 mm per annum.

In stark contrast to the droughts mentioned above, the Soutpansberg also gets severely affected by tropical cyclones which can cause exceedingly high rainfall.

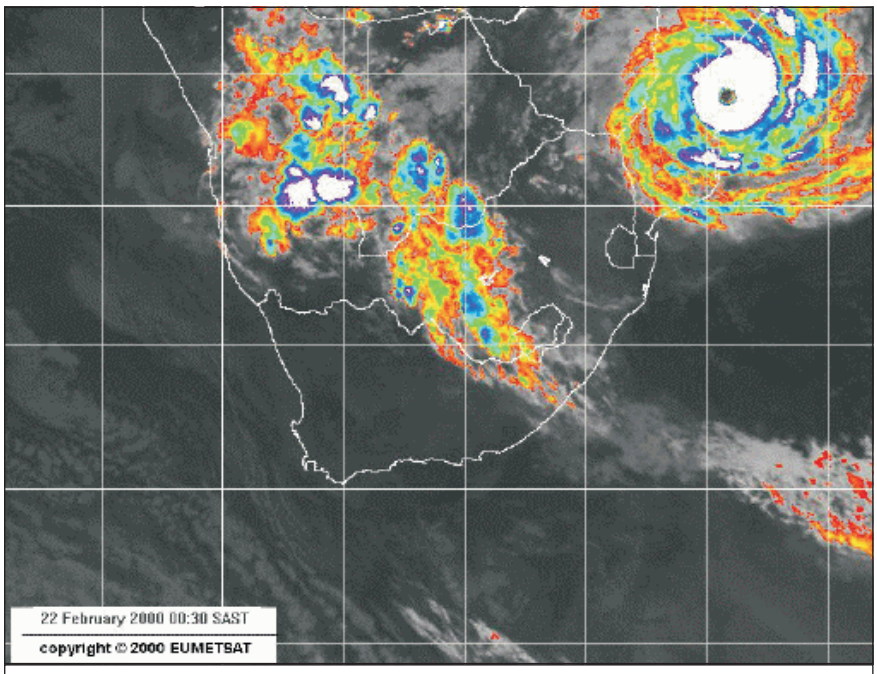


Figure 9: Tropical Cyclone Eline on its path of destruction, with heavy rains falling between 22–25 February 2000 AD over the Soutpansberg and surrounding areas.

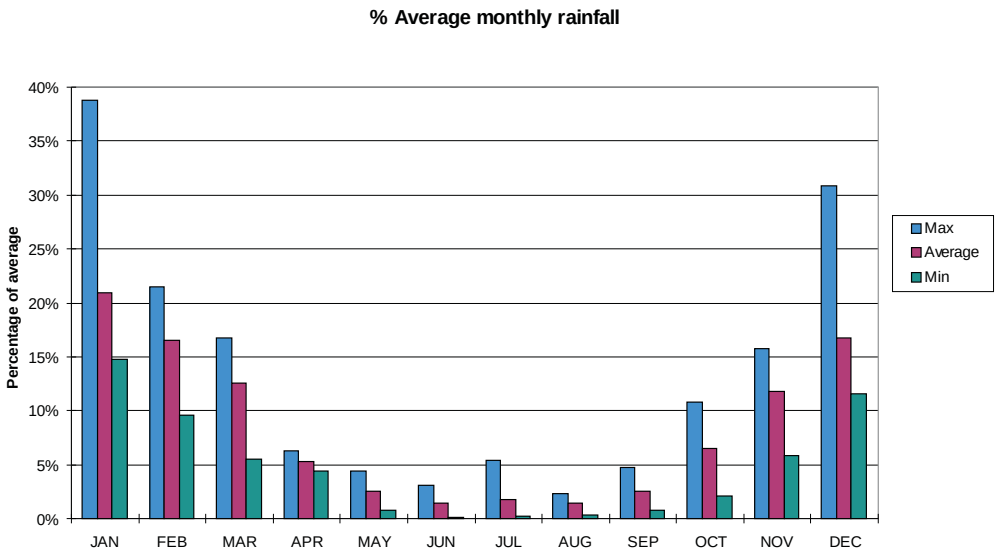


Figure 11: The average monthly rainfall as calculated from preceding rainfall stations.

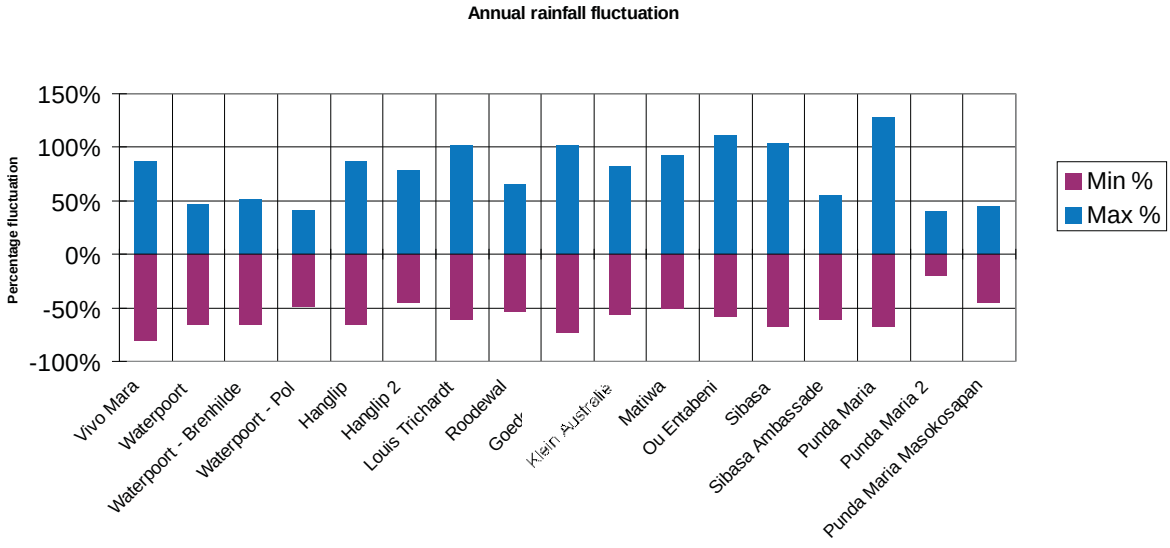


Figure 10: Rainfall fluctuation from the average calculated for the various weather-stations in and around the Soutpansberg.

3.1.3 Winds

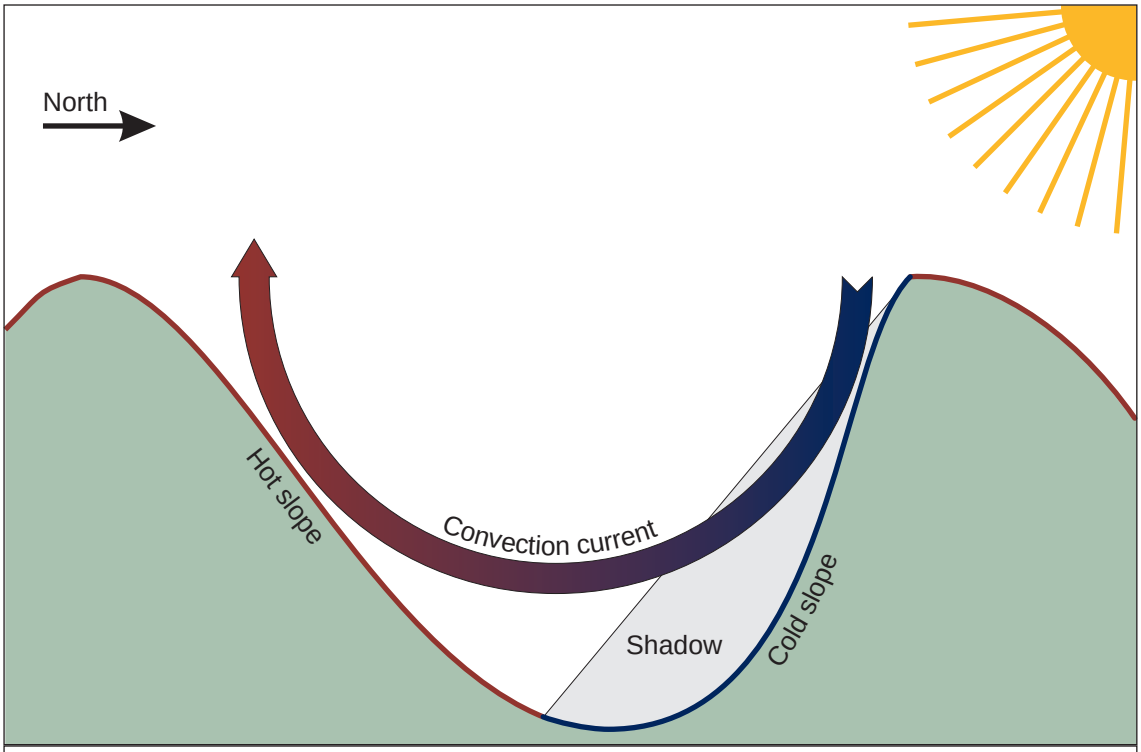


Figure 12: A schematic illustration of convection currents caused by temperature difference between two opposing mountain slops.

Within the Soutpansberg, the actions of winds often has a dramatic influence on plant distribution. Winds affect plant distributions in two main ways namely:

- Creation of microhabitats which can cause bizarre distribution patterns of certain plants.
- Influencing pollination and seed dispersal.

Orographic winds within mountainous regions are incredibly complex, leading to all sorts of air movements that can even affect the air stability quite some distance away from the mountain. These “mountain waves” occur where “lenticular cloud” formations are present (Cambell & Jones 1995). Extreme turbulence can be expected on the leeward side of mountains in the vicinity of “roll clouds”.

In the Soutpansberg, prevailing winds usually blow from east to west, or occasionally, west to east. Convection currents caused by temperature differences between north- and south-facing cliffs are especially prevalent in the Soutpansberg as the mountain axes are east west (Figure 12).

Their severity is partly dependent on the transition of the sun and therefore has a strong seasonal component.

Anabatic and katabatic winds are prevalent in the Soutpansberg, but their severity is less intense than convection- derived orographical winds (Figure 13). The former is best observed in winter after sun set. When the valleys start cooling, katabatic winds, cause a rapid drop in temperature.

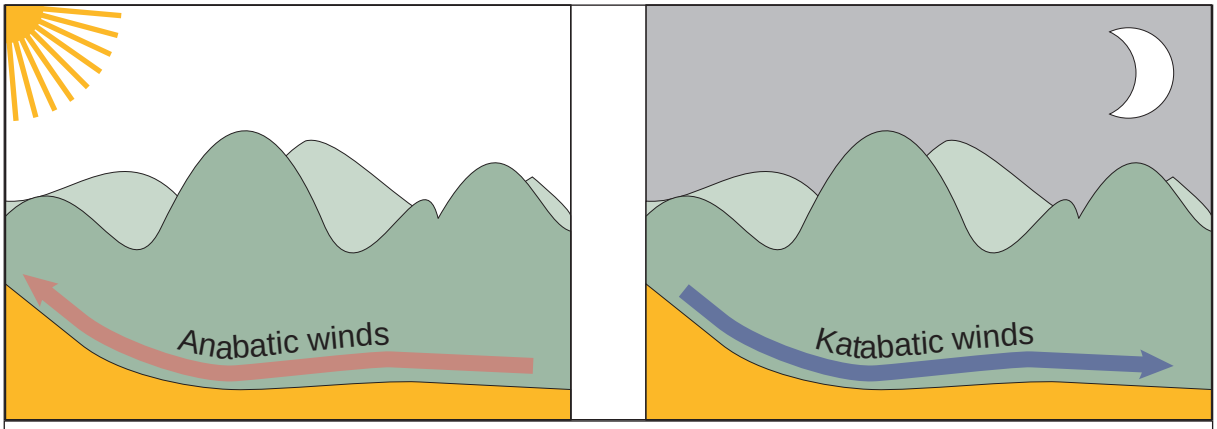


Figure 13: The effect of anabatic and katabatic winds in a cut through section of a valley.

The venturi effect caused by certain narrow gorges when mist is forced into them can lead to abnormally high precipitation.

The mist-belt is situated high on the mountain and is exposed to severe winds. In summer these winds carry moisture, in the form of mist, but in winter they are dry and cause dehydration.

3.1.4 The effect of aspect and altitude

The following chart shows a schematic mountain and the effect of meteorological precipitation on it (Figure 14). When there is a flux in meteorological precipitation, a vertical shift in moisture regime occurs. In non-mountainous regions, a horizontal shift of moisture regime occurs. Thus it is possible for plants to survive periods of environmental flux on mountains by transposing their distribution vertically. Lapse Rate is of importance when considering evolutionary processes on mountains.

Meteorological precipitation is not the only environmental factor which has this effect. Temperatures drop as altitude increases and, in the southern hemisphere eastern slopes are usually

cooler than the western slopes. The Laps Rate of air is highly variable, being affected by radiation, convection and condensation processes, averaging 6·5 mK · m^{-1}. In times of temperature fluctuations, plants might either become transposed vertically, or gradually change their preference of aspect. In this respect, vagile plants with a short life expectancy are able to move rapidly from one location to another as observed in periods of drought caused by El Niño.

3.2 Climatic variations

Climate is one of the most important abiotic factors governing evolutionary processes in the Soutpansberg. Over time the climate of the region has fluctuated. Various phenomena play a roll in influencing the short as well as the long term climatic conditions.

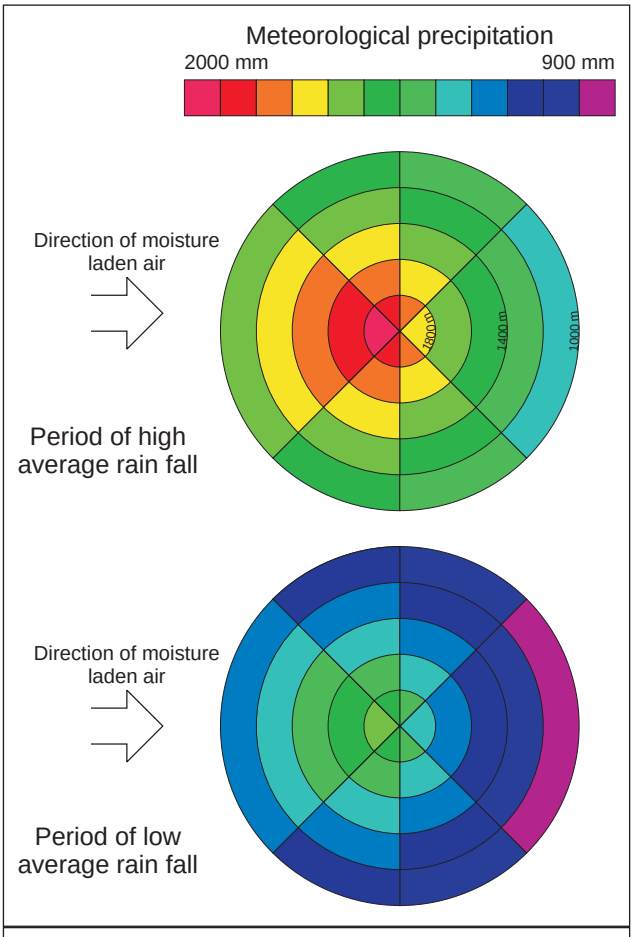


Figure 14: Hypothetical mountain and the effects of meteorological precipitation on it.

3.2.1 Recent

The Soutpansberg region experiences periodic wet and drought cycles, caused by the La Niña and El Niño phenomena. These periodic cycles have an immense impact on both the natural and socioeconomic well-being of the region. The most recent drought, that ended in 1994, lasted for more than 14 years, the last few years being especially harsh, killing many trees throughout the range. Few communities of truly big trees occur in the Soutpansberg. Most of these communities are in sheltered areas such as gallery forests or regions with very high rainfall suggesting that droughts occur frequently. Seasonal fires or a combination of the two could also be responsible for this occurrence.

3.2.1.1 La Niña and El Niño

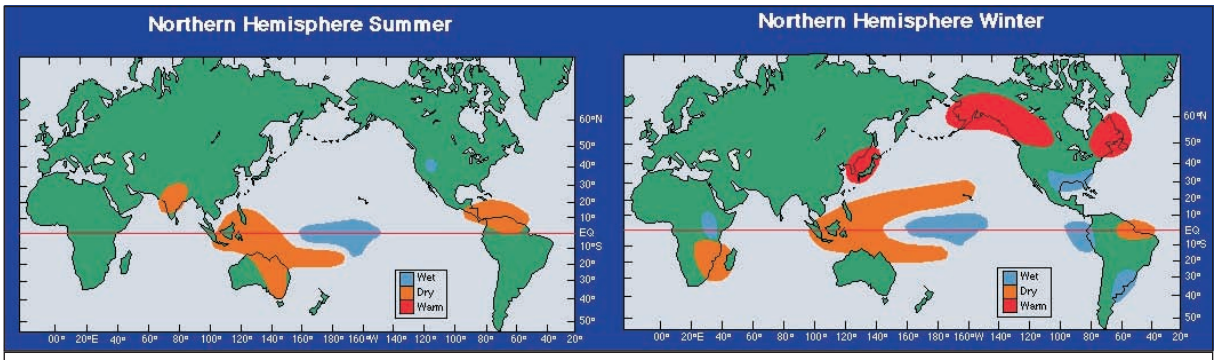


Figure 15: Precipitation anomalies during El Niño.

The *La Niña* phenomenon is characterized by unusually cold ocean temperatures in the equatorial Pacific, whereas the *El Niño* phenomenon is characterized by unusually warm ocean temperatures in the equatorial Pacific. Usually, global climatic variations in La Niña are opposite to those of El Niño in the tropics. At higher latitudes, El Niño and La Niña climatic influences are most clearly seen during winter. During El Niño periods, the north-central States of the USA experience warmer than normal temperatures during winter, whereas the Southeast and the Southwest experience cooler than normal temperatures. During La Niña periods, winters are warmer than normal in the Southeast, and cooler than normal in the Northwest (Figure 15). Typically, El Niño occurs more frequently than La Niña.

El Niño years: 1986–1987, 1991–1992, 1993, 1994 and 1997–1998

La Niña years: 1988–1989, 1990–1994, 2000

3.2.2 Transition of the sun

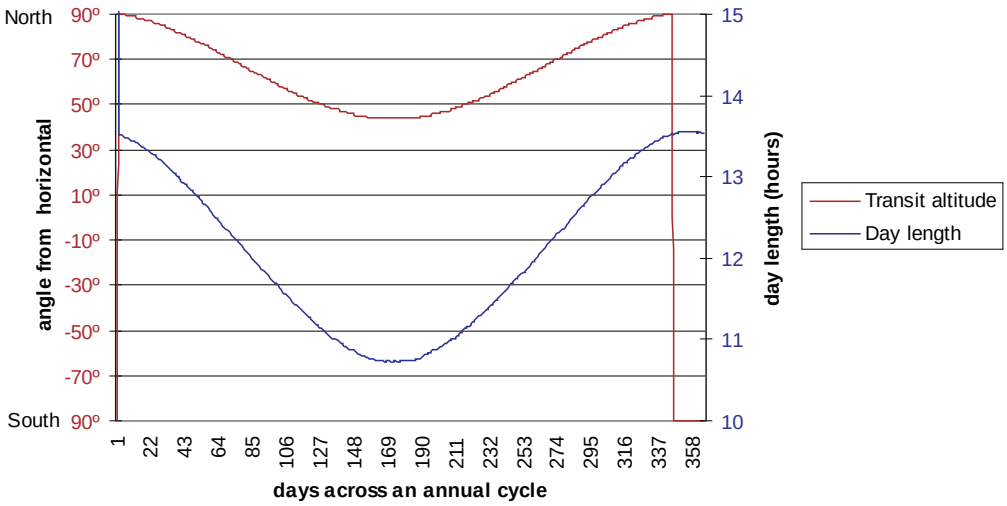


Figure 16: Graph showing transit altitude (angle measured from horizontal, positive number represents north and negative number represents south) of sun at high noon for the year 2 000 AD and day length.

Over the course of the year 2000 AD, the sun will move from about 0·4° south of the zenith at true local noon at the summer solstice to 46·5° north of the zenith at true local noon at the winter solstice. At the equinoxes it will be 23·05° north of zenith at true local noon (Figure 16). Thus plants situated on a southern slope will receive sun in high summer whereas they would receive none for the greater part of the year. This coincides with the high levels of precipitation in the Soutpansberg (Figure 11) and provides a refugium for mesic taxa.

This cycle is by no means constant, as explained by the Milankovitch Theory of orbital variation, resulting in the tropics shifting between 22°–25° (Deacon & Deacon 1999). This suggests that the Soutpansberg, for most of this period, resides within the tropics, hence having a more or less tropical climate throughout most of its evolution.

3.2.3 Palaeoclimatology and History

The action that led to the creation of the Soutpansberg topographical zone started approximately 2 700 million years ago (see geology). Little work has been carried out on past climatic conditions within the Limpopo Province. Various means have been adopted to extrapolate the climatic conditions of the past. From archaeological evidence, extrapolating environmental fluctuations

over approximately 150 thousand years is possible. Beyond this point, environmental evidence becomes scant.

During the Karroo period, the Soutpansberg area was covered by vast forests, the remnants of which are found in the coal beds in the northern regions of the area. As Gondwana started to separate 150 million years ago, and the Earth went through various ice-ages, the Soutpansberg floristic community slowly became separated from the Cape floral zone as a result of the expanding Karroo (Anderson 1999). The lush vegetation started to dwindle and disappear, with only small patches remaining. Even though changes have occurred, remnants of the Cape flora can still be found in patches throughout the range. From the west, the arid Kalahari expanded into the area.

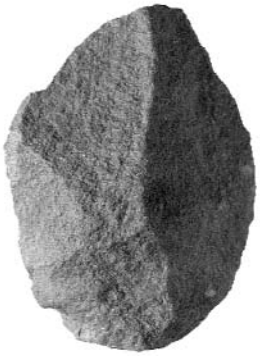
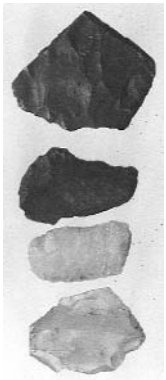
The earliest prehistory of man in the Soutpansberg area is reflected in artefacts found scattered throughout the range dating from the beginning of the Early Stone Age. This indicates that Man inhabited the area from the earliest times of his emergence. Hominoid skeletal remains were found within 100 km from the range (Makapansgat) dating to 3·67 million years ago (Truswell 1977). The stone-tool industry complexes from the Middle to the Late Stone ages are well represented, and reflect a great variety of occupations by various cultures for relatively short periods of time (Table 17).

More specifically, some of the stone-tool complexes indicate that the climate before 40 thousand years before present (Sangoan-type wood shavers etc.) could have been colder and wetter than at present (Coles & Higgs 1975).

Environmental and social pressures on the range, roughly 20 thousand years before present,

were possibly of such a nature that it became a kind of oasis within a realm of marauding wildlife and interchanges between cultures.

Table 17: Chronological list of the main stone age periods found within the Soutpansberg and their stone tools types.

			
Earliest stone age pebble cleaver, 80 mm long.	Early stone age cleaver, 160 mm long.	Pietersburg complex middle stone age arow point, 80 mm long.	Late stone age tools, top = 22 mm long
up to 1·5 mega-years ago	150 => kilo-years ago	30–150 kilo-years ago	30 < kilo-years ago

The Smith-field stone-age culture was prevalent at the end of the last glacial 10–12 thousand years ago. Within the Soutpansberg, a site with a thick archaeological deposit of stone tools relating in style to Smith-field was found, with no other styles present (Hahn 1992). Presently this site is too wet to sustain human habitation, suggesting that at the end of the last glacial, the area underwent a drying episode. The climate 40 thousand years BP was probably cold and wet (Coles & Higgs 1975). Recent discoveries suggest that Khoisan occupation of the mountain range coincided with the earliest metalworking people (Hahn 1992). Precursors to these were probably hunter-gatherers who later adopted agricultural methods from the early metalworking farmers. The remains of the earlier ancestral culture (Wilton - approximately 5 000 BP) can still be seen in paintings on the walls of shelters as well as scatterings of microlithic stone-tools. From roughly 3 000 BP, the fertile soils of the mountain foothills were utilized by the first agriculturists of the area who domesticated *Vigna unguiculata* (L.) Walp. (Fabaceae), *Sorghum bicolor* (L.) Moench (Poaceae) and possibly early millet varieties (Eloff 1979). They also herded livestock such as domestic goats, sheep and cattle to maintain themselves (Voigt & Plug 1984).

Archaeological evidence suggests that within the early iron-ages (200–900 AD) agricultural areas, would possibly have had a higher rainfall than present. Scott (1987) has noted a reduction in arboreal pollen over the last 1 500 years. This is most likely as a result of slash and burn practise by the Iron Age people who entered the region, rather than a change in climate (Scott 1987). From pollen studies done in both Thathe Vondo and Scot (Scott 1982 & 1987) the following patterns have emerged see Table 2.

Table 2: Palaeoenvironmental conditions as interpreted from pollen (Scott 1982 & 1987).

Thathe Vondo			
Age (yr B.P.)	**Vegetation**	**Moisture conditions**	**Temp. conditions**
0–1 500	Deforestation		
1 500–6 500	Forests with well-developed swamp vegetation locally	relatively humid	warmer
6 500–12 000	More dry, warm savanna woodland elements. Forest elements reduced with more fountain bush locally	relatively dry	like present
10 000–12 000	Open grassland with fynbos. Forests well developed in riverines	relatively humid but drier than present	cooler
Scot			
Age (yr B.P.)	**Vegetation**	**Moisture conditions**	**Temp. conditions**
2 460	bushveld		
2 000–4 000	open woodland		cooler
<5 000		relatively humid	
5 000	Savanna vegetation	relatively dry	

These cultures eventually culminated in the establishment of Mapungubwe about 1 000 years ago (Figure 18). These peoples knew how to smelt iron, glass, copper and gold, used for trading, one of the main features of most cultures of south-eastern Africa. The Soutpansberg became the possible trading centre between the interior of the continent and the ports of Sofala and Beira.

The possible ancestors of the Venda culture arrived in the Soutpansberg at approximately the end of the 17th century (Nemudzivhadi 1985).

Figure 18: Perspective view over Mapungubwe.

The settlers from the south, people such as Conraad Buys and Louis Trichardt, brought with them a European lifestyle in the 19th century. In 1837 the first settlers started to gather at the site that later became known as Schoemansdal. These settlers brought far-reaching changes to the area, over exploited the natural environment for financial gain. Natural forests were exploited for timber such as *Ptaeroxylon obliquum* (Thunb.) Radlk. (Sneezewood) and *Afrocarpus falcatus* (Thunb.) C.N. Page (Outeniqua yellowwood). At present it is difficult to imagine the sheer enormity of the trees which had to be sawn to obtain planks of between 18·3–27·4 m long as few of these gigantic trees still exist. In the prime of Schoemansdal, between 70 and 80 Mg of

ivory was hunted annually, rhinos were shot for their horns, lions for their skins, and game for food (Figure 19).

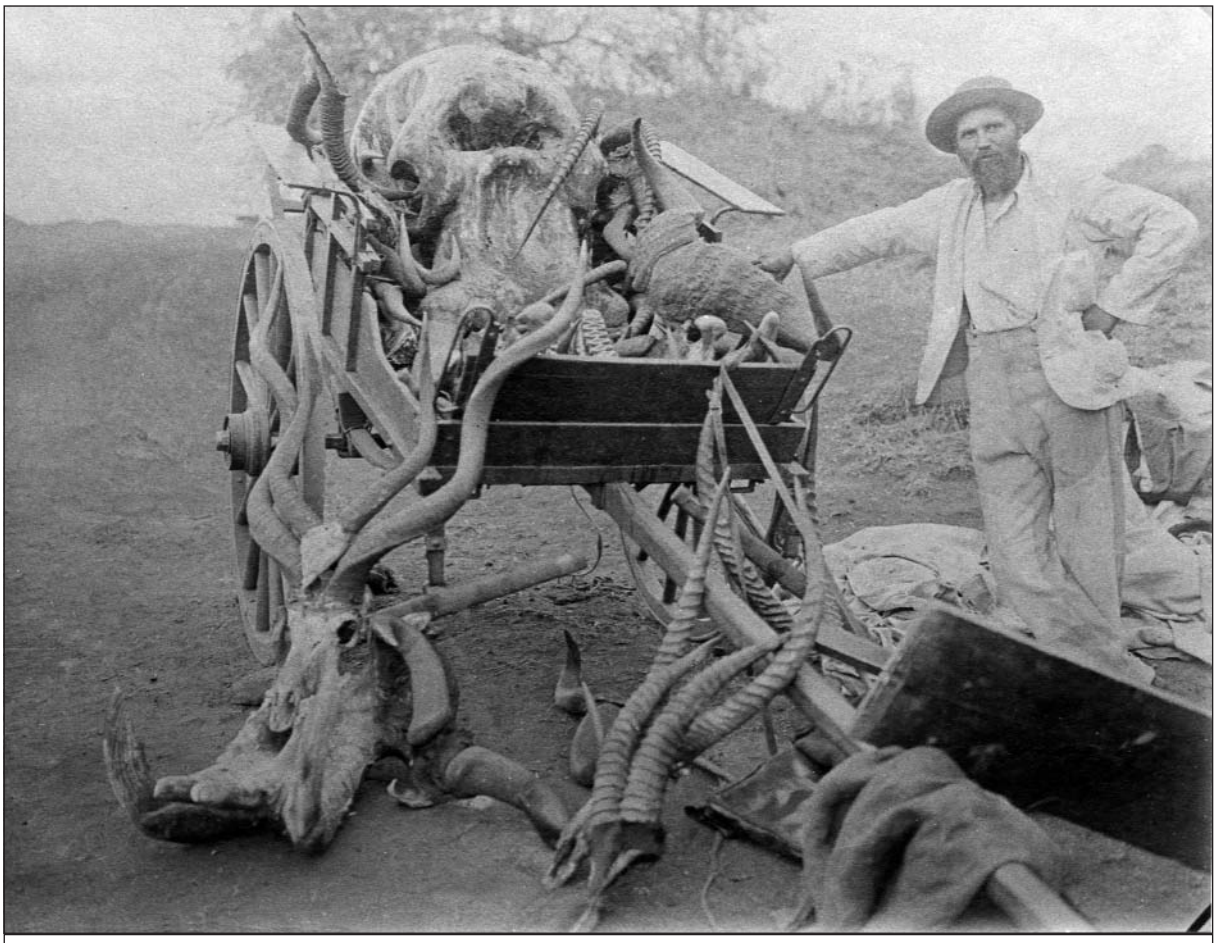


Figure 19: A hunter at the turn of the century displaying his spoils. 1 × *Hippopotamus amphibius*, 2 × *Connochaetes taurinus*, 2 × *Hippotrachus equinus*, 2× *H. niger*, 2 × *Kobus ellipsiprymnus*, 1 × *Loxodonta africana*, 1 × *Synerus caffer*, 1 × *Tauratrachus oryx* and 1 × *Tragelaphus angasii*, 1 × *T. strepsiceros*. Photo from Cuénod private collection.

The following account from Das Neves (1879) describes exploitation of the environment in the times of Schoemansdal: *'The exports from the Transvaal Republic are ivory, hippopotamus teeth, rhinoceros tusks, ostrich feathers, oxen trained for the plough and draught, skins of wild beast, and timber. This last article of commerce is a very important one, on account of the great quantity exported to the English colonies. The greater part is sent out in ready sawn planks of from 60 to 90 feet long* [18·3–27·4 m]*, which the English purchase at from four to six shillings each. The timber is white and close grained.'*

In later years the natural bush was replaced by exotic plantations. *Eucalyptus* and *Pinus* monocultures were planted for timber (Table 3). *Persea americana* P. Mill. (avocados), *Macadamia* sp. (Macadamias), *Mangifera indica* L. (mangoes), *Coffea arabica* L. (coffee), *Musa* sp. (bananas) and *Camellia sinensis* (L.) Kuntze (tea) were planted for cash crops. *Zea mays* L. (maize) and other vegetables were planted for food and rivers were dammed up to supply water for agricultural, domestic and industrial use.

Table 3: The establishment of the main governmental forestry plantations. From SAFCOL records.

Year	Name
1914	Klein Australia
1918	Old Entabeni
1920	Hanglip
1939±	Thata Vondo

In many respects that which has been presented within this work should not be seen as a contribution towards science but towards history. At the present rate of environmental degradation, that which has been recorded within this thesis, will not survive into the next century.

It is hoped that this thesis will not stand as an epitaph of man's destruction of his environment!

3.3 Vegetation

3.3.1 Broad scale

White (1976) in his Vegetation map of Africa classified the Soutpansberg under Zambezian phytogeographical region. In the most recent broad scale classification of the South African flora, the Soutpansberg is categorised under the following biomes:

- Forest (Rutherford & Westfall 1986) (Low & Rebelo ed. 1996) (Siegfried 1991)
- Grassland (Siegfried 1991)
- Savanna (Rutherford & Westfall 1986) (Low & Rebelo ed. 1996)
  - Arid savanna (Siegfried 1991)
  - Moist savanna (Siegfried 1991)

Within the context of the Soutpansberg the biome classification of Siegfried (1991) is most representative to the region. Rutherford & Westfall (1986) and Low & Rebelo ed. (1996) have ignored the presence of a grassland biome in the Soutpansberg. At present this biome has almost been exterminated from the Soutpansberg, notably the eastern high rainfall grasslands which have been transformed into plantations. The subclassification of the savanna biome by Siegfried

(1991) has merit as the vegetation within the dry Limpopo Valley differs significantly in structure and composition to that occurring to the south.

Figure 20: A view across the Limpopo Valley, taken due south of the Limpopo-Shashe junction (Greefswald) looking north-east March 1996.

3.3.2 Floristic elements[2]

The Soutpansberg floristic diversity can possibly be attributed to the influence of eight distinct floristic elements (Hahn 1994)(Figure 21):

1. Tropical
2. Moçambique costal
3. Lowveld
4. Afro-montane
5. Bushveld (= central Transvaal)
6. Waterberg
7. Kalahari
8. Limpopo Valley (Figure 20)

2 The term floristic element is defined by Wulff (1950) as: 'After not only eliminating "aliens" and "escapes" but also the "wides" the remaining species of a given flora can then be classified into a number of groups, termed *floral elements*' .

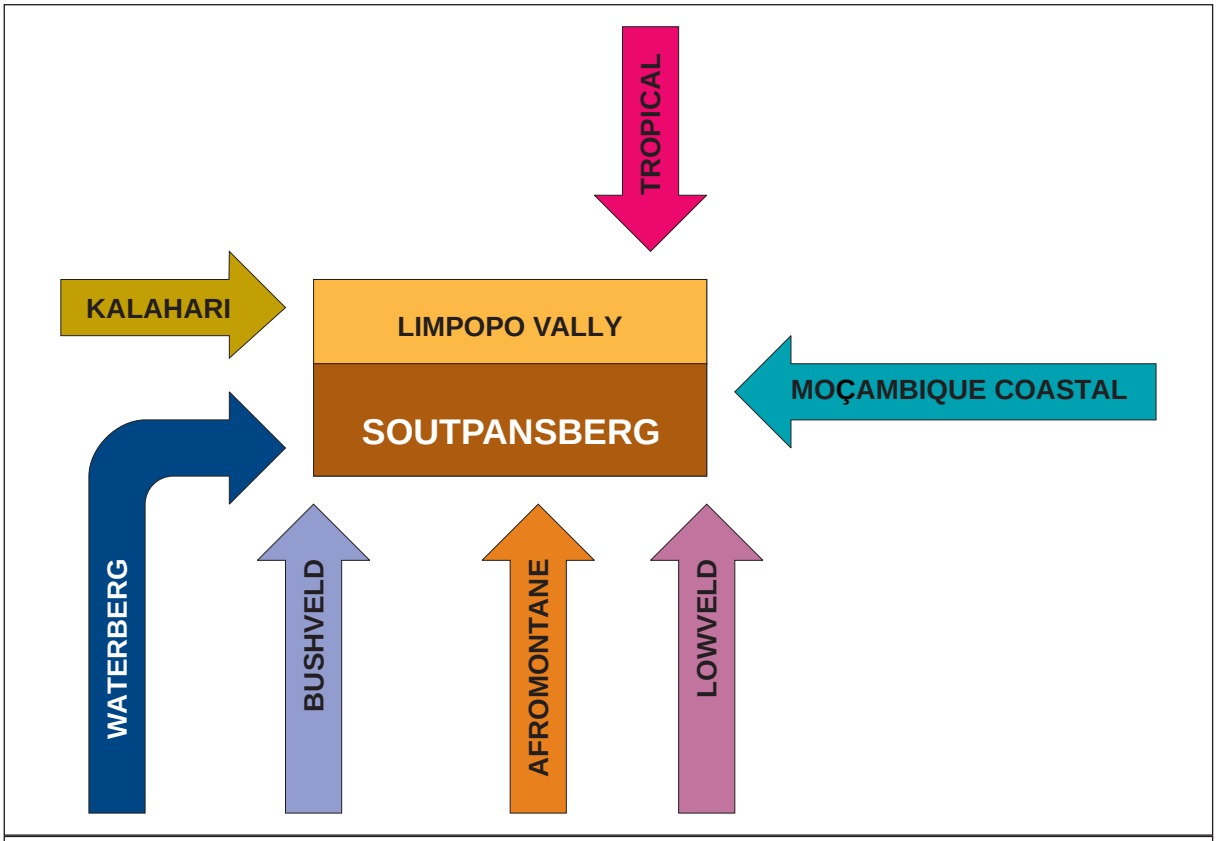


Figure 21: The eight floristic elements acting upon the Soutpansberg. Adopted from Hahn 1994.

3.3.3 Veld types

The mountain, as a whole, has many different vegetation types (Table 4). To define them all and the influences that gave rise to them, falls outside the scope of this thesis.

Table 4: The following is a chronological list of veld types as seen by various authors.

Hutchinson (1946):

X. Mopane Bush
XI. Low Veld
XII. Bush Veld
XV. Eastern Region

Acocks (1988):

8. North-eastern Mountain Sour-veld
9. Lowveld Sour Bushveld
14. Arid Sweet Bushveld
15. Mopane Veld
18. Mixed Bushveld
19. Sourish Mixed Bushveld
20. Sour Bushveld.

Low & Rebelo ed. (1996):

Forest Biome:

2. Afromontane Forest

Savanna Biome:

10. Mopane Bushveld
11. Soutpansberg Arid Mountain Bushveld
17. Sweet Bushveld
18. Mixed Bushveld
19. Mixed Lowveld Bushveld
21. Sour Lowveld Bushveld

4 Methods

4.1 Broad scale vegetation distribution

The images were created using data obtained from a vegetation density map of Africa compiled in 1988, as well as a soil classification map of Africa drawn up for UNESCO. These were manipulated using IDRISI a grid-based geographic information and image processing system, developed by the Graduate School of Geography at Clark University.

4.2 Changing environment

Most of the historic documentation pertaining to the region has been obtained from the Schoemansdal Museum, Louis Trichardt, Munnik Street. In addition personal communications with various people over the years have aided in supplying information where written documentation was lacking.

The historic photographs within the thesis have been obtained from:

- Cuénod Private Collection, Elim, farm Rocky Ridge
- Giesekke Private Collection, Louis Trichardt, Krogh Street.
- Hugh Exton Collection Pietersburg Museum, Pietersburg, Mark Street
- Louis Trichardt Municipal Archive, Louis Trichardt, Burgersentrum, Krogh Street.

All relevant information referring to the rock art of the region has been obtained from Palaeo-Art Field Services, Soutpansberg, Thorntrees, Great North Road.

4.3 Soutpansberg centre of endemism

4.3.1 Taxonomy

'For it is man's weakness of comprehension that leads him to put things into boxes.'

– N. Hahn

The application of a bi-nominal name poses a problem as it does not tell anything of the greater variation and delimitation of the taxa involved. Certain taxa are poorly defined, whereas others are well defined. When posing a name we are given no indication as to its greater evolutionary context. This is especially troublesome when having to compare taxa of one region with those of

another. They may belong to the same species, but may have slight variations within their morphology, which could be ascribed to their geographical isolation. Will we ever have sufficient data to delineate the phylogenetic relationships of all the populations of a given taxon, and thus be able to state whether a given taxon is or is not truly monophyletic?

Scientific names used, are as published in *Plants of southern Africa: names and distributions* (Arnold & de Wet (ed.) 1993). Name changes that have occurred after the date of publication have, as far as possible, been included. In the case of certain taxa, where there was dissatisfaction with the classification system adopted by the National Botanical Institute, a classification system believed to be more suited in the context of the studied flora was adopted.

4.3.2 Field work

The field work on which this thesis is based covers about 15 years. I have botanized extensively throughout the Soutpansberg and further afield. My botanical travels have taken me to some of the remotest regions within southern Africa. The following is a short synopsis on travels and equipment used chiefly to commence this thesis.

4.3.2.1 Roads

The Soutpansberg is connected by a fairly comprehensive network of roads. Few tarred roads exist within the mountain. Except for the tarred roads, the major access roads are fairly well maintained but can become hazardous in the rainy seasons. In general, the roads within the Soutpansberg are not recommended for sedan cars.

Except for the tarred roads surrounding the mountain, the roads within the mountain are poorly marked. Most maps of the region do not depict the true status of the roads within the region. Roads marked as cattle paths may be more accessible than roads depicted as secondary roads and an even bigger percentage are totally absent.

4.3.2.2 Foot

Most of the field work was done on foot, limiting the selection of equipment that could be carried. The Soutpansberg terrain is usually very harsh and the summer temperatures can become

very high. Through the years I have covered most of the mountain region, none the less there are still places to be explored.

4.4 Global Positioning System

Three different GPS's were used during field work, namely: Trimble Ensine, Garmin 45xl and Garmin 2 plus. For up and down loading of way-points and track-points from the Garmin GPS to personal computer the Garmin PCX 5 and OziExplore 3.90.2 programs were used.

4.4.1 How they work

GPS works on the principal of triangulation using distance measurements from satellites. A GPS is only a receiver, receiving positioning data and a time signal from various satellites from which it can calculate the distance to the Satellite. Theoretically, three satellites are the minimum required to obtain a position whereby four are needed to obtain a three dimensional reading. In practise, five satellites are the minimum required to obtain an accurate reading. The fifth satellite is used to cancel out errors caused by clock synchronization in differences, atmospheric interference on the satellite and selective availability.

4.4.2 Accuracy

Usually a GPS's accuracy should not diminish to more than 100 m with selective availability on. Selective availability is an inaccuracy imposed by the US Department of Defence to diminish the accuracy of a GPS to 100 m.

4.5 Photography and Reproductions

4.5.1 Cameras

For the purpose of this thesis three film formats have been used namely, 35 mm, medium format (6 × 6 cm) and large format (4" × 5").

Three single reflex 35 mm (negative size 24 × 36 mm) cameras where used namely a Nikon F90, Minolta SRT10b and Olympus OM4. On the Nikon F90 three lenses where used namely:

- A Nikon 105 mm Af Micro f 2·8 D focussing from ∞–1 × magnification without any extensions and with a single extension tube its range was extended to 2 × magnification.
- For general photography, a Nikon 50 mm f 1·8 lens was used.

- A Schneider — Kreuznach 28 mm M-Componon lens in conjunction with a Novoflex Universal bellows was used for exceptional high magnification between 4–10 ×.

On the Minolta as well as the Olympus only a standard 50 mm lens was used.

For medium format photography (negative size 60 × 60 mm) a Rolleiflex 6003 Professional single reflex camera with standard 80 mm f 2·8 Planar lense was used. This was also the camera of choice for aerial photography.

A Linhof Technika 4" × 5" (negative size 102 × 127 mm) flat bed view camera was used for large format photography using the following lenses:

- A Rodenstok 135 mm N-Sinoronst used for most of the general photography. For closeup photography where subjects approached 1: 1 magnification or more the lens elements were swapped to get a sharper picture. The lens was also used for taking flash pictures in synchronization with sunlight, as the leaf shutter has no limit to its flash synchronization (1/500 second).
- For special effects and habitat photographs a Schneider — Kreuznach 75 mm Super Angulon was used. This lens covers 80° angle along its horizontal axis. A problem associated with most such lenses is barrel distortion. This lens has been specially designed so as to eliminate most distortion.

4.5.2 Film and processing

Most of the colour photos where taken using Agfacrome RSX 100 slide film. This film was developed using Tetenal E-6 3-bathe-prosed chemical in combination with a Jobo CPE2 drum-processor. For black and white photos Ilford FP4 plus film was used and developed with Agfa Rodinal developer.

4.5.3 Accessories

The following accessories where used in conjunction with the above:

- Manfrota 055C tripod with a 141RC head
- Novoflex focussing rake
- Metz 50MZ-5 flash used for general flash photography
- Nikon SB-21 ring flash used for macro applications
- Sekonic Digi-Spot hand held exposure meter was used as normal exposure meter and as flash exposure meter.

4.6 Recording of archival material

All photos from the Cuénod private collection and Hugh Exton collection Pietersburg Museum where reproduced by photographing the original photos on black and white film using a Nikon

F90 in conjunction with a 105 mm macro lense as light source a Metz 50MZ-5 flash was used. The subsequent negatives were enlarged onto Ilford multigrade paper.

Photos from the Giesekke Private Collection and the Louis Trichardt Municipal Archive were scanned directly using a UMAX Astra 1200S. Glass negatives from the Giesekke Collection where reproduced as contact prints on black and white photographic paper. All large format negatives from Giesekke collection where enlarged using the Linhof Technika in reverse. All images where then scanned using a UMAX Astra 1200S and a Epson Perfection 1640 SU. For image enhancing Corel Photo Paint 9 and Paint Shop Pro 7.04 was used.

4.7 Desktop Publishing

This thesis was type set using Ventura 8.559. Final hard copies were printed on a Hewlett Packard DeskJet 959c printer. Electronic copies were produced using Jaws PDF Creator 2.1.

5 Results

5.1 Phytogeography

5.1.1 Broad scale

The following images where compiled to show possible associations between vegetation indices and soil type, in relation to likely plant distribution of the Soutpansberg flora throughout Africa. These images could propose possible explanations for the interaction of certain floristic elements acting upon the Soutpansberg. Figure 22 shows the vegetation indices for the whole of Africa, from this one can deduce that the area with the highest index, receives the highest moisture

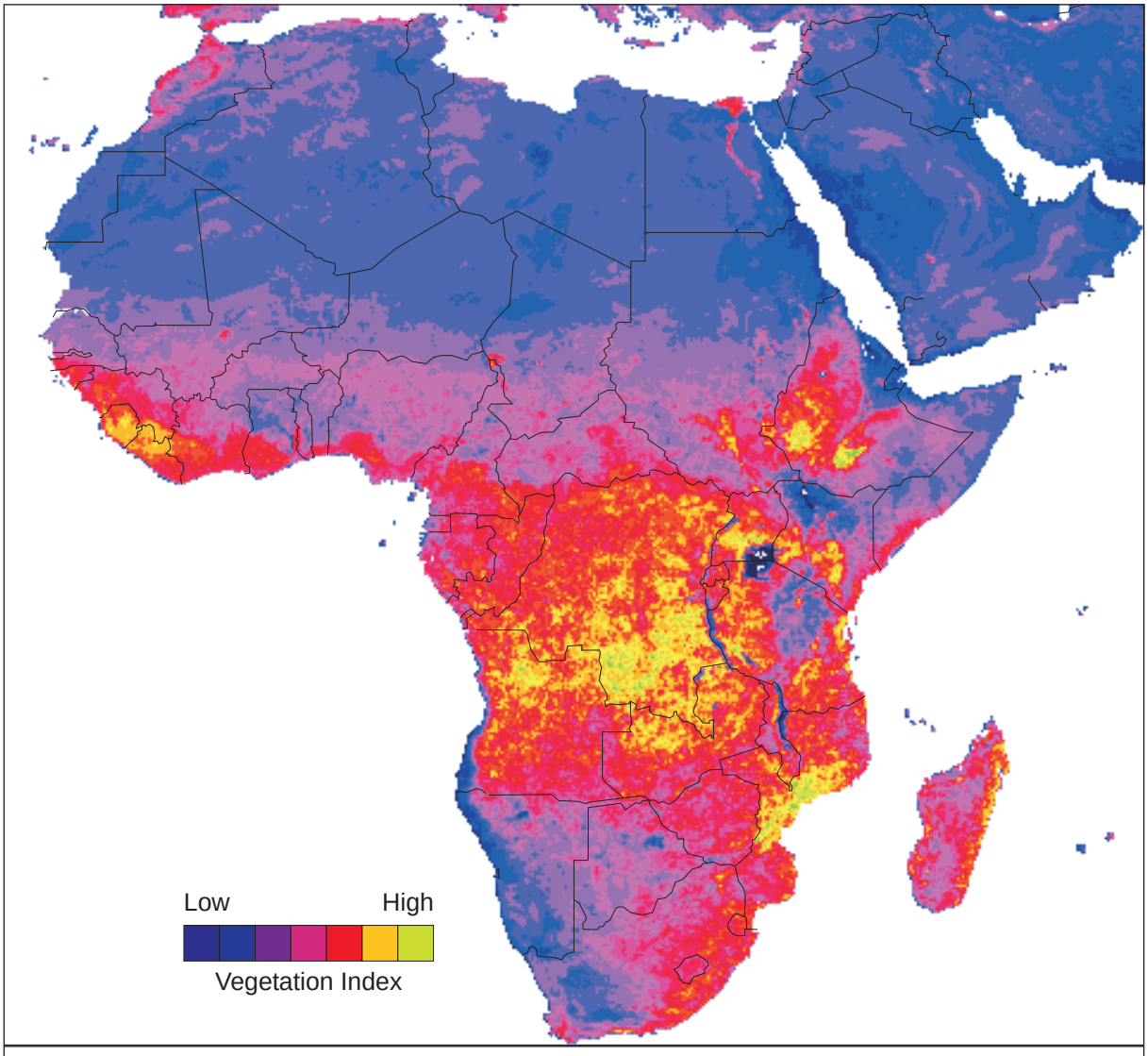


Figure 22: Vegetation index for Africa showing clearly showing vegetative cover across the continent. Compiled from a Vegetation index (NDVI) December 1988.

precipitation opposed to the areas with the lowest index. The image clearly shows tropical rain forest as and the desert regions as .

The wide latitude of climatic extremities represented in the Soutpansberg is well illustrated by figure 23. Only the extremely low and high indices are not represented within the Soutpansberg lending credence to the fact that the region is neither a desert nor a rainforest region. This image could explain why the Soutpansberg exhibits such an immense biodiversity.

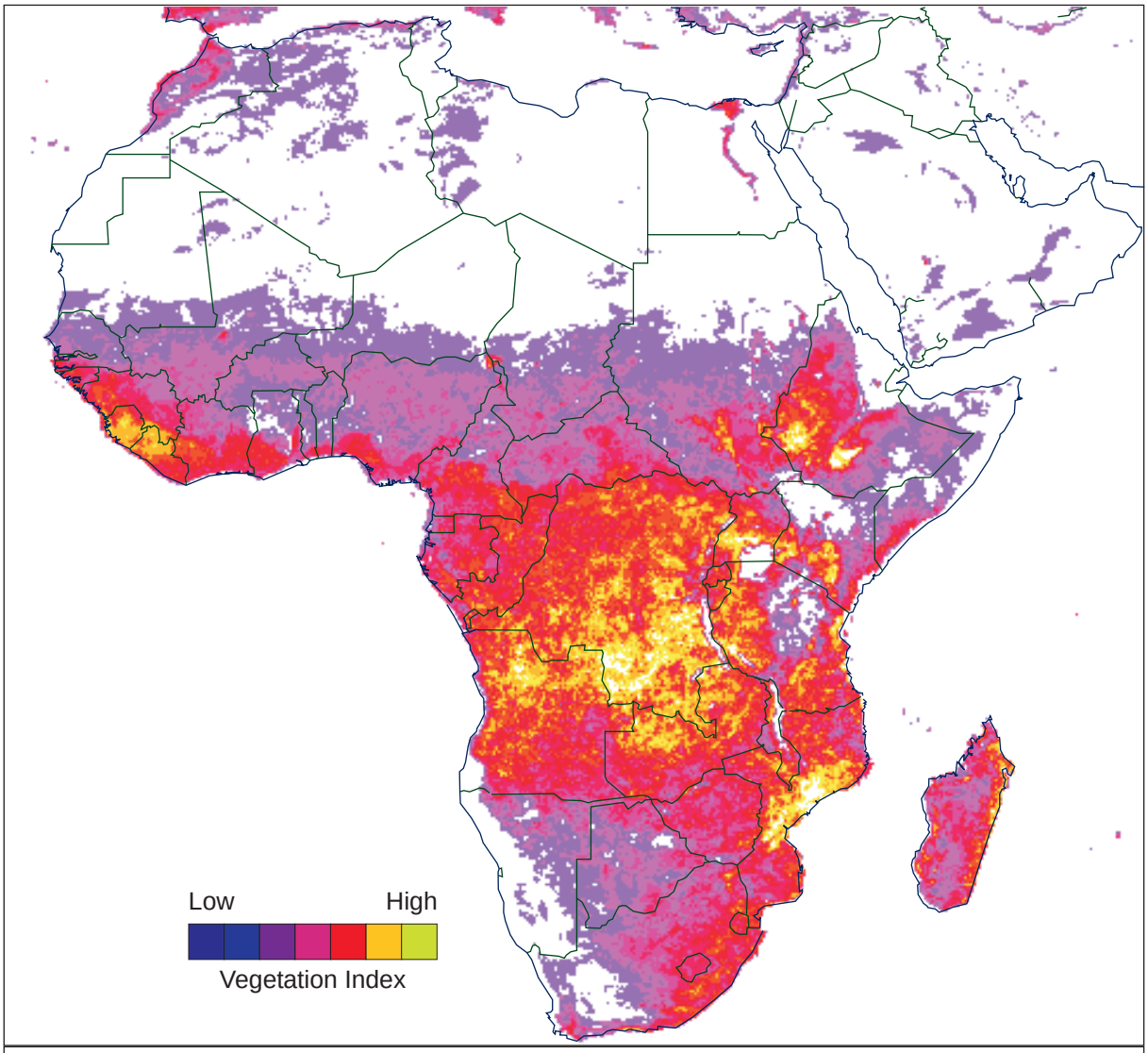


Figure 23: The eight vegetation indexes as occurring on the Soutpansberg extrapolated across Africa. Compiled from a Vegetation index (NDVI) December 1988.

In contrast to the proceeding figure 24 shows the five soil types out of the 133 occurring in the Soutpansberg extrapolated across Africa.

It becomes evident that edaphic specialist plants occurring on the Soutpansberg would have a far more restricted distribution across Africa than those that are not.

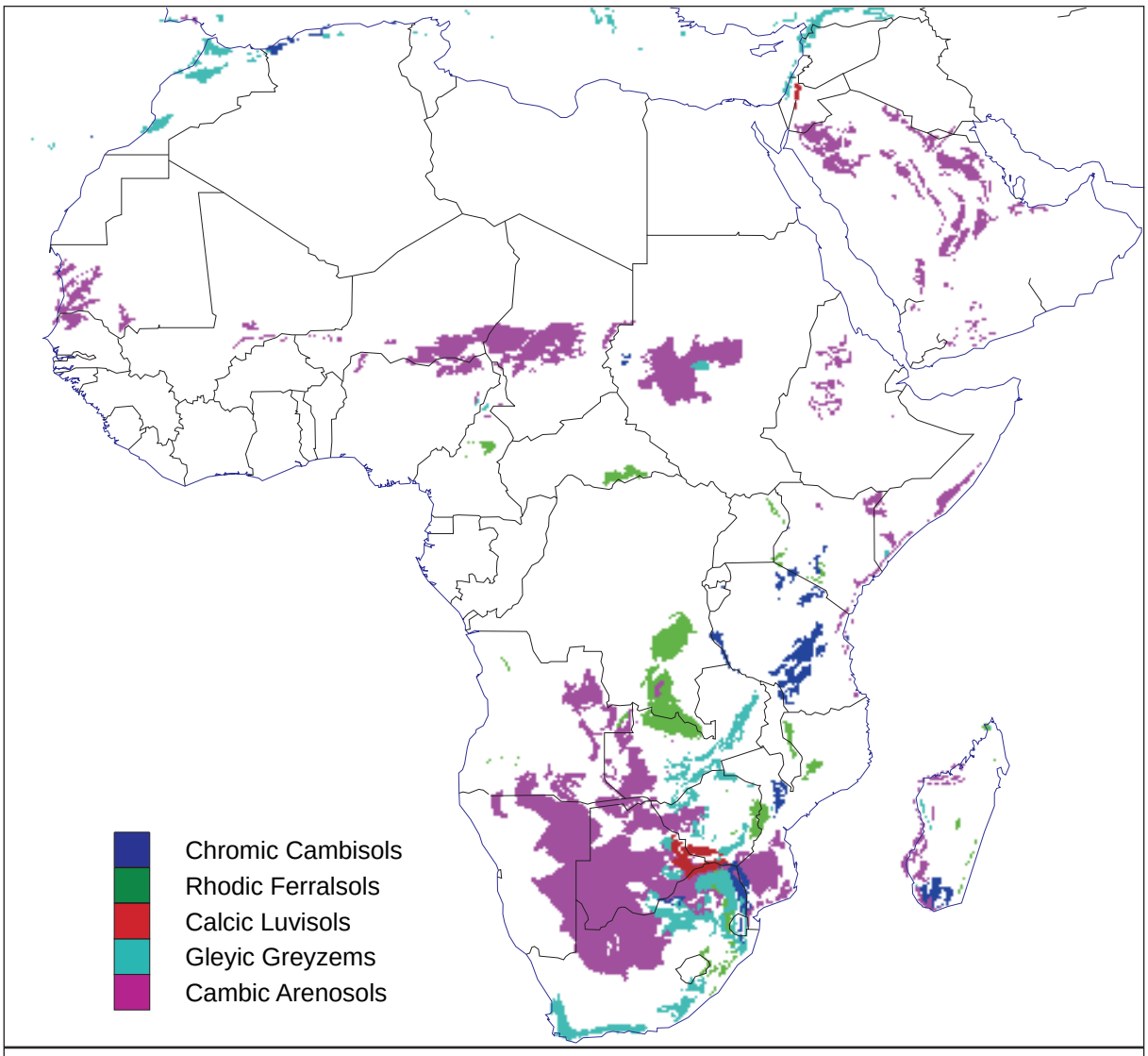


Figure 24: This image shows the five soil types occurring in the Soutpansberg extrapolated across Africa. Compiled from a UNESCO/FAO Soil Classes image.

In figure 25, figure 23 was overlayed on a binary image of figure 24. This image shows the likely distributions that less edaphic specialist species occurring on the Soutpansberg could follow if they were more climatically sensitive. There is a major reduction in area occupied between figures 25 and 23.

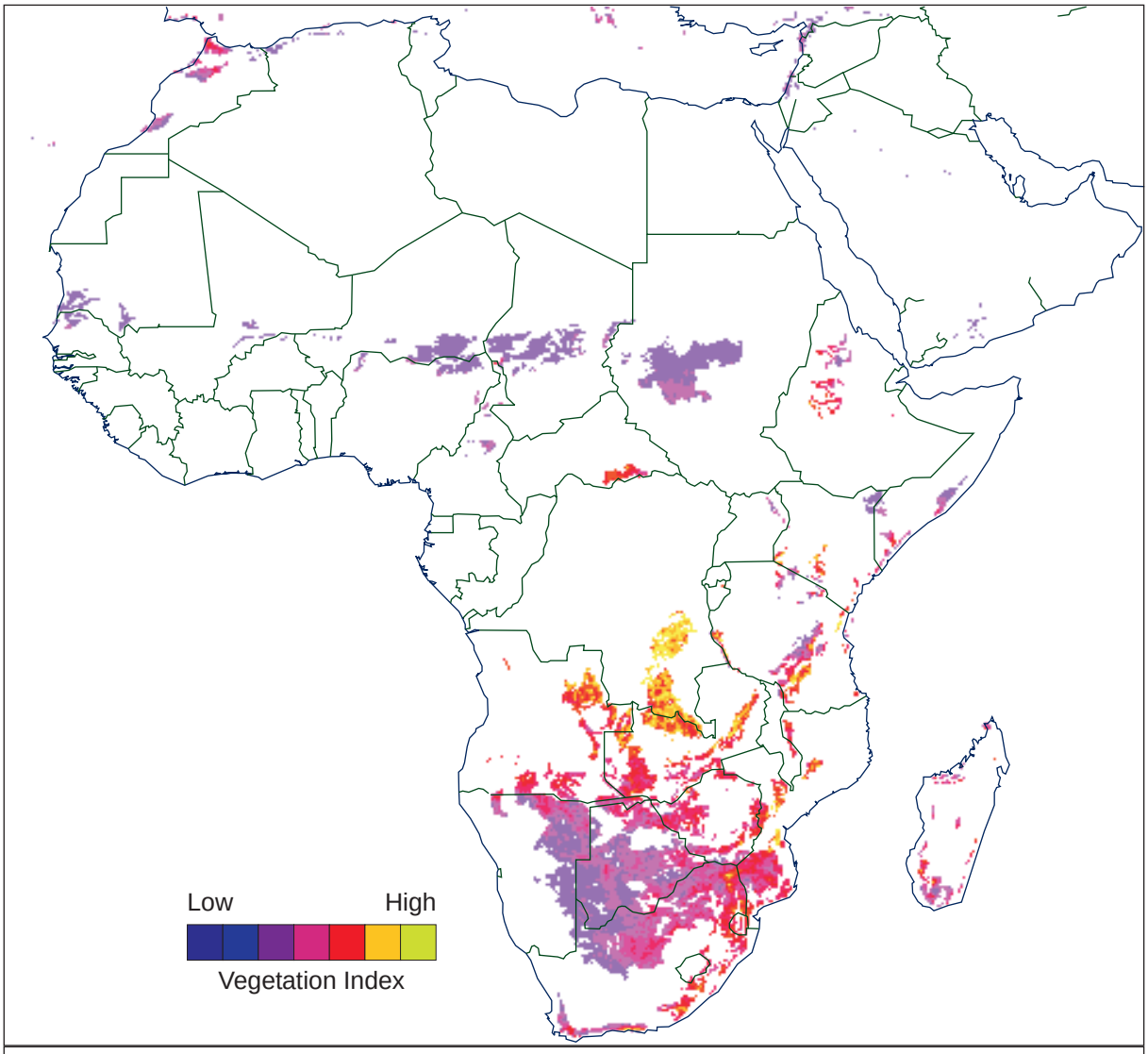


Figure 25:This image shows the eight vegetation indexes occurring in the Soutpansberg extrapolated on a binary image of the five soil classes in the Soutpansberg. Compiled from a Vegetation index (NDVI) December 1988 and a UNESCO/FAO Soil Classes image.

In figure 26, figure 24 was overlayed on a binary image of figure 23. This image shows the possible distributions that less climatically sensitive species occurring on the Soutpansberg could occupy if they where edaphic specialists. There is not a major difference in area occupied between figures 24 and 26.

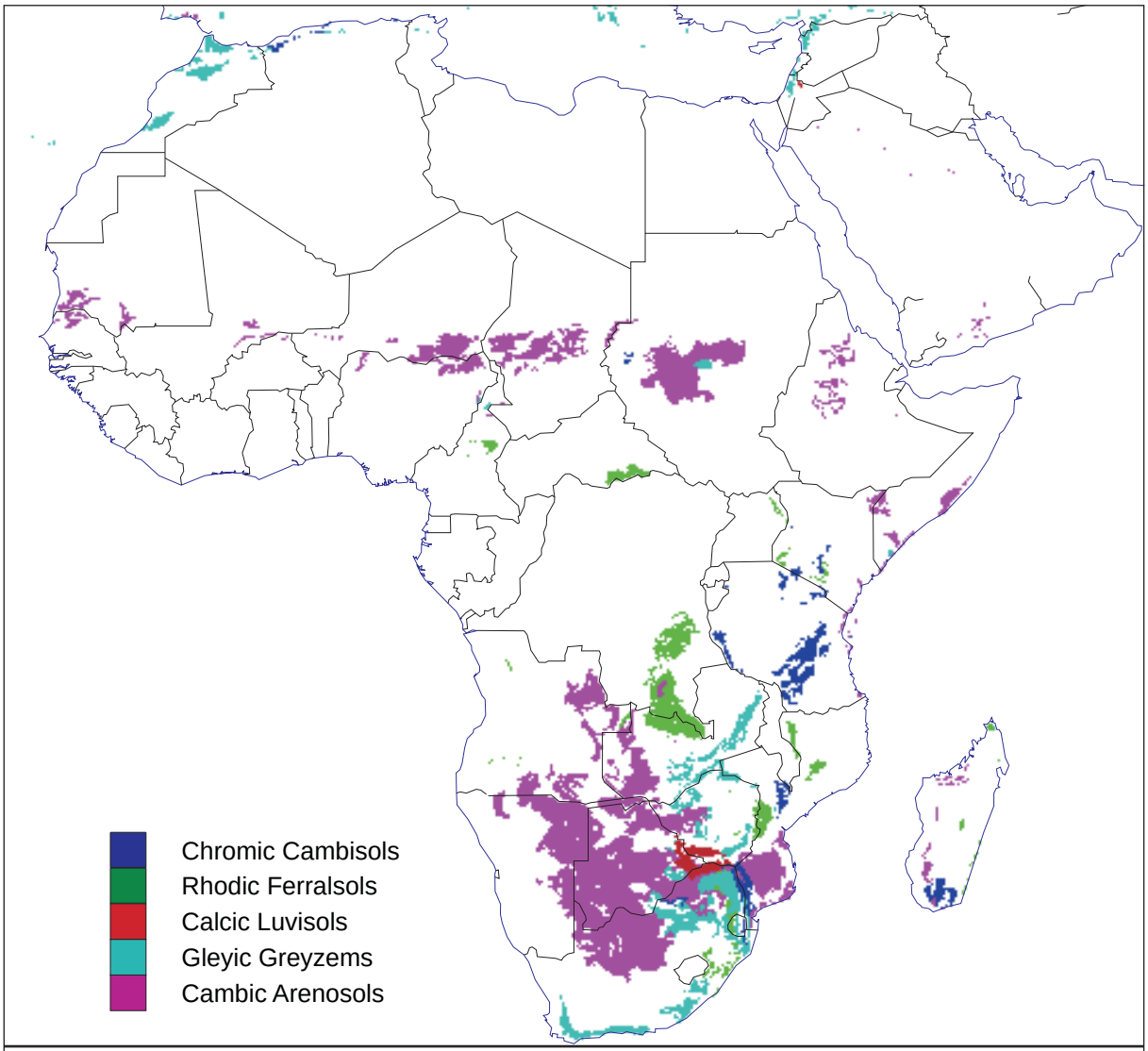


Figure 26:This image shows the five soil types occurring in the Soutpansberg extrapolated on a binary image of the vegetation indexes occurring in the Soutpansberg. Compiled from a Vegetation index (NDVI) December 1988 and a UNESCO/FAO Soil Classes image.

5.2 Changing environment

'Non sum qualis eram'
(I am not what I once was.)

Man, from the beginning of his emergence, irreversibly changed his environment to suit his needs. This phenomenon makes man unique within the animal kingdom, as all other species ei-

ther adapt to their environment, or die. In the beginning his influence was slight, but from about 150 000 BP when he learned to use fire, his influence became dramatic (Deacon 1986). Through time, no era can account for such an extreme transformation of habitat as that which has occurred in the last 150 years (see heading Photographic).

Even though no formal vegetative physiological studies have been published concerning the Soutpansberg many historic books have been written wherein the vegetation of the area is colloquially mentioned (see paragraph below). From these accounts it becomes evident that the area has changed dramatically in its vegetion structure.

Struben (1920) mentions the Soutpansberg as “beautiful mountainous grassy country”. Mauch (1969) mentions that the veld at the foot of the Soutpansberg was almost bare, and that tree growth was only to be found towards the slopes of the mountain. Trevor (1919) records on his visit to Lake Fundusi the habitat to the east of Sibasa as: ‘*...an open down-like plateau, with scattered Protea trees and close-growing grass, which might be taken for a portion of the Transvaal high veld, though the actual altitude is under 4000 ft* [1 219 m]’. At present, most of this area is under exotic plantation or rural settlements. Miller (1993) records Mr. Sybrant Mosterd’s account when he moved to the Soutpansberg in 1932. Mr. Mosterd told him that, at that time, the mountain above his farm Ashfield was covered with grass and that the trees were more or less concentrated towards the valleys next to streams.

5.2.1 Photographic

Figure 27: The southern slopes of the Soutpansberg as seen from the air, with Louis Trichardt in the foreground and Hanglip in the background. Photo taken 1998.

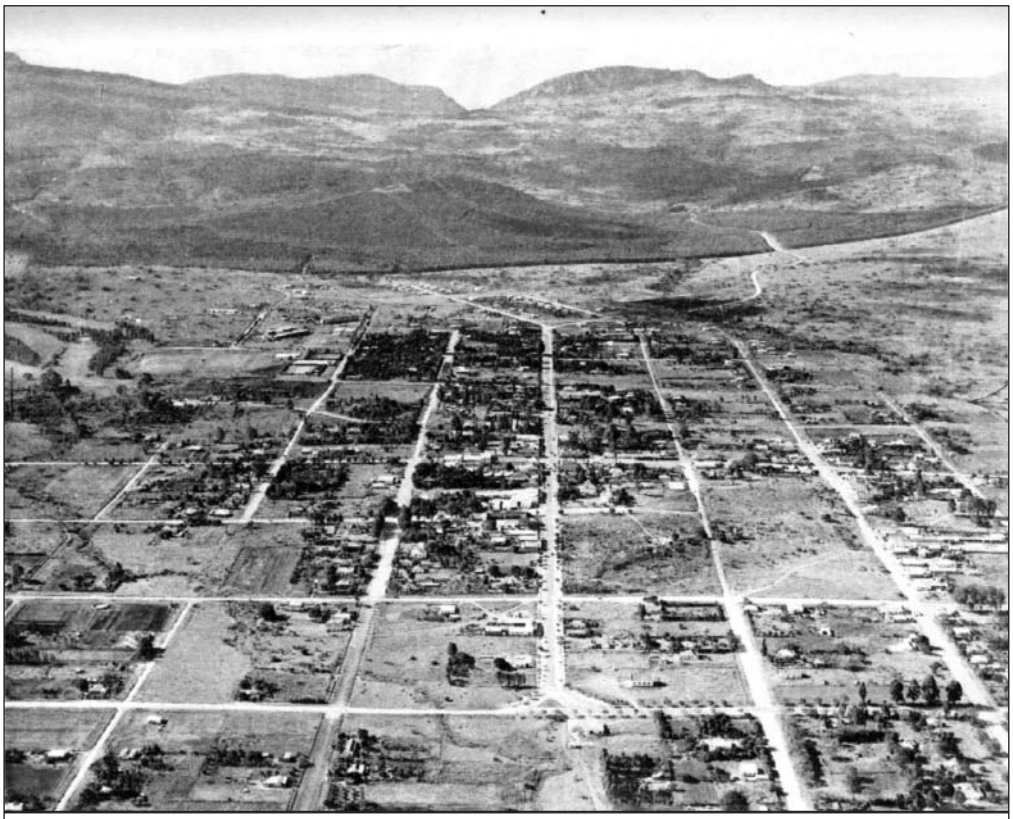


Figure 28: Louis Trichardt from the air with the Soutpansberg in the distance. Photo taken by Mr. H. Neethling, April 1954 (Tempelhoff 1999: p 138).

Figure 29: View across Louis Trichardt towards the mountain in the distance, taken in *circa* 1925.

Figure 30: October or November 1898, Joubert's lager at the foot of the Soutpansberg at the time of the attack on Mphefu. The lager was situated in the vicinity of where the town Louis Trichardt is today. Photo from the Hugh Exton collection Pietersburg Museum.

Figure 31: Looking west across the southern slopes of the Soutpansberg with Hanglip in the background. Photo taken in November 1999; 23° 00’ 22·1” south and 29° 56’ 39.2” east.

Figure 32: The habitat a short distance N–W of fig. 31as photographed by Reynolds (1950: fig. 10 p. 136) *circa* 1936. In the foreground one can see a community of *Aloe vossii* which was situated 5 miles [8 km] north from Louis Trichardt. This subpopulation could not be traced and is thought to be extinct mainly due to habitat degradation and over collecting.

Figure 33: Louis Trichardt as seen from a distance, with the southern slopes of the mountain in the foreground. This photo must have been taken *circa* 1935 as seen by the established forestry plantations of Hanglip. Photo from the Louis Trichardt Municipal Archive.

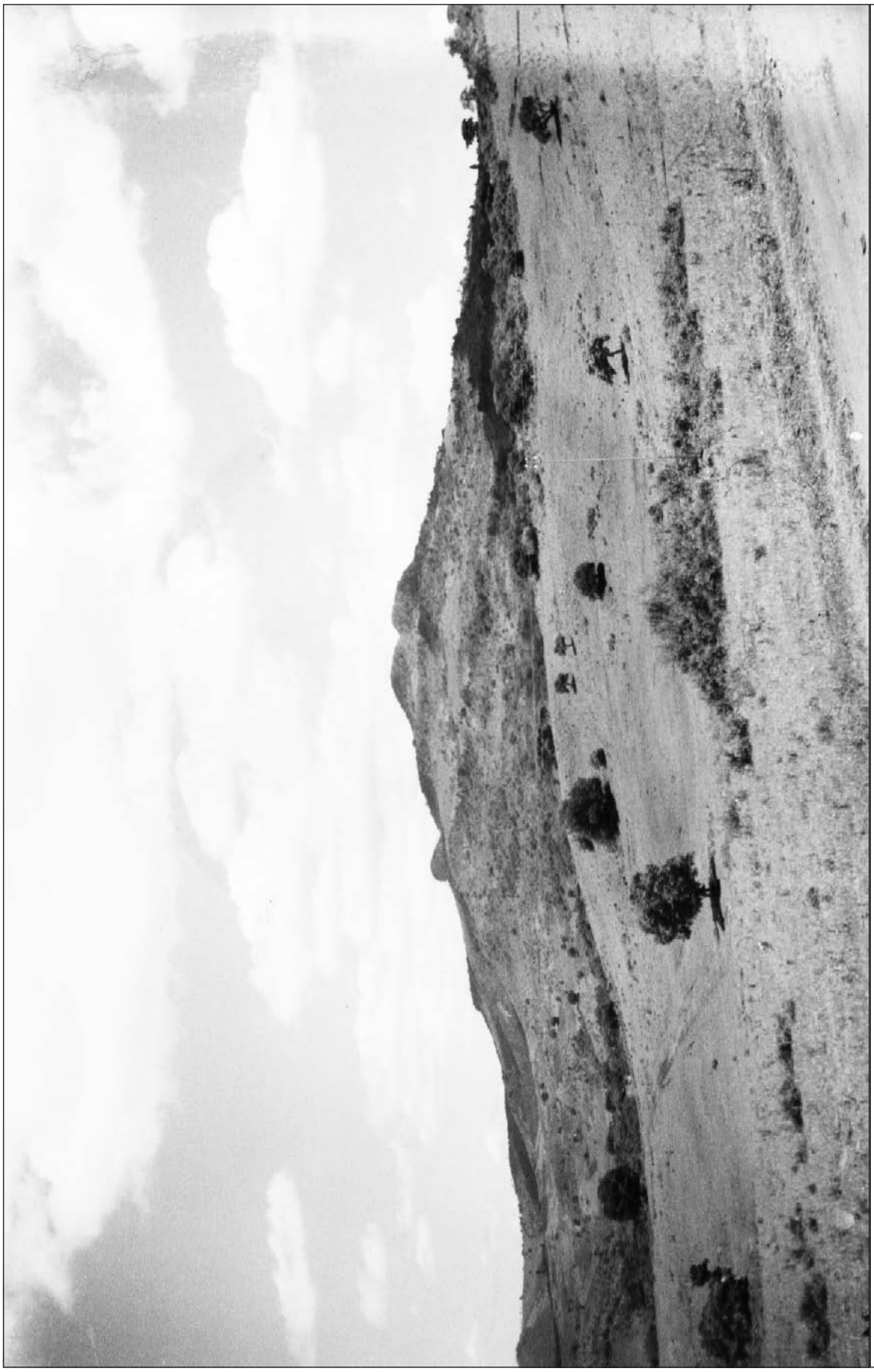


Figure 34: View across the grassy plains of the Soutpansberg before 1920. Photo from the Giesekke Private collection.

Figure 35: The transformed habitat on top of the Soutpansberg. Photo taken November 1999; 23° 00’ 22·1” south and 29° 55’ 37.0” east.

Figure 36: The road works on December 1904 on the top of the mountain also showing the grassy plains in the background. Photo from the Louis Trichardt Municipal Archive.

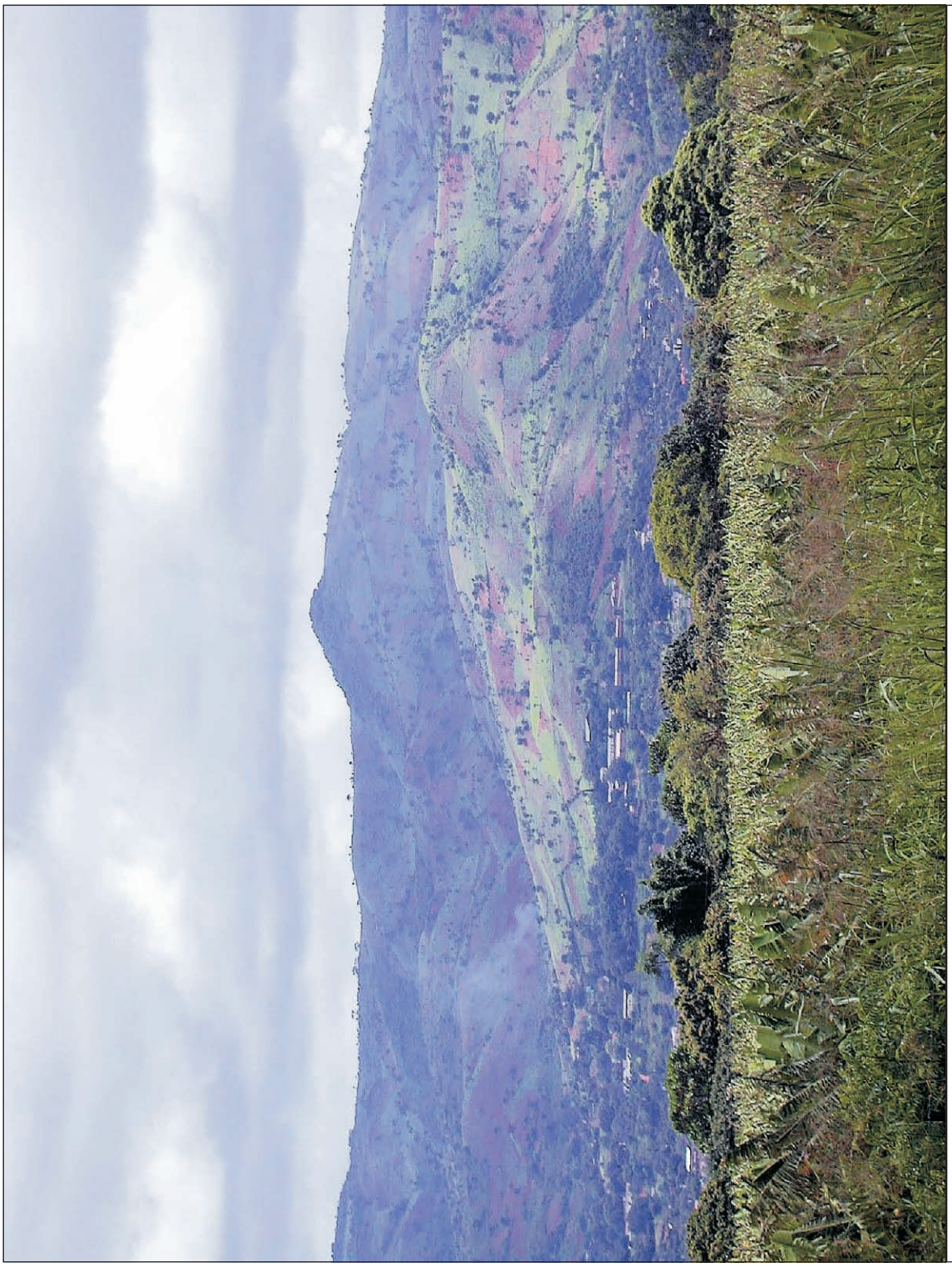


Figure 37: Tshakhuma, January 2002.

Figure 38: Aerial view of Tshakhuma, February 1989. Photo George Marais.

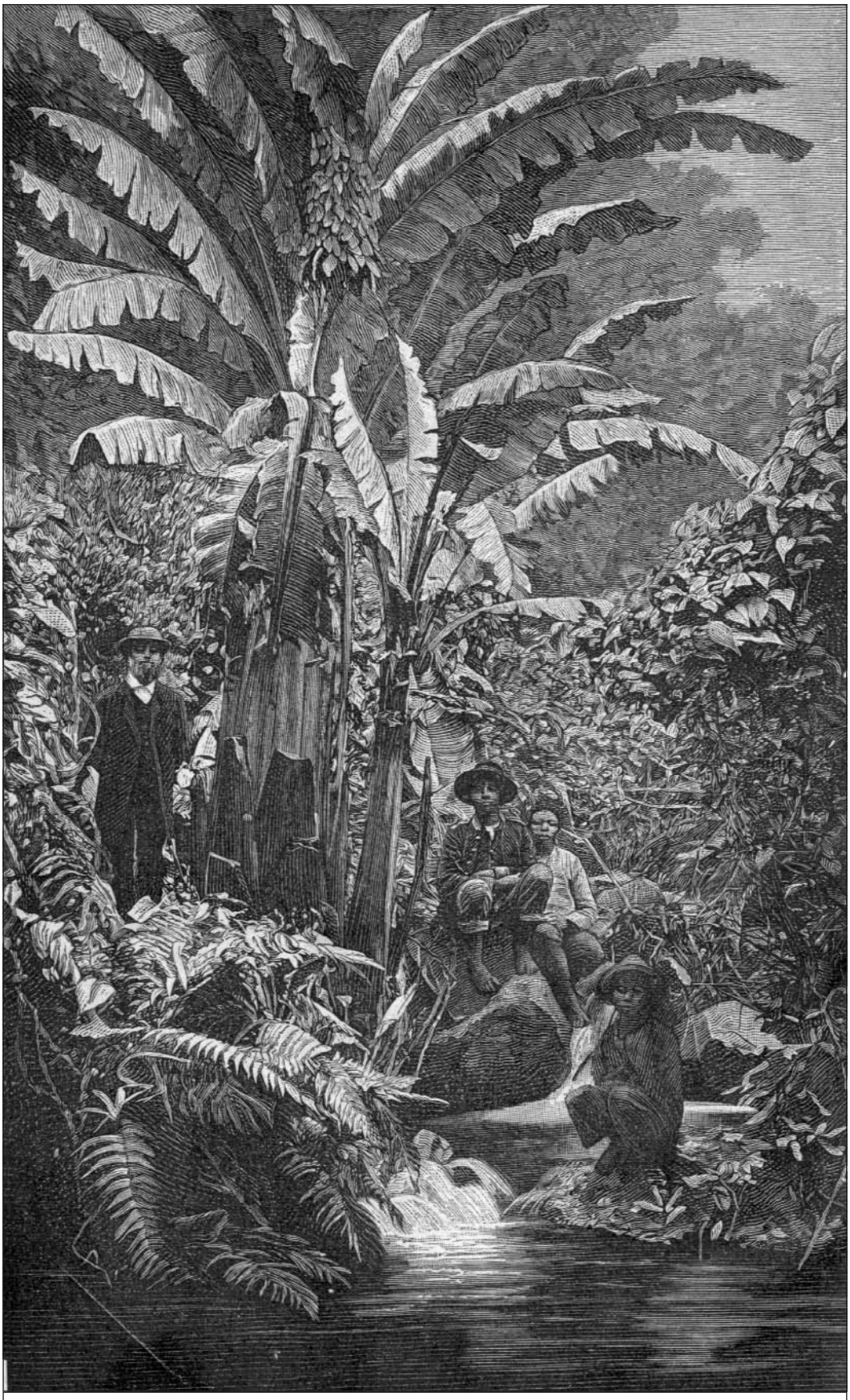


Figure 39: “Waldbach in Bawendaland. Missionar Schwellnus und Eingeborne.” Forest stream in Bavenda Land. Missionary Schwellnus and natives. This image refers to the forest which the missionaries encounter at Tshakuma circa 1894. Woodcut, cover from the book “Geschichte der Bawenda Mission” (Gründler 1897).

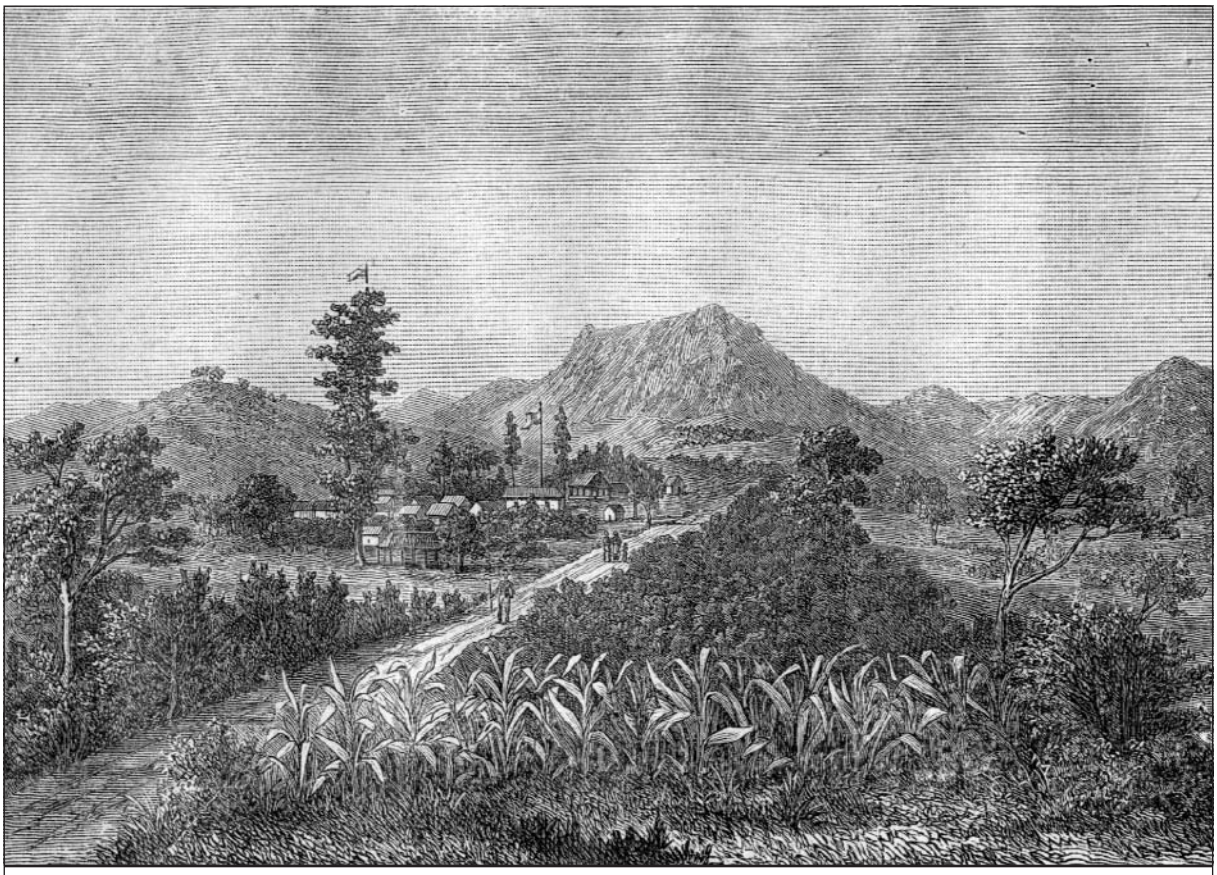


Figure 40: “Tsckakoma”. Tschakoma [Tshakhuma]. The Berlin Mission Station at Tshakuma established 1874 (Gründler 1897)[1]. The establishment of the European mission stations brought forth major transformations in rural cultures ideology and philosophy towards the of utilisation of the land[2].

1 A list of the establishment of the early mission stations: Dutch Reformed Church: 1863 Goedgedacht; Berlin: 1872 Maungani, 1874 Tshakuma, 1877 Mavhola; Swiss: 1875 Lwaleni, 1879 Vari.

2 The first commercial saw mill in the Soutpansberg was established Tshakuma to utilise the indigenous trees. Exotic trees where planted experimentally to establish their silvicultural potential. Various crops from all over the world were also planted.

Figure 41: The Negele valley as seen from Thata Vondo looking west 1940. Photo from the Giesekke Private collection

Figure 42: One of many ever increasing man made deserts. Photo taken at Mbodi October 1996.

5.2.2 Zoological evidence

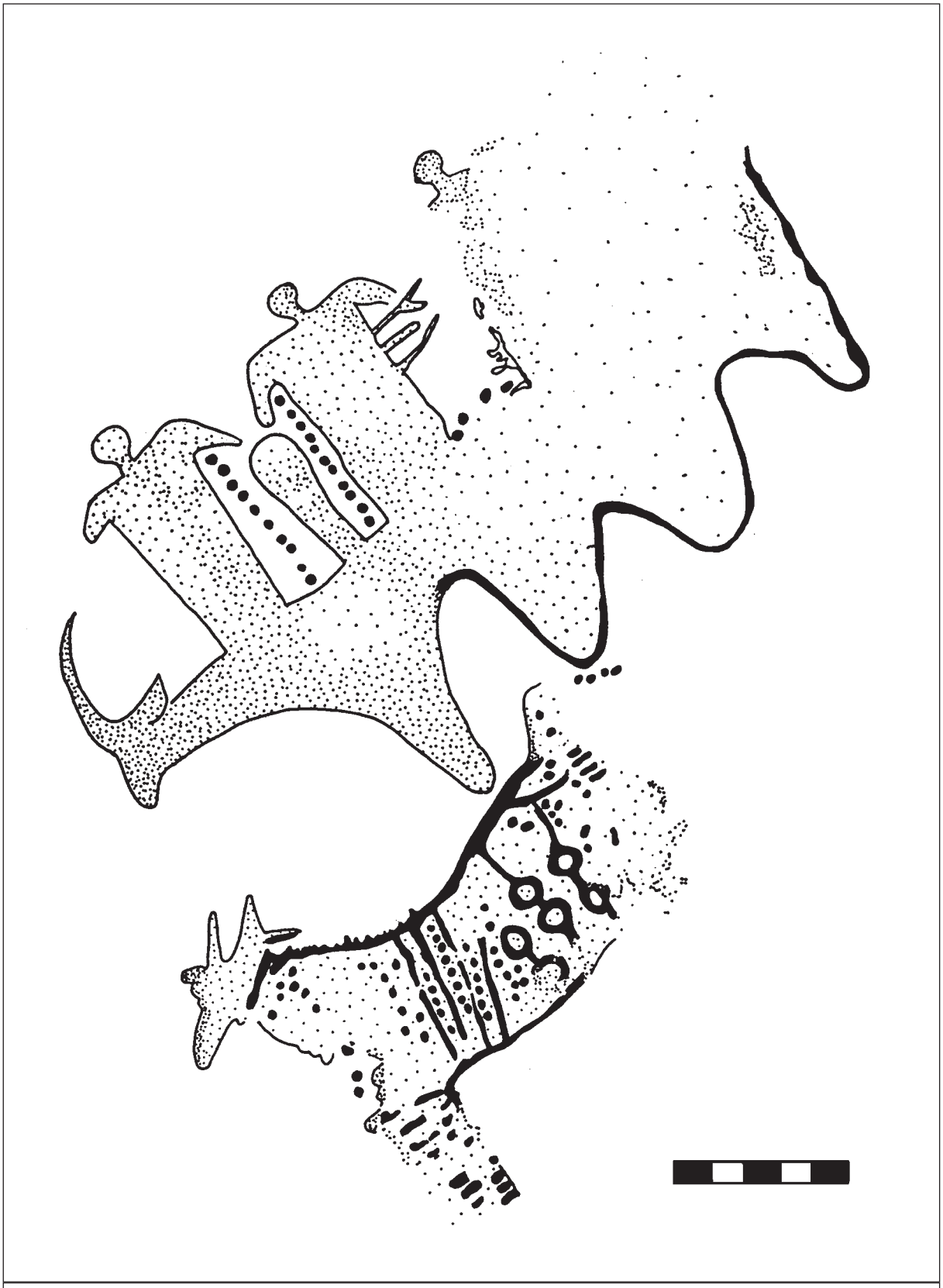


Figure 43: A rock art panel of therianthropic figures the top clearly depicting a roan antelope. From Eastwood *et al.* (1993).

Table 6: Large mammalian herbivores which occurred, or are still to be found in the Soutpansberg. (Smithers 1983 & 1986; Eastwood *et al.* 1993 & 1995).

Scientific name	Common name	Present status	Feeding preference
Aepyceros m. melampus (Lichtenstein, 1812)	Impala	Still present in protected environments	Browser and Grazer
Cephalophus natalensis A. Smith, 1834	Red duiker	Rare in the east due to poaching	Browser
Ceratotherium s. simum (Burchell, 1817)	Square-lipped rhinoceros	Extinct, reintroduced on game farms.	Grazers
Connochaetes taurinus (Burchell, 1823)	Blue wildebeest	Still present in protected areas	Grazers
Damaliscus l. lantus (Burchell, 1823)	Tsessebe	Extinct, except for Kruger National Park. Reintroduced into protected areas.	Grazer
Diceros b. bicornis (Linnaeus, 1758)	Hooked-lipped rhinoceros	Extinct	Browser
Equus burchelli (Gray, 1824)	Burchell's zebra	Extinct, except for Kruger National Park. Reintroduced into protected areas	Grazer
Giraffa camelopardalis (Linnaeus, 1758)	Giraffe	Still present and reintroduced into protected areas	Browser
Hippopotamus amphibius capensis Desmoulins, 1825	Hippopotamus	Still present in some river systems	Grazer
Hippotrachus e. equinus (Desmarest, 1804) (Fig. 43)	Roan	Extinct	Grazer
Hippotragus n. niger (Harris, 1838)	Sable	Present status unknown, remnant populations may possibly still exist in the western Soutpansberg. Reintroduced	Grazer
Kobus e. ellipsiprymnus (Ogilby,1833)	Waterbuck	Extinct except for Kruger National Park. Reintroduced into protected areas	Grazers
Loxodonta a. africana (Blumenbach, 1797)	African elephant	Extinct except for Kruger National Park	Grazer and browser
Neotragus moschatus zuluensis Thomas, 1898	Suni	Unknown, most probably in Kruger National Park	Browser
Oreotragus oreotragus transvaalensis Ansell, 1972	Klipspringer	Common	Browser
Oryx gazella (Linnaeus, 1758)	Gemsbok	Extinct. In the past it was a seasonal migrant into the north western parts of the range. Remnant population at Lang Jan Nat. Res. Reintroduced into protected areas.	Grazer

Scientific name	Common name	Present status	Feeding preference
Ourebia o. ourebi (Zimmermann, 1783)	Oribi	Unknown, probably in Kruger National Park.	Grazer
Pelea capreolus (Foster, 1790)	Grey rhebok	Present	Grazer
Phacochoerus aethiopicus sundevalli Lönnberg, 1908	Warthog	Common	Grazer and Browser
Potamachoerus porcus (Linnaeus, 1758)	Bush pig	Common	Grazer and Browser
Raphicerus campestris (Thunberg, 1811)	Steenbok	Common	Browser and Grazer
Raphicerus sharpei colonicus Thomas & Schwann, 1906)	Sharp's grysbok	Rare in the east due to poaching	Browser
Redunca a. arundium (Boddaert, 1785)	Reedbuck	Still present	Grazer
Redunca f. fulvorufla (Afzelius, 1815)	Mountain Reedbuck	Still present	Grazer
Sigmoceros lichtensteinii (Peters, 1849)	Lichtenstein's Hartebeest	Extinct	Grazer
Sylvicapra grimmia (Linnaeus, 1758)	Common duiker	Common	Browser
Syncerus c. caffer (Sparrman, 1779)	Buffalo	Extinct except in Kruger National Park.	Grazer
Tauratrachus oryx (Pallas, 1766)	Eland	Extinct, reintroduced into protected areas	Browser
Tragelaphus angasii Gray, 1849	Nyala	Still present but rare outside Kruger National Park.	Browser
Tragelaphus scriptus ornatus Pocock, 1900	Bushbuck	Common	Browser
Tragelaphus strepsiceros (Pallas, 1766)	Kudu	Common	Browser

Number	Total		Extinct		% per extinct
Total	31		11	34·48 %	
Browser	9	29·03 %	2	6·45 %	18·18 %
Grazer	16	51·61 %	8	25·81 %	72·73 %
Browser & Grazer	6	19·35 %	1	3·23 %	9·091 %

5.3 Soutpansberg centre of endemism

Table 7: Biodiversity figures for the Soutpansberg.

Flora	Number
Known vascular plant taxa	2 500–3 000
Known vascular plant genera	1 066
Known vascular plant families	240
Known endemic plants	33
Fauna	
Known endemic mammal taxa	0
Known bird taxa	519
Known endemic reptiles taxa	7
Known endemic frog taxa	1
Known endemic butterfly taxa	2

Derivation: (Gk. ενδημος, *endemos*, dwelling in a place, a native) referring to a biological entity being restricted to a given area.

In the Darwinistic context, **endemics** are referred to as biological entities which through separation from their parents, have evolved into morphologically and genetically distinct entities.

In this work, **endemics** refer to organisms that through whatever circumstances, are restricted to the Soutpansberg and Blouberg mountain ranges.

5.3.1 Fauna

Table 8: Endemic butterflies to the Soutpansberg and their Blouberg near relatives. Compiled from Henning *et al*. 1994.

Soutpansberg	Blouberg
Charaxes druceanus entabeni Van Someren, 1963	*Charaxes druceanus solitarius* S. F. & G. A. Henning 1992
Charaxes xiphares bavenda Van Son, 1935	*Charaxes xiphares staudei* S. F. & G. A. Henning 1992
Dira swanepoeli swanepoeli (Van Son, 1939)	*Dira swanepoeli isolata* Van Son, 1955
Papilio ophidicephalus entabeni Van Son, 1939	No endemic taxa recorded

Table 9: Endemic reptiles of the Soutpansberg. Compiled from Branch (ed.) 1988.

Family	Taxon	Type locality
Amphisbaenidae	*Chirindia langi langi* FitzSimons, 1939	Kruger National Park, Punda Maria.
	Chirindia langi occidentalis Jacobsen, 1984	
Colubridae	*Amblyodipsas microphalma nigra* Jacobsen, 1986	Soutpansberg, farm Harnham.
Cordylidae	*Platysaurus relictus* Broadley 1976	Soutpansberg, Waterpoort.
Lacertidae	*Lacerta rupicola* FitzSimons, 1933	Soutpansberg, Lake Fundusi.
Scincidae	*Typhosaurus lineatus richardi* Jacobsen, 1987	Soutpansberg, 4–5 km north of Tshamavhudzi peak.
	Typhosaurus lineatus subtaeniatus Broadley, 1968	

Table 10: The Rare and Endangered Mammals of the Soutpansberg. Compiled from Smithers 1986.

Extinct	
Sigmoceros lichtensteinii (Peters, 1849)	Lichtenstein's Hartebees
Endangered	
Lycaon pictus (Temminck, 1820)	Wild Dog
Vulnerable	
Felis lybica cafra Desmarest, 1822	African Wild Cat
Hippotrachus niger niger (Harris, 1838)	Sable Antelope
Manis temminckii Smuts, 1832	Pangolin
Mellivora capensis capensis Schreber, 1776	Honey Badger
Neotragus moschatus zuluensis Thomas, 1898	Suni
Orycteropus afra afra (Pallas, 1766)	Antbear
Rare	
Atelerix frontalis (A. Smith, 1931)	South African Hedgehog
Calcochloris obtusirostris limpopoensis (Poberts, 1964)	Yellow Golden Mole
Cephalopus natalensis natalensis A. Smith, 1834	Red Duiker
Ceropithecus mitis labiatus L. Geoffroy, 1843	Samango Monkey
Civetticis civetta australis (Lundholm, 1955)	African Civet
Cricetomys gambianus ansorgei Thomas, 1904	Giant Rat
Damaliscus lanthus lanthus (Burchell, 1823)	Tsessebe
Felis serval serval Schreber, 1776	Serval
Hippopotamus amphibius capensis Desmoulins, 1825	Hippopotamus
Hyaena brunnea Thunberg, 1820	Brown Hyena
Panthera perdus melanotica (Günther, 1885)	Leopard
Paracynictis selousi selousi (De Winton, 1896)	Selous' Mongoose
Petrodromus tetradactylus beirae Roberts, 1913	Four-toed Elephant-shrew
Poecilogale albinucha albinucha (Gray, 1864)	African Striped Weasel
Proteles cristatus cristatus (Sparrman, 1783)	Aardwolf
Raphicerus sharpei colonicus Thomas & Schwann, 1906	Sharp's Grysbok

5.3.2 Flora

'We have a mental habit which makes it much easier for us to explain the miraculous in natural terms than to explain the natural in miraculous, yet the latter is as necessary as the former.'
– T.S. Eliot

Acanthaceae

Blepharis A. L. Juss.

Derivation: (Greek βλεφαρις, *blepharis*, eyelash) referring to the fringed bracts characteristic of this genus.

Blepharis spinipes K. Vollesen
Blepharis (Acanthaceae) A taxonomic revision: 130 (2000)

Type: South Africa, Limpopo Province, Soutpansberg, Waterpoort, Van Collers Pass, 1990-6-25, *Balkwill 5888* (K, holo.; J, iso.).

Description: Shrub 300 mm tall (Figure 46), up to ∅ 500 mm; young branches minutely puberulous on the one side glabrous on the other. Leaves narrowly elliptic-obovate, up to 25 × 4 mm, glabrous; margins conspicuously thickened, white, with 3–5 pairs of triangular mucronate teeth; petiole with 1–2 persistent teeth on either side of base, 5 mm long. *Inflorescence* 2-flowered, spicate (Figure 47), 15–20 mm long, peduncle 2–4 mm long; sterile bracts 4–5 pairs; fertile bracts obovate up to 10 × 8 mm, green to pale brown, apical spine 5 mm, marginal teeth 4–5 teeth up to 3–4 mm long; bracteoles narrowly oblanceolate, up to 12 × 1 mm, apex acute, mucronate. *Sepals* glabrous base becoming sparsely minutely sericeous towards apex; dorsal ovate, up to 14 mm long, 4-veined from base, apical teeth 1–3 teeth, acute; ventral broadly ovate, up to 11 mm long, with 2 narrowly triangular 1·5 mm long teeth; lateral ovate up to 7 mm long. *Corolla* pale whitish blue, up to 20 mm long; tube 5 mm long; limb spathulate up to 12 mm wide, hairy; central lobe truncate, wider than long; filaments up to 6 mm long, sparingly glandular hairy; appendage ovate, rounded, 1–2 mm; anthers ca. 3 mm long. Capsule up to 9 mm long. For flowering and fruiting periods see Figure.

Related taxa: Vollesen expresses difficulty in indicating an ally but suggests *B. ilicina* Oberm. from the Eastern Cape as a possibility.

Habitat: Growing in exposed rocky areas and in fissures within bedrock (Figure 46).

Global distribution:

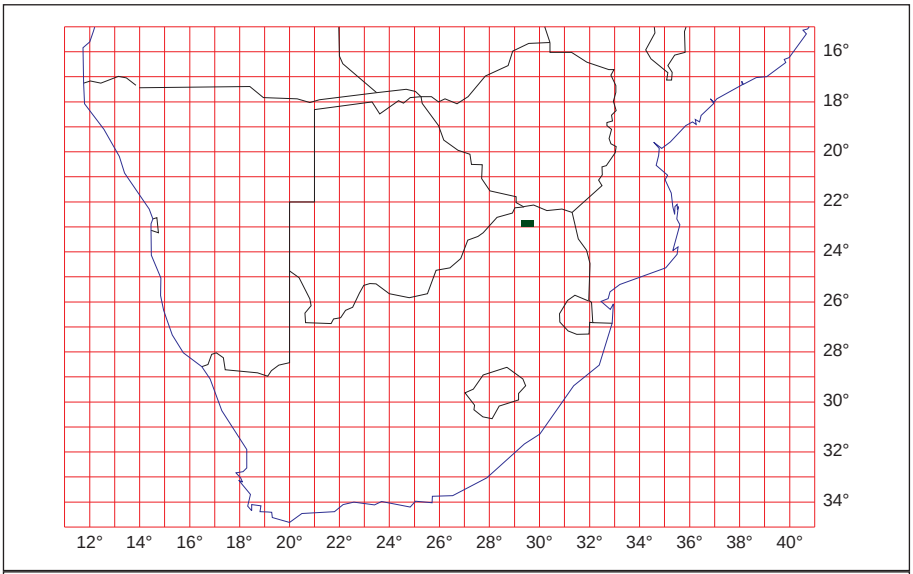


Figure 44: The known global distribution of *B.spinipes*. Plot resolution equals to a ¼° grid.

Local distribution:

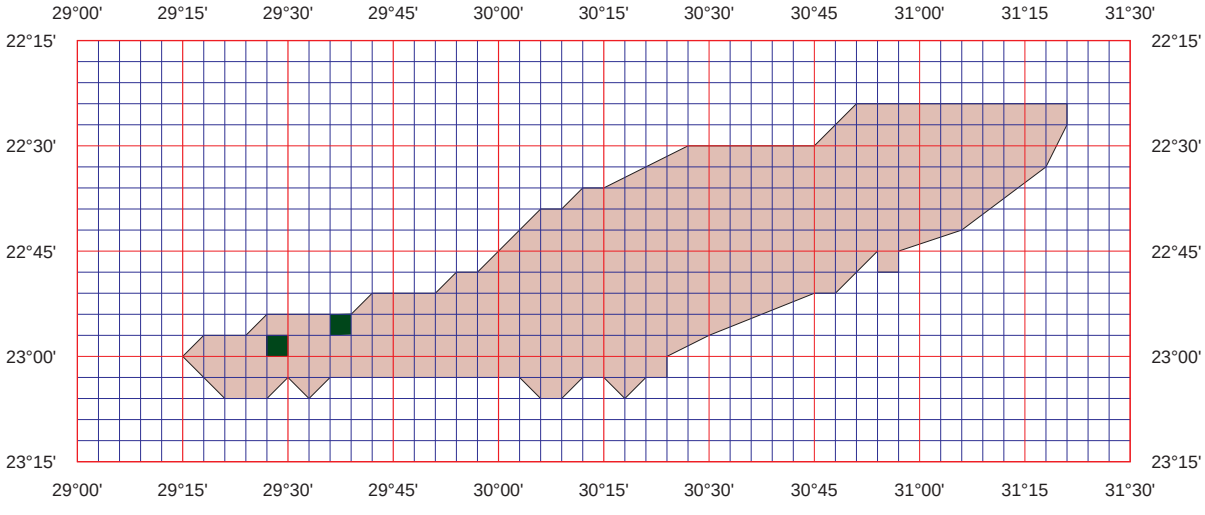


Figure 45: The known distribution of *B.spinipes* on the Soutpansberg. Plot resolution equals to a $\frac{1}{20}$° grid.

Red data listing: Not listed by Hilton-Taylor (1996).

Voucher specimens: 2229: Bluebell, (–CD), *N. Hahn 1797* (ZPB)

Literature reference: Vollesen (2000).

Figure 46: *B. spinipes* in habitat.

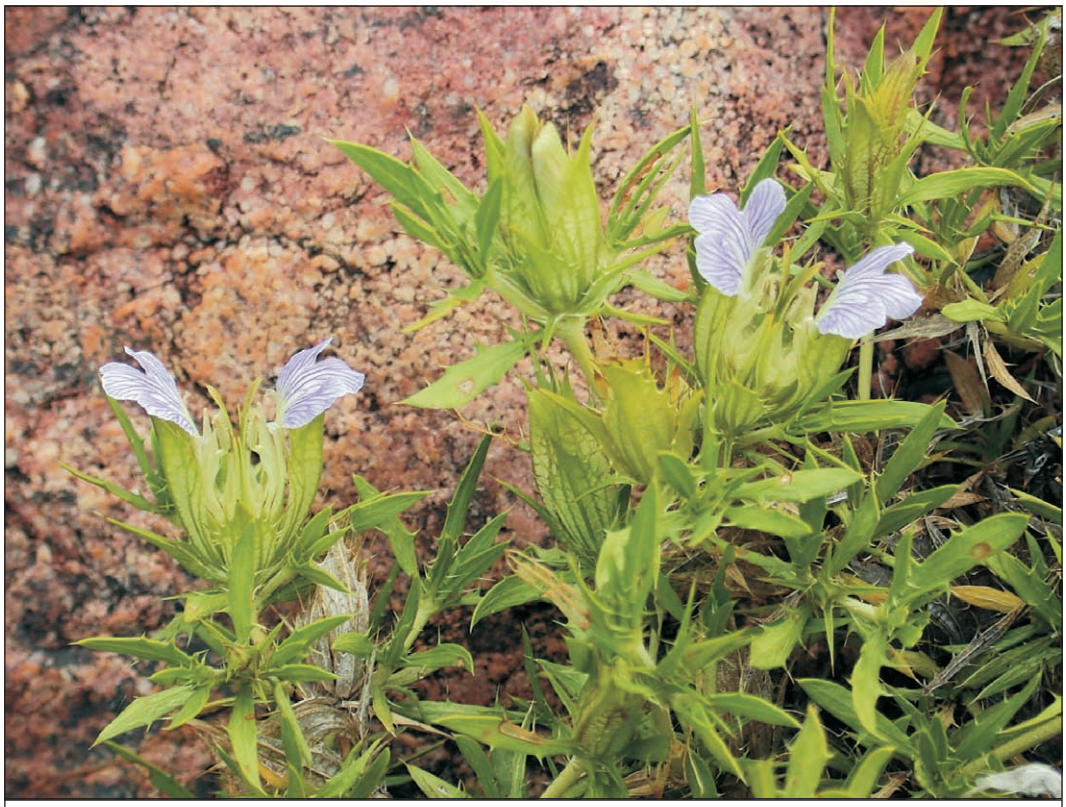


Figure 47: *B. spinipes* flowers.

Justicia L.

Derivation: Named after: James *Justice* (1698–1763).

Taxa recorded in the Soutpansberg: *J. anagalloides* (Nees) T. Anderson, *J. anselliana* (Nees) T. Anderson, *J. betonica* L., *J. campylostemon* (Nees) T. Anderson, *J. flava* (Vahl) Vahl, *J. matammensis* (Schweinf.) Oliv., *J. montis-salinarum* A. Meeuse, *J. odora* (Forssk.) Vahl, *J. petiolaris* (Nees) T. Anderson subsp. *incerta* (C.B.Clarke) Immelman, *J. protracta* (Nees) T. Anderson subsp. *protracta*, and *J. protracta* (Nees) T. Anderson subsp. *rhodesiana* (S. Moore) Immelman

Figure 48: Flowering and fruiting branch of *J. montis-salinarum*.

Justicia montis-salinarum A. Meeuse

in Bothalia 7(2): 407 (1960).

Type: South Africa, Limpopo Province, Soutpansberg, southern entrance of Sandrivierspoort, about 6·4 km north of main road bridge, *Meeuse 10 213* (PRE, holo.!).

Derivation: (Latin: *montis*, mountain + *sal*, salt) referring to the Soutpansberg.

Description: Perennial erect shrublet, 300–600 mm tall (Figure 52). *Stems* much branched, becoming woody with age. *Leaves* decussate, linear-lanceolate, 10–25 × 1·0–1·5 mm; upper and lower surface puberulous; margins entire, midrib prominently raised below; apex acute, base tapering. *Inflorescence* terminal (Figure 48), helicord; bract 1 on opposite side of axis, bracteoles 2, linear-lanceolate, 5·00–6·00 × 0·75 mm, puberulous. *Calyx* 5-fid, covered with stiff bulbous hairs,same colour as leafs; tube 1 mm long; lobes erect, 4 × 0·5–0·75 mm, linear-lanceolate. *Corolla* 7–9 mm long, white, with purple markings. *Capsule* 4-seeded, thinly textured, up to 9 mm long. *Seed* rough, ± 2·5 × 1·5 × 1·25 mm. For flowering and fruiting periods see Figure 49.

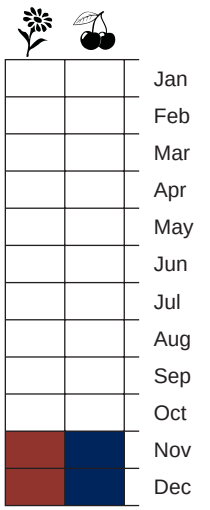


Figure 49.

Diagnostic features: This species is distinguished from other southern Africa members of the genus by its dense bushy habit and by its older branches becoming woody forming perennial shrublets up to 600 mm tall.

Related taxa: Meeuse (1966) places this species in the section *Calophoides*, with *J. orchioides* L.f., *J. odora* Vahl, *J. phillipseae* Rendle and *J. lorteae* Rendle. It differs from the first two mentioned species by its smaller flowers and narrow leaves. It differs from the last two by its pubescent corolla and capsules.

Habitat: Growing on sandy soils derived from Soutpansberg quartzite in exposed rocky areas and in fissures in bedrock.

Global distribution: Endemic to the Soutpansberg.

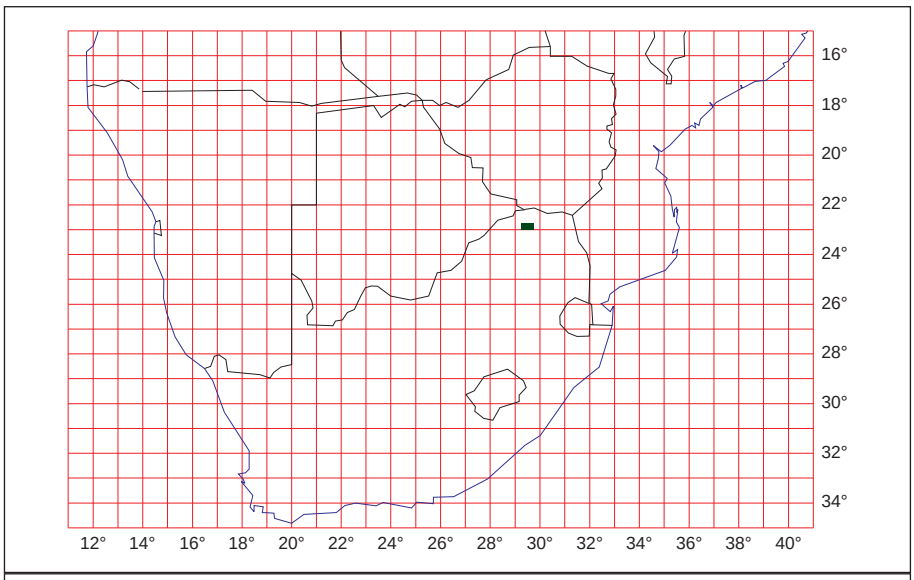


Figure 51: The known global distribution of *Justicia montis-salinarum*. Plot resolution equals to a ¼° grid.

Local distribution: Known from the western Soutpansberg.

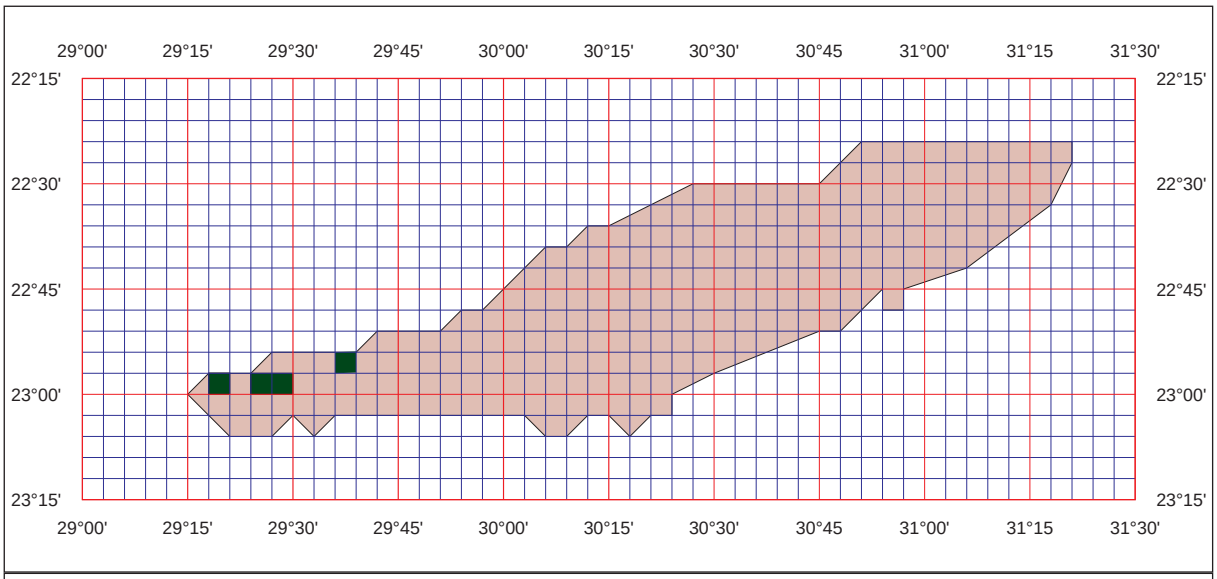


Figure 50: The known distribution of *J. montis-salinarum* on the Soutpansberg. Plot resolution equals to a $\frac{1}{20}$° grid.

Red data listing: Listed as *Insufficiently Known* by Hilton-Taylor (1996).

Voucher specimens: 2229: Zoutpan, (–CD), *Obermeyer, Schweickerdt & Verdoorn 168* (PRE, paratype), Van Coller Pass, (–DC), *N. Hahn 1116* (ZPB); 2329: Sandrivierspoort, (–BA), *Meeuse 10213* (PRE, holotype).[1]

Literature reference: Immelman (1995), Meeuse (1960).

Figure 52: *J. montis-salinarum* in habitat.

1 Meeuse (1960) in his original description of the species cite a specimen "Soutpansberg, Vivo, school grounds, *Mogg 24448* (PRE!, J). This population could not be located! At the time of Mogg's collection the school master encouraged his pupils to collect plants from the surroundings to be planted in the school gardens (*pers com. homines localis*). Vivo lies in the Blouberg—Soutpansberg gap, the habitat there is not suitable for *Justicia montis-salinarum* to occur naturally. It is therefore quite possible that a plant from the mountain was brought to the school grounds by one of the school pupils.

Anacardiaceae

Rhus L.

Taxa recorded in the Soutpansberg: *R. chirinidensis* Bak. f., *R. coddii* R. & A. Fernandes, *R. guenzii* Sond., *R. leptodictya* Diels, *R. lucida* L., *R. pentheri* Zahlbr., *R. pyroides* Burch., *R. rehmanniana* Engl., *R. tomentosa* L., *R. transvaalensis* Engl., *R. tumulicola* S. Moor. var. *meeuseana* (R. & A. Fernandes) Moffet. and *R. tumulicola* S. Moor. var. *tumulicola*

Rhus magalismontana Sond. subsp. *coddii* (R. & A. Fernandes) Moffett

in Flora of southern Africa 19(3): 57 (1993).

Type: South Africa, Limpopo Province, Venda, near Sambandou, 40 km north east of Sibasa, alt. 580 m, 20-02-1952, *L. E. Codd 6902* (PRE, holo.!).

Derivation: Named after: *Codd*, Leslie Edward Wostall (1908–1999).

Basionym: *Rhus coddii* R. & A. Fernandes in Boletim da Sociedade Broteriana sér. 2(39): 251, t. 7 (1965). Type as above.

Synonyms: *Rhus schliebenii* R. & A. Fernandes in Boletim da Sociedade Broteriana sér. 2(39): 255, t. 11 (1965). Type: South Africa, Limpopo Province, Soutpansberg, 67 km west of Louis Trichardt, alt. 1 500 m, 3-11-1955, *Schlieben 7 532* (PRE, holo.!).

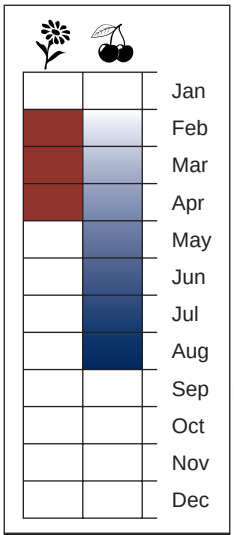


Figure 53.

Description: Shrubs or small tree of up to 3·5 m high. *Leaves*: coriaceous, greyish green, young growth golden or reddish pink, trifoliolate, terminal leaflets, narrowly rhombic to narrowly trullate29–117 × 9–39 mm, lateral leaflet 18–95 × 9–38 mm, petiole 13–70 mm. *Inflorescence* large lax panicle, flowers, small yellow green. *Drupe* round, 4·2–5·1 × 2·9–3·4 mm. For flowering and fruiting periods see Figure 53.

Diagnostic features: *Rhus magalismontana* subsp. *coddii* can readily be separated from other *Rhus* species occurring in the Soutpansberg by its large greyish green, coriaceous leaves. It

grows as a small tree or geoxylic shrub distributed throughout the mountain range. It shows great variation in growth habit. At one extreme it grows as a rhizomatous shrublet no taller than 500 mm forming clumps, at the other extreme it grows into a single-stemmed tree over 3 m high. These forms seem to be associated with different soil types and drainage.

Figure 54: Flowers of *Rhus magalismontana* subsp. *coddii*.

Taxonomic notes: Some uncertainty still exists regarding the interrelationship between this taxon and *R. magalismontana* Sond. *sensu latu*. The two are obviously allied and intermediate specimens have been found on the Strytpoortberg south of Pietersburg.

Rhus schliebenii might be nothing other than young material of *Rhus magalismontana* subsp. *coddii* (Moffett 1993).

Related taxa: *Rhus magalismontana* Sond. subsp. *magalismontana* occurs in Gauteng extending to the Waterberg and a short distance into Botswana. *Rhus magalismontana* Sond. subsp. *trifoliolata* (Bak. f.) Moffett occurs on the Waterberg and in Zimbabwe near Bulawayo and Gwero.

Figure 55: Shrubs of *R. magalismontana* subsp. *coddii* in habitat.

Habitat: This species occurs in a variety of habitats, always growing on soils derived from quartzite.

Figure 56: A small tree of *R. magalismontana* subsp. *coddii* in habitat.

Global distribution: Only recorded from the Soutpansberg.

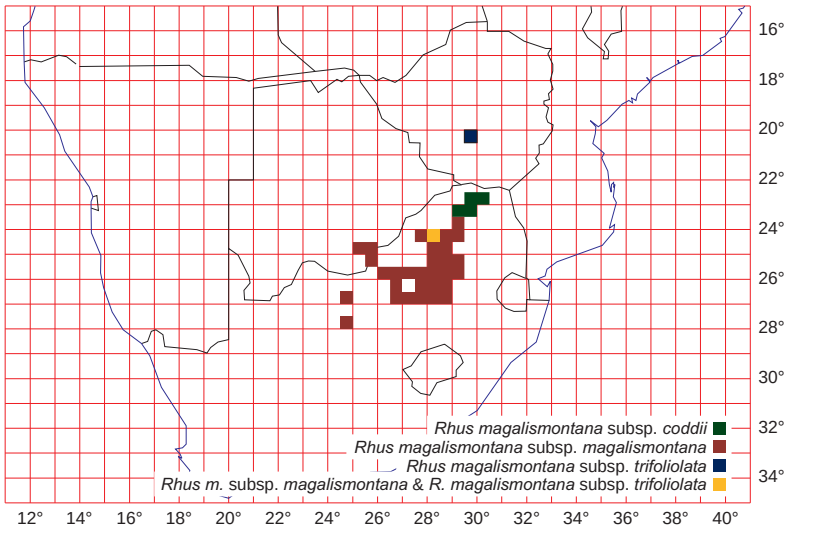


Figure 57: The known global distribution of *R. magalismontana* subsp. *coddii* and its nearest allies. Distribution data for taxa other than *R. magalismontana* subsp. *coddii* obtained from PRE and Moffett (1993). Plot resolution equals to a ½° grid.

Red data listing: Not listed by Hilton-Taylor (1996).

Voucher specimens: 2229: Little Leigh, (–DD), *N. Hahn 70* (ZPB; PRU); 2230: Vuva, (–DA), *N. Hahn 48* (ZPB; PRU); 2230: Sambandou, (–DA), *L. E. Codd 6 902* (PRE, holotype); 2329: 67 km west of Louis Trichardt, alt. 1 500 m, (–AB), *Schlieben 7532* (PRE)[1].

Literature reference: Moffett (1993: p. 55–57), R. & A. Fernandes (1965a: p. 251–255; 1965b: 1976: p. 15).

1 This specimen is the holotype of *R. schliebenii*.

Apocynaceae

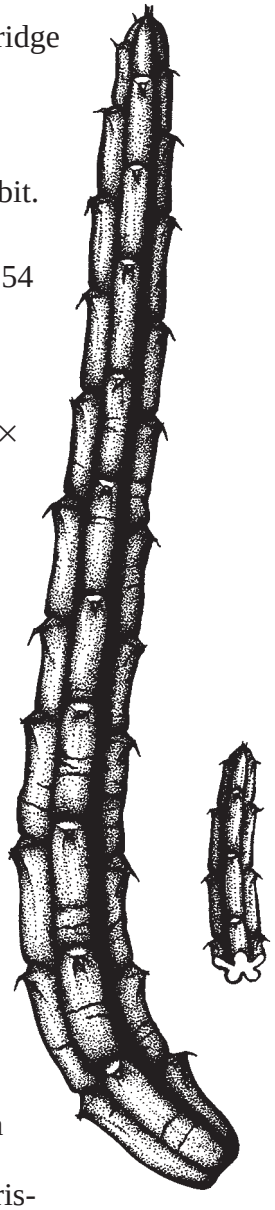
Duvalia Haw.

Derivation: Named after Henri August *Duval* (1774–1814).

Taxa recorded in the Soutpansberg: *D. polita* N. E. Br. and *D. procumbens* R. A. Dyer.

Duvalia procumbens R. A. Dyer

in Flowering Plants of South Africa 31: plate 1218 (1956).



Type: South Africa, Limpopo Province, Kruger National Park, Pafuri, ridge near Seekoegaat, 16-2-1955, *van der Schijff 3618* (PRE, holo.!).

Derivation: (Latin: *procumbere*, to fall forward), referring to its growth habit.

Synonyms: *Huernia procumbens* (R. A. Dyer) Leach in Bothalia 10(1): 54 (1969). Type: as above.

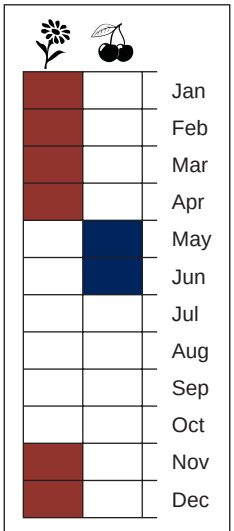


Figure 58.

Description: Prostrate or pendent synenpodial succulent stems 100–300 × ∅ 7–12 mm, dull green with a purple tinge, becoming yellow if exposed to excessive sunlight, obtusely 5-angled, tuberculate along the angles (Figure 60). Tubercles 10–20 mm long, apex tipped with a rudimentary leaf. *Inflorescence* umbellate, 1–2-flowered on young branches between angles. *Flowers* bisexual, developed successively. *Sepals* subulate, about 6 mm long. *Corolla* (Figure 59& 63) unopened having an acuminate bud, 17 × 25–30 mm when expanded, parchment-coloured with terra cotta margins, upper surface pubescent with short terra cotta hairs or minute bristles, glabrous; annulus glabrous, 8–9 mm broad, 3 mm high; lobes reflexed, narrowly lanceolate, 15 × 4–5 mm, margin folded upwards. *Corona* slightly sunken, outer lobes

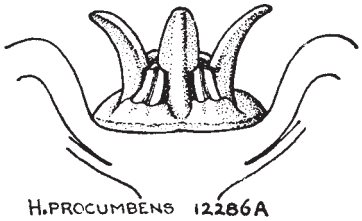
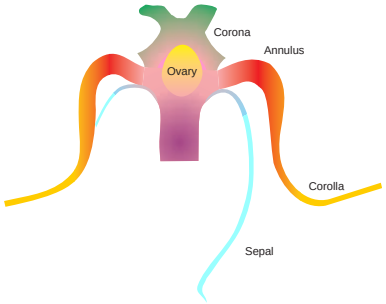
forming a small disc, margin crenulate, inner lobes 1 mm high with dorsal foot-like projection and small inner tooth incumbent on anthers. *Pollinia* 0·25 mm long, flattened, with translucent upper margin; caudicle attachment with minute lateral wings. *Fruit* a pair of cylindrical follicles. For flowering and fruiting periods see Figure 58.

Figure 59: *D. procumbens* corolla + corona.

Taxonomic notes: Controversy exists as to the exact generic disposition of this species. Dyer (1971) considers this species to reside under the genus *Duvalia* whilst Leach (1969) and Meve (1997) classify it under *Huernia*. This confusion could possibly be due to Letty's incorrect illustration of the flowers of *Duvalia procumbens* which resemble those of a *Huernia* (Table 11) which is identical to Leach's illustration.

Related taxa: *Duvalia procumbens* is most closely allied to *D. tanganyikensis* Bruce & Bally occurring in Northern Tanzania. A geographic disjunction of over 2 000 km.

Table 11: The two mistaken illustrations of Letty (left) and Leach (centre) with the correct illustration on the right.

		
Letty (from Dyer 1931)	Leach (1969 &1988)	Outline of figure 63.

Habitat: The plant is found in association with *Androstachys* woodlands growing in soils derived from Fripp Sandstone and Clarens formations.

Figure 60: A large clump of *D. procumbens* flowering in habitat.

Global distribution: Species known only from the far north-eastern sector of the Soutpansberg range extending a short distance into Zimbabwe.

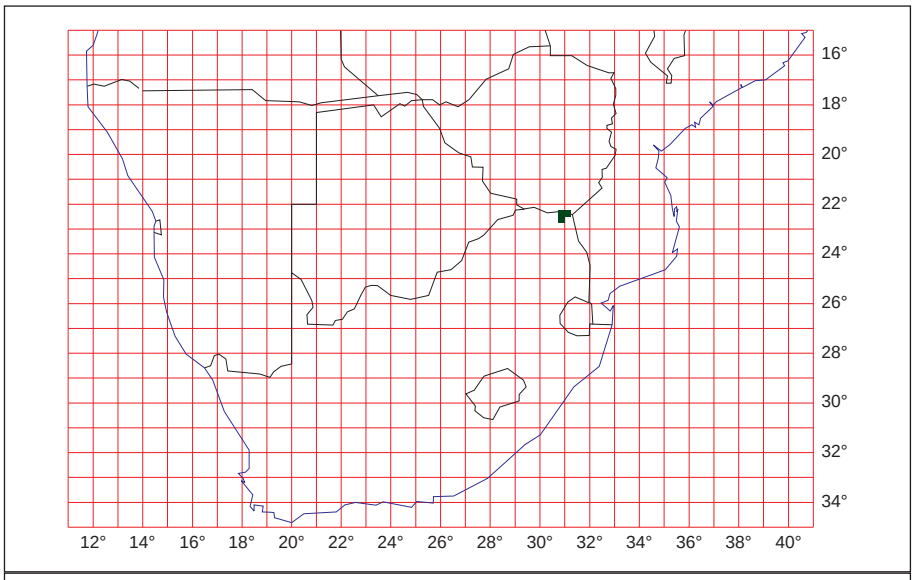


Figure 62: The known global distribution of *D. procumbens*. Plot resolution equals to a ¼° grid.

Local distribution: Only known from the north-eastern sector of the Soutpansberg.

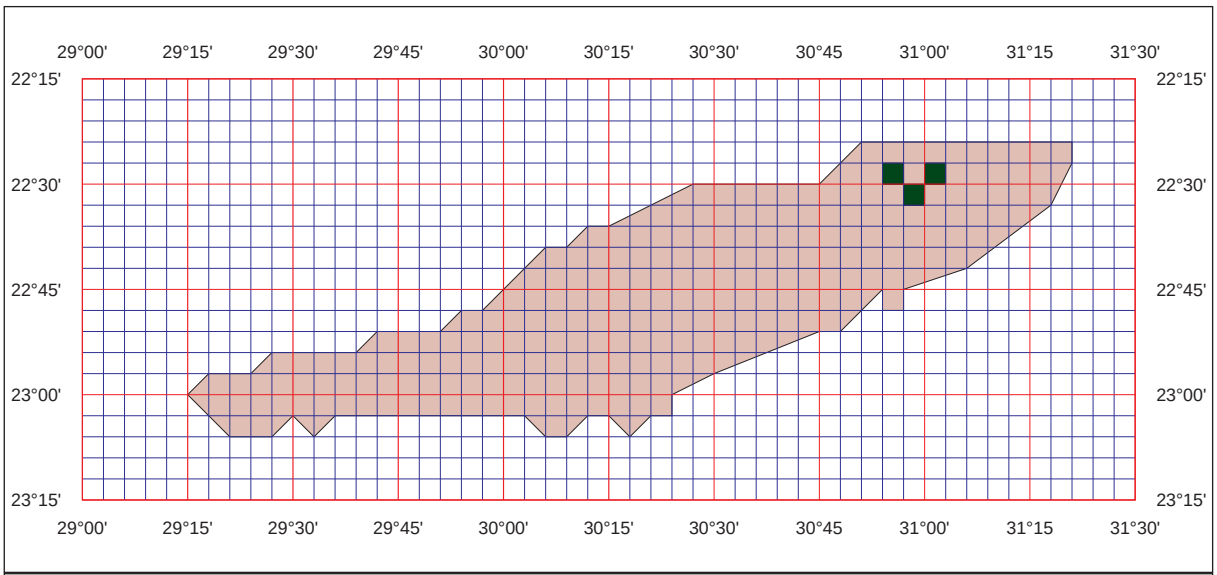


Figure 61: The known distribution of *D. procumbens* on the Soutpansberg. Plot resolution equals to a $\frac{1}{20}$° grid.

Red data listing: Not listed by Hilton-Taylor (1996).

Threats: Plants are brittle and sensitive to:

- Trampling and flash floods cause the plant to fragment.
- Habitat degradation, especially the collecting of *Androstachys* wood has lead to some populations become excessively exposed to direct sun.
- Indiscriminate collecting. A population near Masisi has been heavily impacted by collectors.

Uses: Collected as an ornamental plant by succulent enthusiasts.

Voucher specimens: 2231: Kruger National Park, Pafuri, (–AC), *van der Schijff 3618* (PRE, holotype).

Literature references: Dyer (1956, 1971), Leach (1969; 1988: p. 151–152), Letty (1962: p. 268, t. 133: 1), Meve (1997).

Figure 63: Cut through of *D. procumbens* flower.

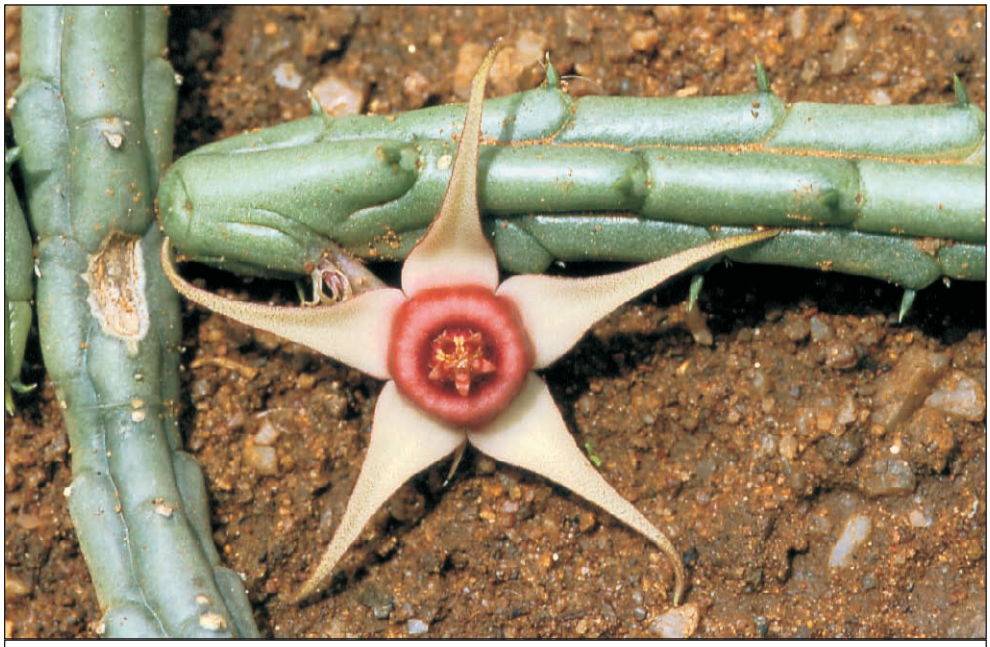


Figure 64: Normal flower colour of *D. procumbens*.

Figure 65: Dark flower form of *D. procumbens*.

Huernia R. Br.

Derivation: Honouring Justus *Huernius* (1587–1652).

Taxa recorded in the Soutpansberg: *H. hystrix* (Hook. f.) N. E. BR. var. *hystrix*, *H. nouhuysii* Verdoorn, *H. whitesloaneana* L. Lückhoff and *H. zebrina* N. E. Br. var. *magniflora* Phill.

Huernia nouhuysii Verdoorn

in Flowering Plants of South Africa 11: t. 412 (1931).

Type: South Africa, Limpopo Province, Soutpansberg, Wylie's Poort, *van Nouhuys s.n.* PRE 8 757 (PRE, holo.?). **Lectotype**: designated by Leach (1988), Flowering Plants of South Africa 11: plate no. 412 (1931)[1].

Derivation: Named after van *Nouhuys*.

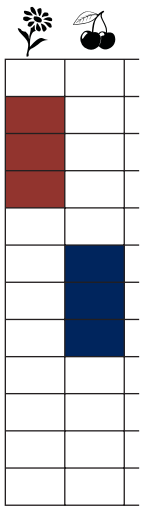


Figure 66.

Description: Multi-stemmed succulent, stems 4–6 angled, 80–200 × ∅ 10–15 mm, covered with a waxy layer, spirally twisted, teeth on angles tipped with hard white acute points. *Inflorescence* several, near the base of the branches, pedicels 20–30 mm long (Figure 71). *Sepals* 6 mm long, subulate, base ovate. *Corolla* campanulate, smooth outside, green inside with red spots; tube 5 × ∅ 10–13 mm, papillate; lobes 5 mm long (Figure 68& 71). *Corona* outer, 3–4 × ∅ 5–6 mm, shallowly 10-lobed, light green; inner corona with 5 linear spathulate lobes with a dorsal ridge (Figure 72). For flowering and fruiting periods see Figure 66.

1 No specimen numbered *van Nouhuys s.n.* PRE 8 757 is known to exist. The specimen *van Nouhuys* cult. Transvaal Mus. 30 614 (PRE!) annotated as the type is stated as having flowered in March 1932. This plant might have been a clone of the original plant, or the plant from which Cythna Letty drew the plate for Flowering Plants of South Africa. In light of the above, Leach (1988) designated Cythna Letty's plate no. 412 as the lectoiconotype.

Diagnostic features: In flower the plant is quite distinct, when not in flower, its characteristic twisted stems aids to its identification (Figure 69).

Related taxa: Well defined taxon. Leach (1988) places this species under the section *Fallacistelma* which is concentrated in the Eastern Cape. *Huernia nouhuysii* is most closely related to *Huernia quinta* (Phillips) White & Sloane var. *quinta* and *H. quinta* var. *blyderiverensis* Leach see Figure 67.

Habitat: Occurring in small sporadic communities throughout the western sector of the mountain. It favours the drier regions, along the central ridges of the range, where it grows among rocks, grass and shrubbery, making it very difficult to locate (Figure 69).

Global distribution: Endemic to the western Soutpansberg.

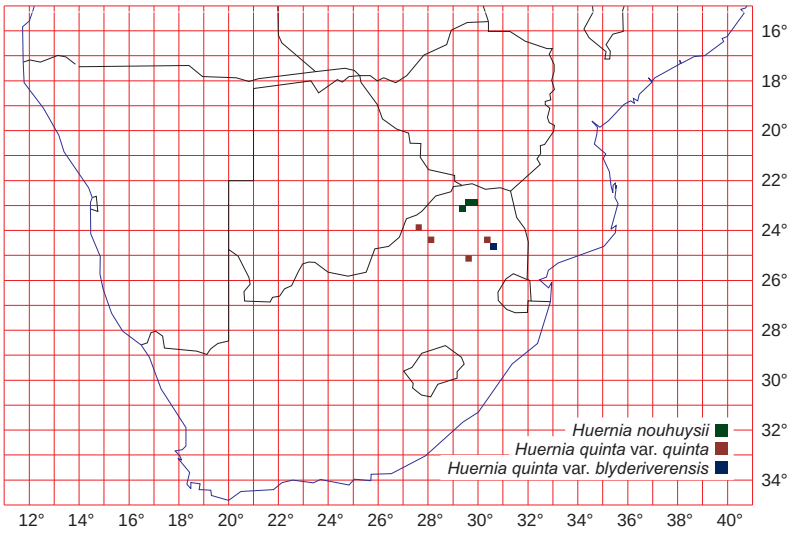


Figure 67: The known global distribution of *Huernia nouhuysii*. Plot resolution equals to a ¼° grid. Distribution data for *H. quinta* var. *quinta*[2] and *H. quinta* var. *blyderiverensis*[3] obtained from Leach (1988) and PRE.

2 Vouchers: *Hardy 934* (PRE), *Leach & Bayliss 12 085* (PRE), *Leach & Louw 14 071* (PRE), *Voster 1952* (PRE).

3 Voucher: *Percy-Lancaster 466* (NBG, type not seen), *Percy-Lancaster 967* (PRE).

Figure 69: *H. nouhuysii* in in situ.

Figure 68: Front view of *H. nouhuysii's* flower

Local distribution: Recorded from Wylie's Poort in the east to the end of the mountain.

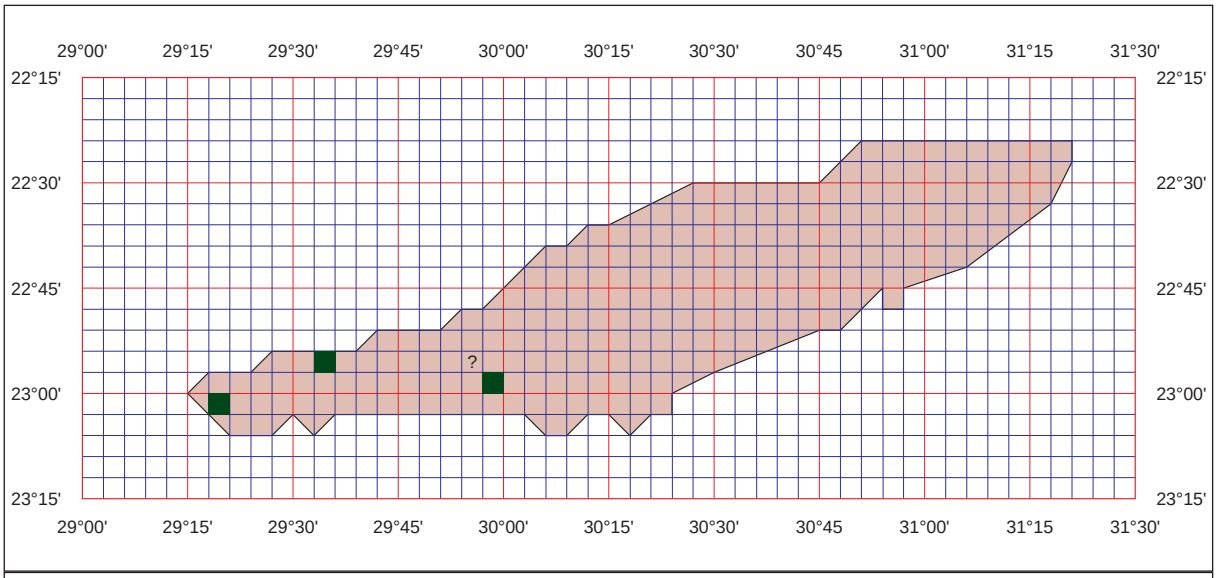


Figure 70: The known distribution of *H. nouhuysii* on the Soutpansberg. The square demarcated with a "?" refers to the type locality where the plant seem to have died out. Plot resolution equals to a $\frac{1}{20}$° grid.

Red data listing: Listed as *Endangered* by Hilton-Taylor (1996).

Threats: The type community at Wylie's Poort may be extinct (Figure 70 square marked with a ?). Factors that could have led to its demise are over collecting by succulent enthusiasts and natural factors such as drought. Natural pests observed affecting plants are black rot and the occasional pulling out of plants by animals. Populations are also affected by fire.

Uses: Collected as an ornamental plant by succulent enthusiasts.

Voucher specimens: 2229: Clydesdale, (–DD) *N. Hahn 611* (ZPB), Wylie's Poort, (–DD), *van Nouhuys* cult. Transvaal Mus. 30614 (PRE).

Literature reference: Leach (1988: p. 179–181), Letty (1962: p. 260, t. 129: 1), Lückhoff (1952: p. 205), Verdoorn (1931), White & Sloane (1937: p. 888–889).

Figure 71: Side view *H. nouhuysii flower* and developing flowers

Figure 72: Cut through of *H. nouhuysii* flower.

Huernia whitesloaneana Nel

in Cactus and Succulent Journal of the Cactus and Succulent Society of America 8(1): 9 (1936).

Type: South Africa, Limpopo Province, Soutpansberg, Entabeni Forest Station, 1 370 m, June 1935, *Nel s.n.* (STE).

Derivation: Named in honour of Messrs. Alain *White* and Boyd L. *Sloan*.

Description: Small succulent, branching from the base to form dense clumps (Figures 76), stems 30–50 × ∅ 8–12 mm, 4–5-angled, extensively toothed; teeth 3 mm long, deltoid, acute. *Inflorescence* umbellate, up to 5-flowered, basal on stem, pedicel 4–8 mm long; flowers developing successively. Sepals narrowly lanceolate, 5–6 mm long; *Corolla* tubular, campanulate, up to 15 × ∅ 12–22 mm (Figure 78), outside surface mottled purple-red except for the ribs, inside surface, smooth towards the base becoming densely papillate above; papillae soft purplish or spotted mucronate (Figure 77); lobes 3-nerved, with the median nerve being the most prominent; tube 8–9 × ∅ 9 mm; lobes deltoid, 5 mm long, acute, intermediate teeth 1 mm long. *Corona* outer, disc-like, appressed to the base of the corolla, 5-lobed, each lobe bifid purple; inner corona 4 × 0·75 mm. *Fruit* two smooth mottled follicles, lanceolate, up to 100 mm long (Figure 79). For flowering and fruiting periods see Figure 73.

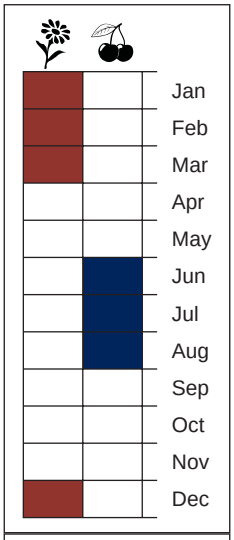


Figure 73.

Diagnostic features: Can generally be separated from the preceding species by its smaller growth habit and its small, tubular flowers.

Related taxa: This species falls in the greater *Huernia longituba* N. E. Br. group, but shows no close affinity to any species of the group. Leach (1988) classified the species in the series *Pauciangulosa* subseries *Australis* comprising eight taxa with the main centre of distribution being Zimbabwe.

Habitat: The species grows in xeric habitats in the wetter mist belt regions, in lithosols (Figure).

Global distribution: Occurring on both the Blouberg and the Soutpansberg.

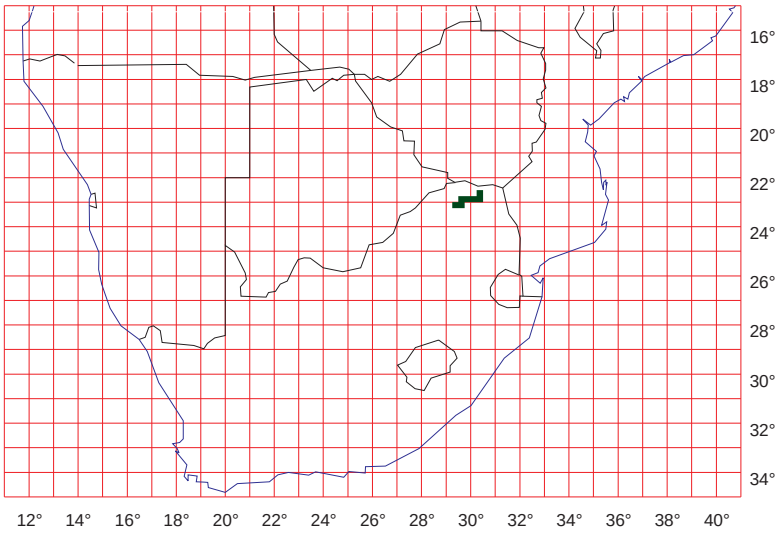


Figure 74: The known global distribution of *H. whitesloaneana*. Plot resolution equals to a ¼° grid.

Local distribution: Occurring across the mist-belt regions of the Soutpansberg.

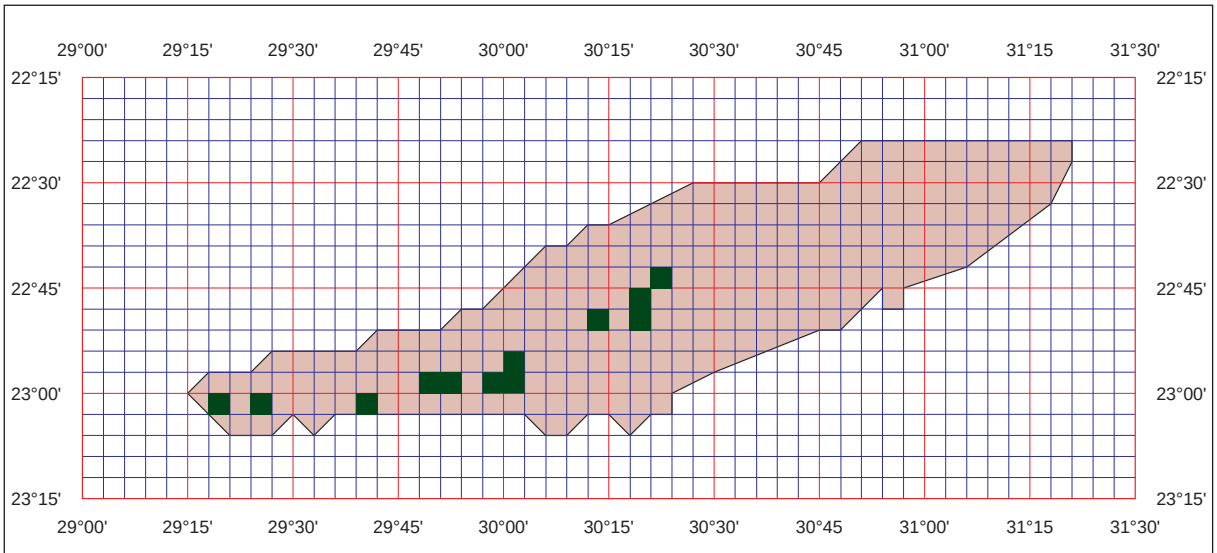


Figure 75: The known distribution of *H. whitesloaneana* on the Soutpansberg. Plot resolution equals to a $\frac{1}{20}$° grid.

Red data listing: Not listed by Hilton-Taylor (1996).

Voucher specimens: 2229: Clydesdale, (–DD), *N. Hahn 612* (ZPB); 2230: Fig Tree, (–CC), *N. Hahn 619* (ZPB), Entabeni, (–CD), *Taylor 2 514* (PRE).

Literature references: Dyer (1936), Nel (1936), Leach (1988: p. 71–73), Lückhoff (1952: p. 206), White & Sloane (1937: p. 1 172–1 173).

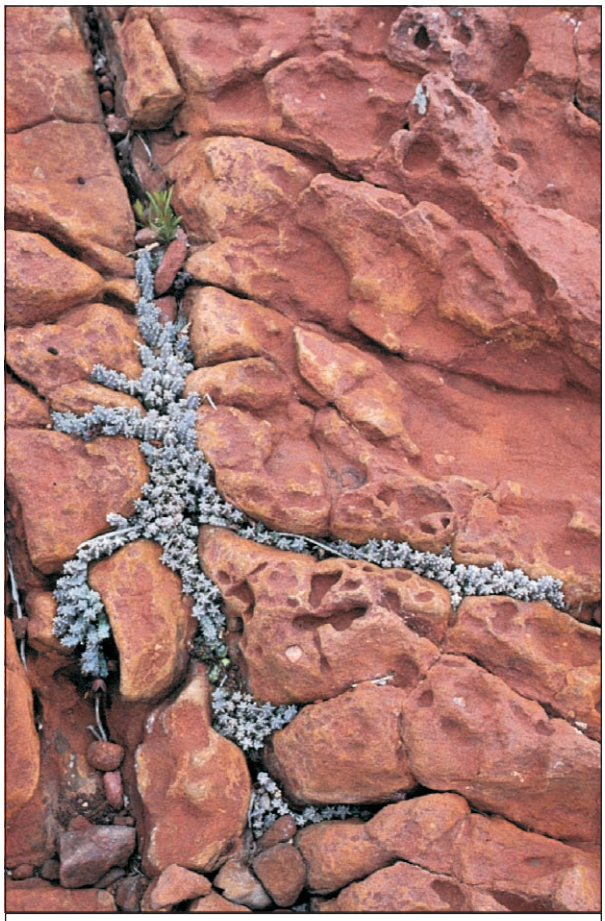


Figure 76: *H. whitesloaneana* typical growth habit.

Figure 77: Front view of *H. whitesloaneana*.

Figure 78: Side views of *H. whitesloaneana's* flowers.

Figure 79: *H. whitesloaneana* in fruit.

Orbeanthus Leach

Derivation: (*Orbea*, referring to the genus + Greek: αντθος, *anthos*, flower).

Taxa recorded within the Soutpansberg: *Orbeanthus conjunctus* (White & Sloane) Leach

Orbeanthus conjunctus (White & Sloane) Leach

in Excelsa Taxonomic Series no. 1: 73 (1978).

Type: South Africa, Limpopo Province, Soutpansberg, Mara, *A. H. Crundall* Comm. *H. Herre*; clonotype cult. PRE, *A. H. Crundall* (PRE).

Derivation: (Latin: *con*, join + *iunctus*, connect) referring to the corolla.

Basionym: *Stultitia conjuncta* White & Sloane in Cactus and Succulent Journal of America 10: 69 (1938). Type: as above.

Description: Succulent plant creeping along ground, occasionally hanging, *stems* 4-angled, 100–300 × ∅ 7–12 mm, grey-green mottled with a dark brown-green tinge, reddish yellow if exposed to excessive sunlight. *Inflorescence*: umbellate 1–2 flowered, at the base of young branches and between angles. *Sepals* lanceolate, up to 7 mm long. *Corolla* up to 30 × ∅ 25 mm, upper portion sub-urocelate, base campanulate, tube flesh coloured, base of tube maroon; tube about 20 mm across the mouth, widening to 25 mm in diameter and about 13. deep to the rim of the annulus; annulus 6–7 × ∅ 8 mm. *Corona* about 1 mm above base, *outer lobes* 4 mm long. For flowering period see Figure 80.

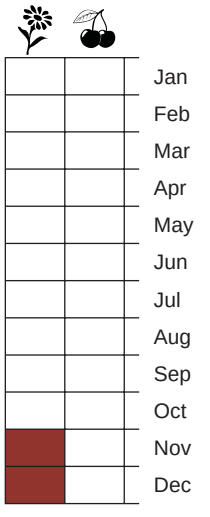


Figure 80.

Diagnostic features: Its growth habit is similar to some species of *Ceropegia* and to *Duvalia procumbens*, its mottled grey stems should aid in identification of sterile specimens.

Related taxa: *O. conjunctus* is most closely related *O. hardyi* (R. A. Dyer) Leach which occurs to the south of the Soutpansberg. It differs from *O. conjunctus* by its lime coloured flowers mottled with maroon dots, its corolla is fused for up to 6 mm and the lobes reflex completely.

Habitat: A procumbent succulent usually in humus-rich soils in closed woodland, also amongst rocks and grass clumps at altitudes above 1 400 m. This is an elusive succulent being difficult to locate amongst fallen leaves, rotten debris and roots.

Global distribution: Recorded from the Blouberg and Soutpansberg.

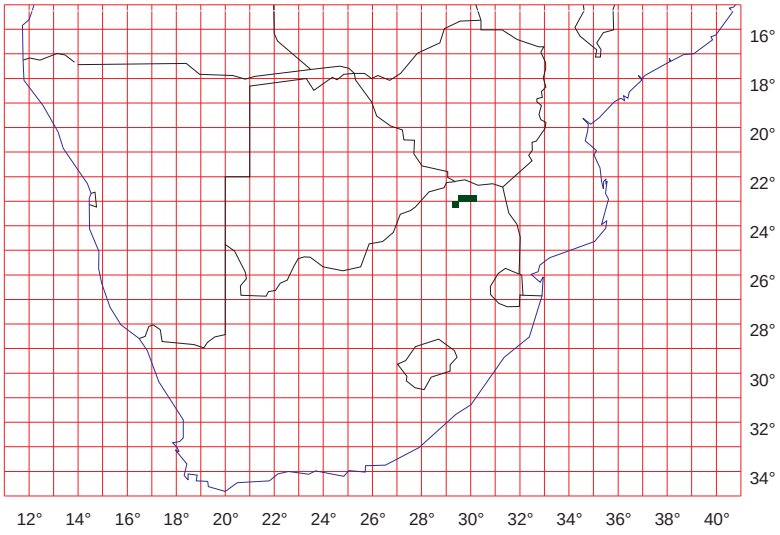


Figure 80: The known global distribution of *Orbeanthus conjunctus*. Plot resolution equals to a ¼° grid.

Local distribution: Western to the central Soutpansberg.

Biology: The plant reproduces vegetatively through fragmentation. In the years that I have been observing this plant, I have not once come across a fruit or seed or any component thereof.

Red data listing: Listed as *Vulnerable* by Hilton-Taylor (1996).

Threats: Plants are sensitive to trampling and flash foods which cause fracturing of plants. Habitat degradation and indiscriminate collecting are nonetheless its most severe threats. The community at Wylie's Poort is severely affected by collectors, with few plants remaining.

Uses: Collected as an ornamental plant by succulent enthusiasts.

Voucher specimens: 2229: Morningsun, (–DD), *N. Hahn 1111* (ZPB).

Literature reference: Dyer (1938 & 1942), Leach (1978: p. 71–74), White & Sloane (1936).

Figure 82: *O. conjunctus* in situ.

Figure 83: Front view of *O. conjunctus* flower.

Figure 84: Side view of *O. conjunctus* flower.

Figure 85: A cut through of *O. conjunctus* flower

Stapelia L.

Derivation: Named after: Bodaeus J. von *Stapel* (?–1636).

Taxa recorded in the Soutpansberg: *Stapelia clavicorona* I. Verd., *Stapelia gettliffei* R. Pott-Leend., *Stapelia gigantea* N. E. Br. and *Stapelia kwebensis* N. E. Br.

Stapelia clavicorona Verdoorn

in Flowering Plants of Southern Africa 11: plate 407 (1931).

Type: South Africa, Limpopo Province, Soutpansberg, Wylie's Poort, *Van Nouhuys s.n.* PRE 8 756 (PRE!).[4]

Derivation: (Latin: *clava*, the club of Hercules) referring to the inner corona being divided into two clavate lobes.

Description: Erect clumps usually with 1–10(–100) stems (Figure 91). *Stems* robust, 120–250 mm tall, 4-angled, velvety pubescent, strongly toothed, teeth ending with an up to 2 mm prominent thick white tip (Figure 87). *Inflorescence* flowering successively from a short peduncle; peduncle usually situated about midway up the stem, 6–7 × ∅ 3·5 mm; pedicel, pubescent; *sepal* lobes triangular, 5–6 × 2·5 mm, pubescent. *Corolla* (Figure 88& 90), ∅ 50–60 mm, outside velvety pubescent, inside glabrous with a few white hairs; disc and lobes transversely marked with purple-brown stripes; lobes broadly ovate, 16·5–17·5 × 15·5 mm, finely ciliate with white hairs. *Corona* raised on a 5-ribbed pedicel; outer lobes dark purple, 2-horned, *outer lobes* suberect, fleshy, almost black, 2·5 × 1·25 mm, *inner lobes* dark purple, 2-horned, inner horns 3

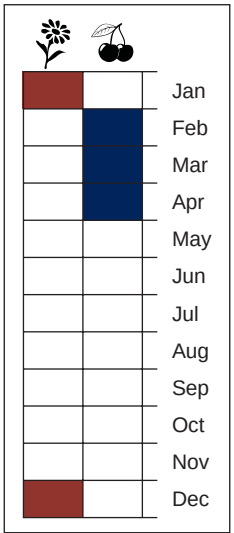


Figure 86.

4 Verdoorn (1931) and Leach (1985) site the type as *Van Nouhuys s.n.* PRE 9756, the accession number should be 8756.

Figure 87: *S. clavicorona's* stem

mm long, curved, clavate (Figure 88). *Fruit* a two-horned pubescent follicle. For flowering and fruiting periods see Figure 86.

Diagnostic features: Similar in growth form to *Stapelia gettliffei*, and *S. gigantea*, it is differentiated by its smaller flowers which are grey to white in colour and by its unique corona morphology.

Related taxa: None known! White & Sloane (1937: p. 417) place this species under their section Clavirostres stating the following common features for the four species within this section, corolla has no annulus and the inner corona lobes are formed of two clavate horns. At present *S. clavicorona* is the only species within the section still upheld under genus *Stapelia*, two are now placed under *Tridentea* Haw. and one under *Tromotriche* Haw. Leach (1985) in his revision of the genus *Stapelia* abandoned all subgeneric classification. He states that *S. clavicorona* conforms in most of its characteristics to the generic circumscription but is not closely related to any other species within the genus. On page 76 he goes on to mention that the clavate inner corona-lobes are reminiscent of *Tridentea herrei* (Nel) Leach, a rare Richtersveld endemic.

Habitat: The plant grows in a variety of habitats, favouring drier regions along the central ridges of the mountain range. The plant grows in soils derived from quartzite.

Global distribution: Endemic to the Soutpansberg, sporadic from the Nzhelele Dam west to the Sand River.

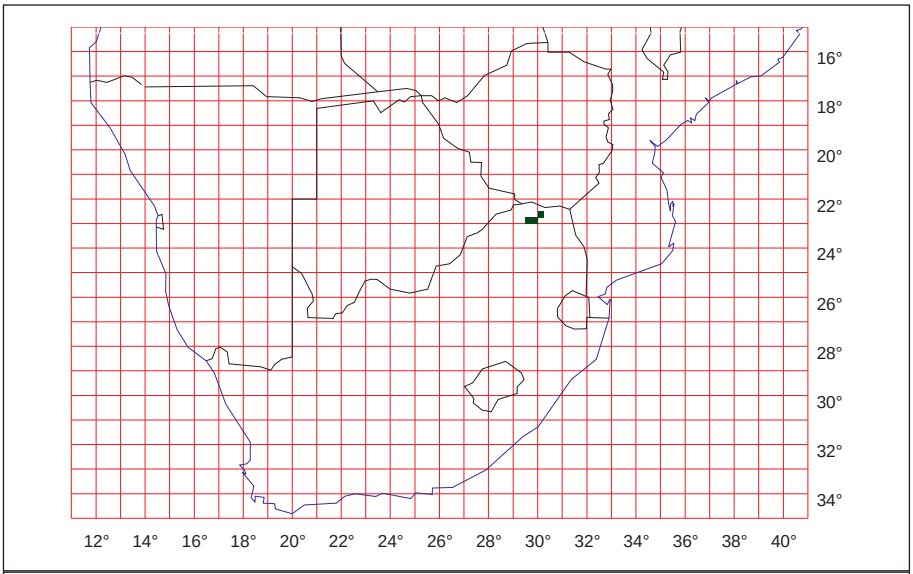


Figure 89: The known global distribution of *S. clavicorona*. Plot resolution equals to a ¼° grid.

Red data listing: Listed as *Vulnerable* by Hilton-Taylor (1996).

Figure 88: *S. clavicorona* yellow flower.

Threats: The type community at Wylie's Poort has been severely depleted by over-collecting and possibly by natural factors. The plants are adversely affected by black rot and sometimes pulled out by animals. Habitat degradation and over-grazing have led to the demise of at least one known population. There has also been an observed decline in the number of plants in some communities as a result of drought.

Uses: Used as an ornamental plant by succulent enthusiasts.

Voucher specimens: 2229: Wylie's Poort, (–DD), *Van Nouhuys s.n.* in PRE 9756 [8756] (PRE, type).

Literature references: Leach (1985: p. 76–78), Lückhoff (1952: p. 103, 148 & 149), Verdoorn (1931a), White & Sloan (1937: p. 642–643).

Figure 90: Flowers of *S. clavicorona* being visited by flies.

Figure 91: *S. clavicorona* in situ.

Tylophora R. Br.

Derivation: (Greek: τυλος, *tylos*, a knot + φορα, *phora*, carrying) referring to the corona being composed of five tubercles.

Taxa recorded within the Soutpansberg: *Tylophora coddii* Bullock and *Tylophora flanaganii* Schltr.

Tylophora coddii Bullock

in Flowering Plants of Africa 36: plate 1435 (1964).

Type: South Africa, Limpopo Province, Soutpansberg, south end of Wylie's Poort on dry rocky slopes at 1050 m, January 1954, *L. E. Codd 8350* (PRE, holo.!; K, iso.).

Derivation: Named After: *Codd*, Leslie Edward Wostall (1908–1999).

Description: Shrublets up to 550 mm tall (Figure 94), erect with glabrous branches (*pers. obs.*), stems occasionally decumbent, freely rooting from the base. *Leaves* simple, opposite, lanceolate, up to 35 × 60 mm; apex acute to subacute; base cuneate; upper and lower surfaces green, glabrous. *Inflorescence* few-flowered, axillary cymes; peduncles up to 10 mm long; pedicel 0–8 mm long. *Calyx* lobes triangular-lanceolate, about 1 mm long. *Corolla* contorted, tube short, lobes about 6–7 × 2 mm, triangular-lanceolate, usually light maroon (Figures 97, 96& 98), base blood-red, occasionally yellowish green. *Gynostegium* green, flat-topped, pentagonal. *Corona-lobes* with minute fleshy tubercles. *Pollinia* erect in the anther-thecae, with translators. *Fruit* one or two horned smooth follicle, lanceolate, 30–45 × ∅ 5 mm (Figure 95), tapering to the apex. For flowering and fruiting periods see Figure 92.

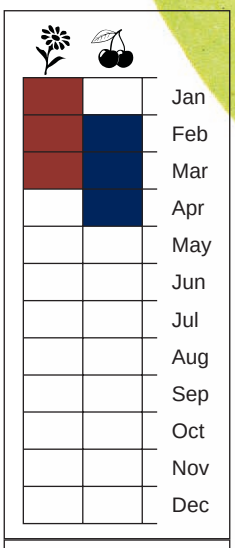


Figure 92.

Taxonomic notes: Well defined taxon.

Related taxa: The plant is most closely related to *Tylophora fleckii* (Schltr.) N. E. Br. occurring in Namibia. *Tylophora coddii* is similar in appearance to *T. fleckii* but is not puberulous and has leaves which exceed 15 mm in length.

Habitat: The species has been found from the dry central ridges of the mountain up to the mist-belt where it occurs along exposed rock strata, growing in fissures and shallow soil pockets.

Global distribution: Recorded on the Soutpansberg from 29° 20" to 30° 05" east longitude at an altitude above 1 000 m, also occurring on the Blouberg.

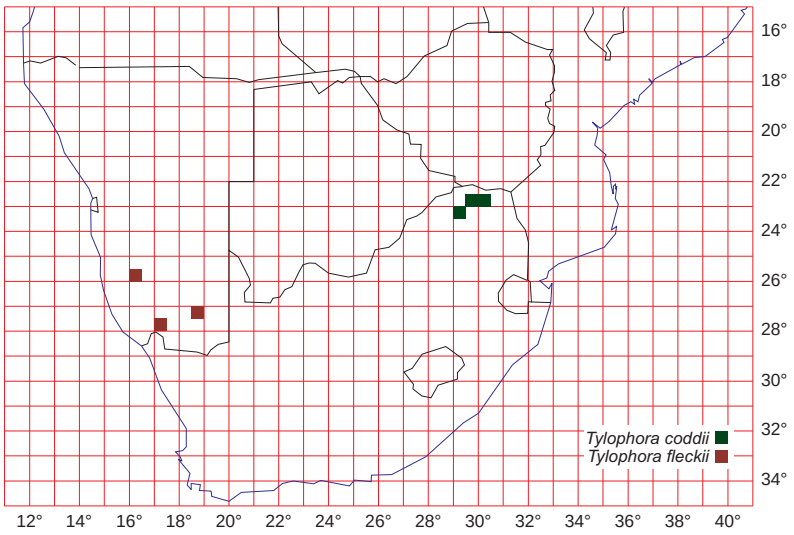


Figure 93: The known global distribution of *T. coddii* and it nearest ally. Plot resolution equals to a ½° grid. Distribution data for *T. fleckii* obtained from PRE.

Red data listing: Not listed by Hilton-Taylor (1996).

Voucher specimens: 2229: Ladismit, (–DC), *N. Hahn 1371* (ZPB); Wylie's Poort, (–DD), *L. E. Codd 8 350* (PRE, holotype), LaRoch, (–DD), *N. Hahn 1389* (ZPB). 2230: Studerholm, (–CC), *N. Hahn 1129* (ZPB) & *N. Hahn 1396* (ZPB).

Literature reference: Bullock (1964).

Figure 94: *T.coddii* in situ.

Figure 95: *T. coddii* in fruit.

Figure 97: Light coloured flower of *T. coddii*.

Figure 96: Dark coloured flower of *T. coddii*.

Figure 98: Typical flower colour of *T. coddii*.

Asphodelaceae

Aloe L.

Taxa recorded in the Soutpansberg: *A. aculeata* Pole-Evans, *A. angelica* Pole-Evans, *A. arborescens* Mill., *A. chabaudii* Schönland var. *chabaudii*, *A. cryptopoda* Bak., *A. excelsa* A. Berger, *A. globuligemma* Pole-Evans, *A. greatheadii* Schönland var. *greatheadii*, *A. littoralis* Baker, *A. lutescens* Groenew. *A. maculata* Medic., *A. marlothii* Ber. subsp. *marlothii*, *A. petrophila* Pillans, *A. pretoriensis* Pole Evans, *A. sessiliflora* Pole-Evans, *A. soutpansbergensis* I. Verdoorn, *A. swynnertonii* Rendle, *A. vogtsii* Reynolds, *A. vossii* Reynolds and *A. zebrina* Baker

Aloe angelica Pole Evans

in Flowering Plants of South Africa 14: plate 554 (1934).

Type: South Africa, Limpopo Province, Soutpansberg, Wylie's Poort, 16 June 1932, *Pole Evans s.n. sub* PRE 13040 (PRE, holo.!).

Derivation: Named in honour of: *Angelique* Wallace.

Common Names: **Afrikaans**: Wyliespoortaalwyn; **English**: Wylie's Poort aloe

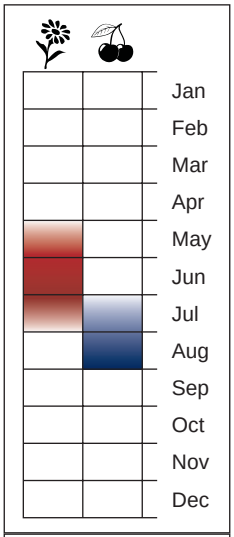


Figure 100.


Figure 99: *A. angelica's* leaf.

Description: Plants usually single-stemmed, up to 4 m tall (Figure 103). *Leaves* succulent, simple, alternate, forming dense apical rosettes, older leaves recurved, becoming marcescent, ensiform tapering towards the apex, up to 800 × 150 mm, margins with reddish teeth (Figure 99); upper surface canaliculate, greenish in summer, brownish-red in winter or drought. *Panicle* much branched racemes, up to 20; bracts acutely ovate, 8–10 × 8–10 mm, 3-nerved, pedicels 25 mm long. *Perianth* initially orange-red to red, becoming yellow to yel-

low-green (Figure 101 & 102), broadly cylindric-trigonous, 25 mm long, mouth slightly up turned. *Stamen* exserted, *anthers* 3 inner and 3 outer exserted 15 mm. *Styles* up to 15 mm long. *Capsule* woody splitting in three at maturity. For flowering and fruiting periods see Figure 100.

Diagnostic features: *A. angelica* can be distinguished from all other Soutpansberg aloes by its strongly recurved leaves, which almost touch the stem. In flower and fruit it can be identified by it's much branched inflorescence of dense bicoloured racemes.

Figure 101: *A. angelica* inflorescence.

Figure 102: Various stages of *A. angelica's* flowers.

Figure 103: *A. angelica* in habit.

Taxonomic notes: Taxonomically distinct, not closely related to any other *Aloe*, Reynolds (1951) placed it in a separate group within the section *Pachydendron.*

Related taxa: This plant is similar in habit to *Aloe thraskii* Bak. which occurs on the coastal dunes of Transkei and KwaZulu-Natal, but differs in flower structure.

Habitat: *A. angelica* occurs in drier regions of the mountain where it can form very large populations. The plant grows in soils derived from quartzite, along boulder strewn slopes and in rock fissures (Figure 106).

Global distribution: Occurring on the Blouberg and Soutpansberg.

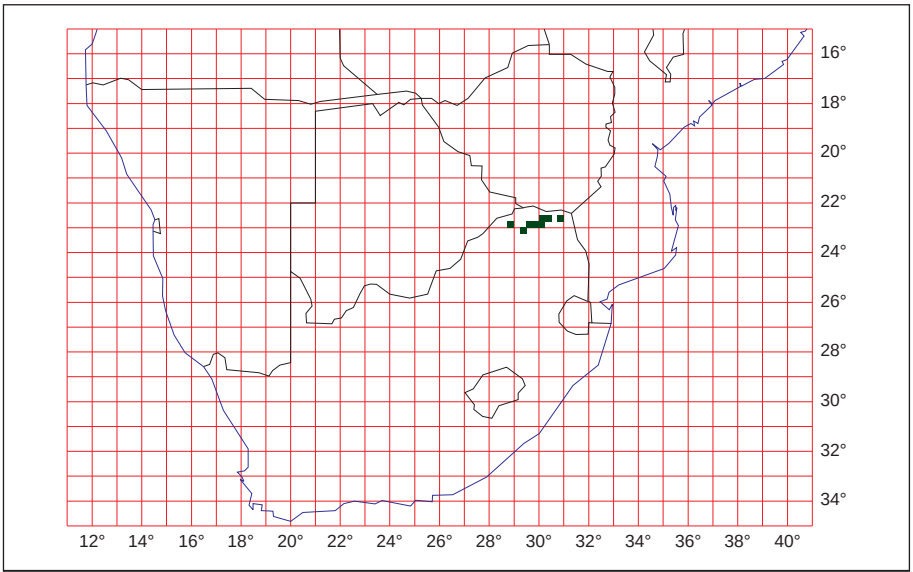


Figure 104: The known global distribution of *A. angelica*. Plot resolution equals to a ¼° grid.

Local distribution: Recorded throughout the Soutpansberg range from the western extremities of the mountain up to the Kruger National Park.

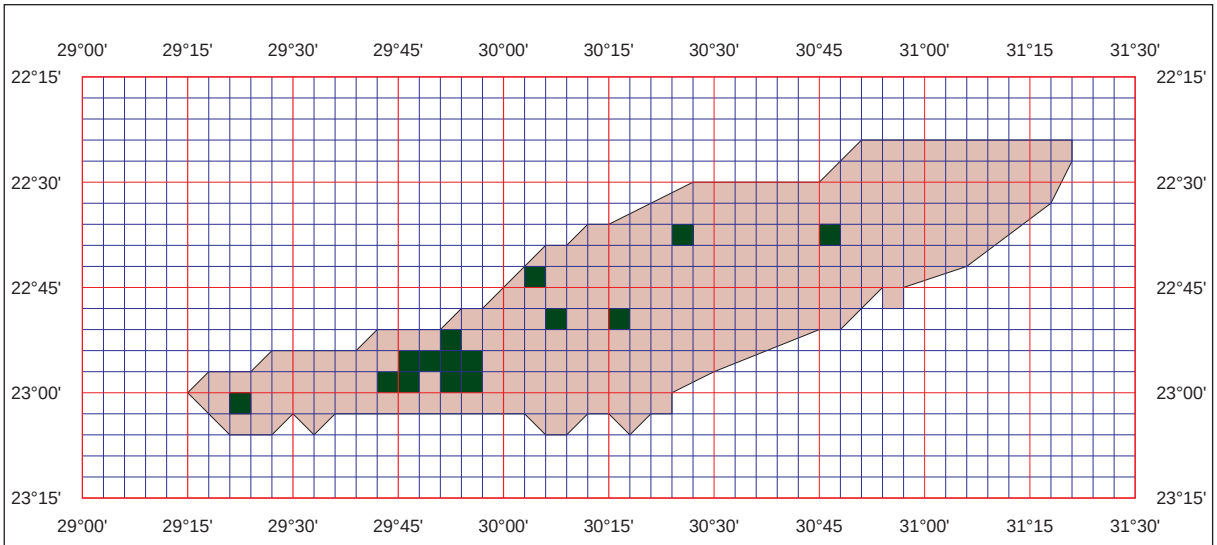


Figure 105: The known distribution of *Aloe angelica* on the Soutpansberg. Plot resolution equals to a $\frac{1}{20}$° grid.

Figure 107: *Aloe angelica* × *A. marlothii* var. *marlothii* hybrid.

Biology: Plants only flower in favourable years.

Red data listing: Listed as *Not Threatened* by Hilton-Taylor (1996).

Threats: *Papio ursinus griseipes* have been observed destroying the growth tips and inflorescences but the impact is negligible.

Natural hybrids: × *Aloe globuligemma*, × *Aloe marlothii* var. *marlothii* (Figure 107) and × *Aloe sessiliflora*

Voucher specimens: 2229: Morningsun (–DD), *N. Hahn 530* (ZPB) & Wylie's Poort, (–DD), *Pole Evans s.n. sub* PRE 13040 (PRE, holotype).

Literature references: Jeppe (1969: p. 36), Pole Evans (1934), Reynolds (1950: p. 470–472), van Wyk & Smith (1996: p. 46).

Figure 106: Typical habitat of *A. angelica*.

Aloe petrophila Pillans

in South African Gardening & Country Life 23: 213 (1933).

Type: South Africa, Limpopo Province, Soutpansberg, Wylie's Poort, rock-cliffs, flowered in cultivation May 1933, *P. R. Frames* (PRE, holo.!).

Figure 108: *A. petrophila's* flower.

Derivation: (Greek: πετρα, *petra*, rock + φιλος, *philos*, loving) referring to its habitat preference, occurring on cliffs.

Description: Caespitose, stem 0–80 mm (Figure 110). *Leaves* succulent, forming a dense rosette, slightly recurved apically; lamina oblong-lanceolate, 200–250 × 50–60 mm and up to 10 mm thick, apex acuminate, margins with dark brown teeth; upper surface flat basally, slightly concave apically, bright green, maculation elongated "H"-shaped and linear, whitish; lower surface slightly convex, pale green, with green specks and linear green lines. *Panicle* 500–800 mm tall, 20–30 -flowered, peduncle 13 mm thick at base, reddish-green, branching midway, branches 3–6,flowers apical, bracts lanceolate, 7 mm long, 3–5 nerved, pedicel up to 15 mm. *Perianth* 28 × ∅ 7 mm, basal swelling sub-globose (Figure 108), basal constriction 4 mm, dull pink with greenish white longitudinal nerves. *Capsule* splitting in three at maturity.

Diagnostic features: Within the Soutpansberg *A. petrophila* is most closely related to *A. swynnertonii*, differing from the latter in its ability to sucker, forming dense clumps as opposed to growing singly. It can further be distinguished from *A. swynnertonii* by its pale pink flowers and its smaller size. *A. swynnertonii* has long leaves lying on the ground whereas *A. petrophila* has short rigid leaves.

Taxonomic notes: Uncertainty exists as to the affinity between *A. petrophila*, *A. swynnertonii* and *A. vogtsii* as intermediate forms between the three have been found.

Related taxa: *A. swynnertonii*, *A. branddraaiensis* Groenewald and *A. vogtsii*.

Habitat: This species is associated with rocky areas where it grows on rock ledges or in fissures (Figure 110).

Global distribution: Endemic to the Soutpansberg, said to occur on the Blouberg. The plants occurring to the east of Wylie's Poort start grading into *A. swynnertonii* and *A. vogtsii* whereby the plants found on the western high attitude mistbelt regions all conform to *A. maculata* rather than *A. petrophila*.

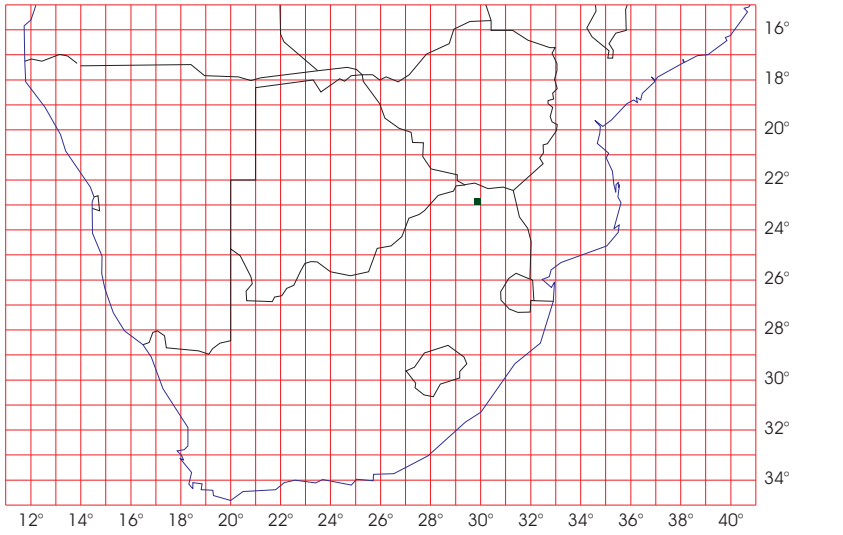


Figure 109: The known distribution of pure *A. petrophila*. Plot resolution equals to a ¼°

Local distribution: Known from a few isolated populations around Wylie's Poort.

Biology: The plant's size varies in proportion to the availability of nutrients and water. Populations growing next to a waterfall on the farm Zwarthoek compare in size to those of *A. vogtsii*.

Red data listing: Listed as *Rare* by Hilton-Taylor (1996).

Threats: In Wylie's Poort most accessible plants have been removed by collectors. Rock falls and baboons occasionally manage to dislodge some plants, which seldom survive. Prolonged droughts also adversely affect populations.

Figure 110: *A. petrophila* habit.

Natural hybrids: × *A. swynnertonii*, × *A. vogtsii*.

Uses: Collected as an ornamental plant by succulent enthusiasts.

Voucher specimens: 2229: Little Leigh (–DD), *N. Hahn 117* (ZPB), Wylie's Poort, (–DD), *N. Hahn 1673* (ZPB) & *P. R. Frames* (PRE type).

Literature reference: Jeppe (1969: p. 83), Letty (1934), Pillans (1933), Reynolds (1950: p. 217–219), van Wyk & Smith (1996: p. 214)[1].

1 The plant depicted in habitat is a good representation of the species, but the close up of the inflorescence seems dubious and could well represent one of the intermediates mentioned.

Aloe soutpansbergensis Verdoorn

in Flowering Plants of Africa 35: plate 1391 (1962).

Type: South Africa, Limpopo Province, Soutpansberg, 56 km west of Louis Trichardt, 1942, *A. H. Crundall s.n.* in PRE 27035 (= PRE 29005) (PRE, holo.!)[2].

Derivation: Named after the *Soutpansberg*.

Description: Solitary or suckering into clumps, stems 50 × ∅ 8 mm (Figure 116). *Leaves* succulent, rosulate, up to 7, linear; 250 × 10 × 3·5 mm, upper surface canaliculate, obscurely maculate; lower surface conspicuously maculate especially near the base, marginal teeth sparse, translucent, deltoid, 500 µm long. *Raceme* lax, flowers 8 or more (Figure 113); peduncle 200 × ∅ 3–4 mm; sterile bracts 4–6, scarious, red-veined; floral bracts, deltoid, 17 × 10 mm, base 5 mm, scarious red-veined. *Perianth* apricot-orange, pedicel 25 mm long, cylindrical, trigonous, 27 × ∅ 7 mm at the base, narrowing towards the apex. Stamens slightly exserted. *Capsule* woody 20 mm long, splitting in three at maturity. For flowering and fruiting periods see Figure 111.

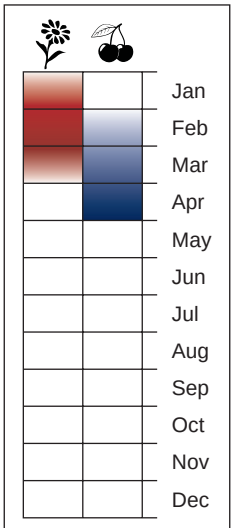


Figure 111.

Diagnostic features: Two grass aloes occur in the Soutpansberg. This species can readily be distinguished from *A. vossii* by its pendulous growth habit, smaller overall size and its different floral structure.

2 Glen & Hardy (1991) indicate that Verdoorn's (1962), type citation, *Crundall s.n.* PRE 29005 is incorrect. The only specimen in PRE is, *Crundall s.n.* PRE 27035. It was then found that in the 20 years from the discovery of the species to its final description that it had been accessioned twice in the PRE register.

Figure 113: *A. soutpansbergensis* inflorescence.

Related taxa: *Aloe soutpansbergensis* is most closely related to *Aloe thompsoniae* Groenewald occurring in the Wolkberg. Within the Soutpansberg, *Aloe soutpansbergensis* is most closely related to *A. vossii,* which is allopatric.

Habitat: A beautiful little grass *Aloe* known from the western parts of the mountain where it grows in clumps among sedges and moss on slopes ranging from 45° to vertical (Figure 115). There seems to be a close association between its distribution, the steep southern cliffs and the mist belt. This mesophytic species seems to be dependent on mist and is associated with spongy vegetation from which it can derive moisture. The western limit of *A. vossii* is the eastern limit of *A. soutpansbergensis*.

Global distribution: Endemic to the Soutpansberg.

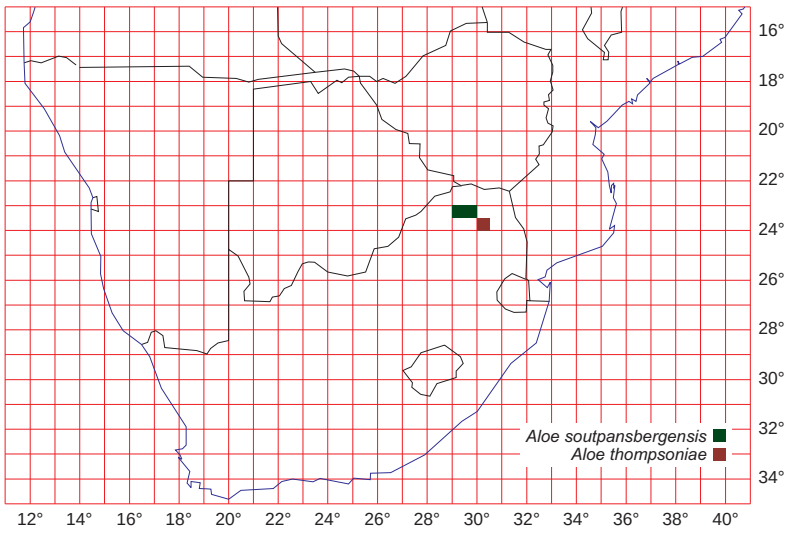


Figure 112: The known distribution of *A. soutpansbergensis*. Plot resolution equals to a ¼° grid.Distribution data for *A. thompsoniae* obtained from PRE and van Wyk & Smith (1996).

Local distribution: Occurring on the south-facing cliffs from west of Hanglip to Lejuma.

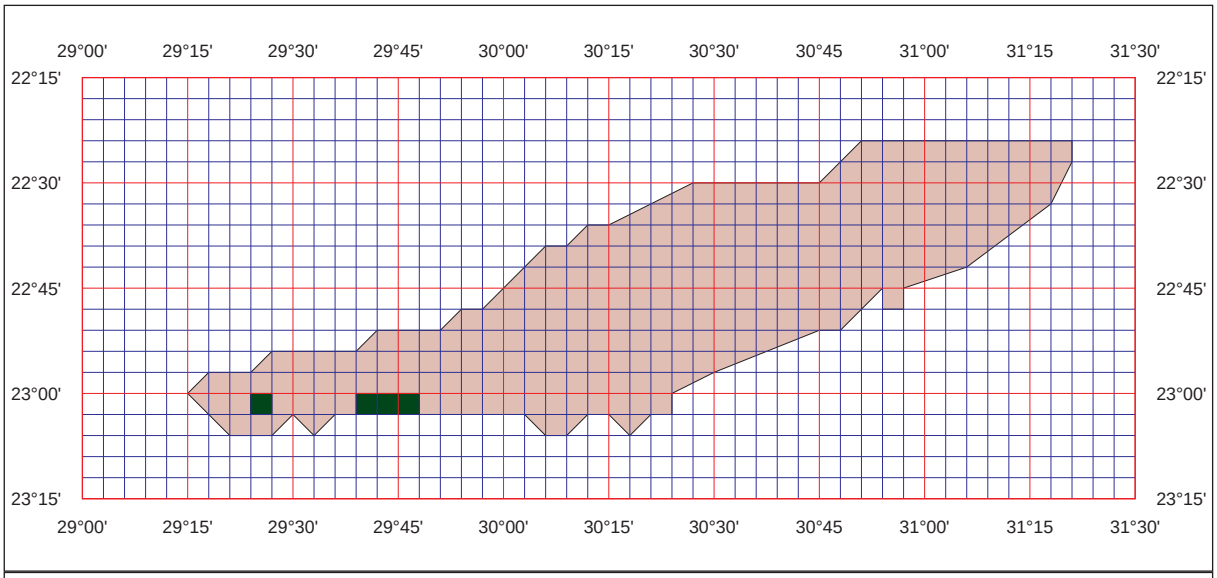


Figure 114: The known distribution of *A. soutpansbergensis* on the Soutpansberg. Plot resolution equals to a $\frac{1}{20}$° grid.

Red data listing: Listed as *Rare* by Hilton-Taylor (1996).

Threats: Indiscriminate collecting could affect accessible populations. The plant is capable of surviving severe droughts and fires. Baboons occasionally uproot specimens.

Uses: Collected as an ornamental plant by succulent enthusiasts.

Voucher specimens: 2329: 56 km west of Louis Trichardt, (–AB), *A. H. Crundall s.n. in PRE 27035 (= PRE 29005)* (PRE, holotype); Happy Rest, (–BB), *N. Hahn 1088* (ZPB).

Literature reference: Glen & Hardy (1991), Jeppe (1969: p. 120), van Wyk & Smith (1996: p. 290), Verdoorn (1962).

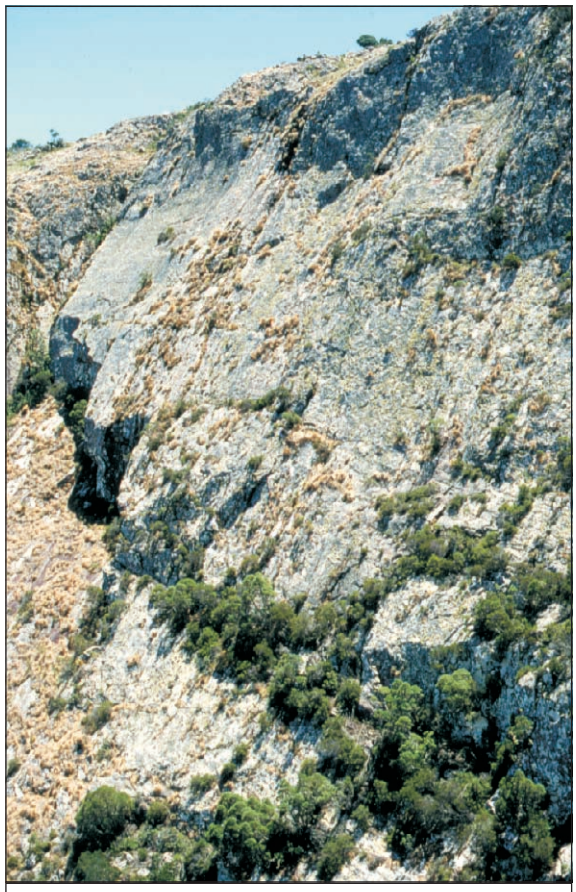


Figure 115: Habitat of *A. soutpansbergensis*.

Figure 116: *A. soutpansbergensis*.

Aloe vogtsii Reynolds

in Journal of South African Botany 2: 11 (1936).

Type: South Africa, Limpopo Province, Soutpansberg, farm Franzhoek [Clydesdale][3], 16 km north-east of Louis Trichardt, *L.E. Vogts sub. Reynolds 1488* (PRE, holo.!).

Figure 117: *A. vogtsii* flowers and fruit.

Derivation: Named after: Louis R. *Vogts*.

Description: Shortly caulescent, stems up to 200 mm long (Figure 122). *Leaves* 16–20, succulent, forming a dense rosette; lamina 200–250 × 50–60 mm, canaliculate, lanceolate-attenuate, erect to recurved; apex pungent; margins with light brown teeth; upper surface bright green, with scattered elongated almost "H"-shaped white markings; lower surface, pale green, with dark green specks and linear whitish lines. *Panicles* up to 600 mm tall, branches up to 7 in the upper half; racemes usually sub-lax, 30–40-flowered, up to 200 × ∅ 80 mm; bracts ovate-acuminate, 10–15 mm long, ± 9 nerved; pedicel up to 18 mm long. *Perianth* 35 × ∅ 9 mm, base sub-globose, constricted above the ovary to ∅ 5 mm, varying from yellow (Figure 119), pink, deep orange (Figure 117) to red . *Capsule* woody splitting in three at maturity.

3 The type locality is stated as the farm Franzhoek. This is believed to be an error based on the following observations: The greater part of the farm Franzhoek occurs outside the mist belt. All regions of the farm which occur in the mist belt border the farm Clydesdale. *Aloe vossii* is said to occur at the type locality which was not found in this region. Both *A. vogtsii* and *A. vossii* occur on the adjacent north-eastern sector of the farm Clydesdale.

Figure 119: Yellow flowering form of *A. vogtsii.*

Diagnostic features: *Aloe petrophila* and *A. swynnertonii* can be distinguished from *A. vogtsii* by their shorter capitate racemes.

Taxonomic notes: Those plants observed flowering early in the season conform well with the typical. These populations occur mainly in the central regions. Later flowering specimens appear to introgress with *A. swynnertonii* and *A. petrophila*. Some plants also show gradations towards *A. greatheadii.* Uncertainty exists about the alliance between *A. petrophila*, *A. swynnertonii* and *A. vogtsii*. In their pure states the three are morphologically related, but occupy different ecological niches.

Related taxa: Morphologically most similar to *Aloe lateritia* Engler occurring in Tanzania, Kenya, Uganda, Rwanda and the Congo (Reynolds 1966).

Habitat: Plants occur on sandy quartzitic soils in grassland and among bushes in the mist-belt (Figure 121).

Global distribution: From the Blouberg and throughout most of the Soutpansberg.

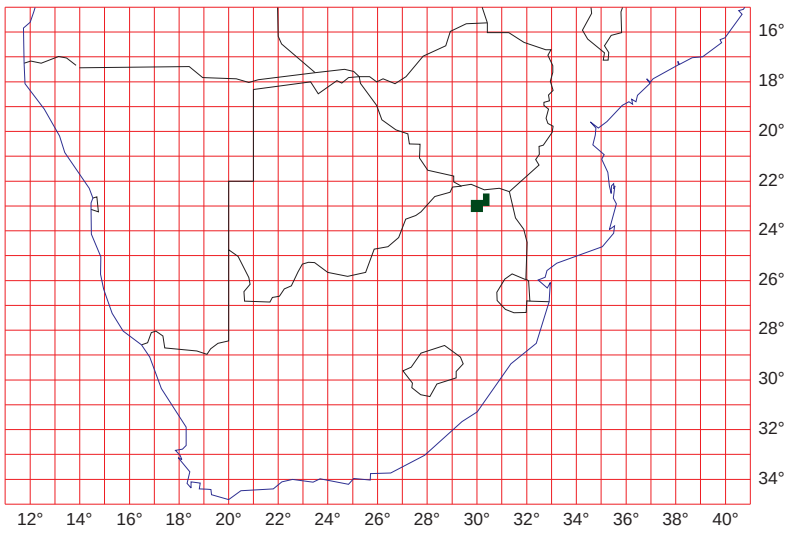


Figure 118: The known distribution of *A. vogtsii.* Plot resolution equals to a ¼° grid.

Local distribution: This is the most common of the endemic aloes.

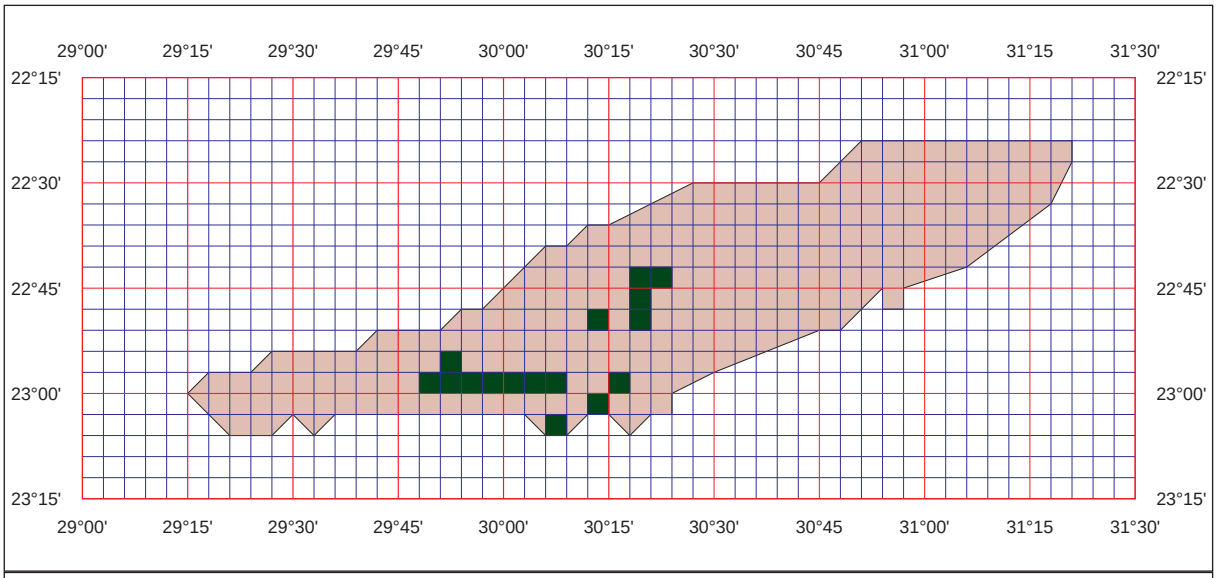


Figure 120: The known distribution of *A. vogtsii* on the Soutpansberg. Plot resolution equals to a $\frac{1}{20}°$ grid.

Red data listing: Not listed by Hilton-Taylor (1996).

Natural hybrids: × *A. arborescens*, × *A. petrophila*, × *A. swynnertonii*, × *Aloe vossii*

Voucher specimens: 2229: Zwarthoek, (–DD), *N. Hahn 86* (UNIN, ZPB), farm Franzhoek, *L.E. Vogts sub. Reynolds 1488* (PRE, holotype).

Literature reference: Jeppe (1969: p. 85), Reynolds (1936a; 1950: p. 257–258 & 1966: p. 95–99), van Wyk & Smith (1996: p. 230–231)[4].

4 Both illustrations given are atypical in nature. The top figure illustrates a plant most similar to those found on the Blouberg and western Soutpansberg. These plants are intermediate between *A. petrophila* and *A. vogtsii*. The lower illustration could possibly be a plant from the eastern sectors which shows intermediated similarities between *A. petrophila*, *A. swynnertonii* and *A. vogtsii*.

Figure 121*: A. vogtsii* flowering in habit.

Figure 122: Typical flowering colour of *A. vogtsii*.

Aloe vossii Reynolds

in Journal of South African Botany 2: 65 (1936).

Type: South Africa, Limpopo Province, Soutpansberg, farm Schyffontein, 8 km north of Louis Trichardt, fl. 12 February 1936, in Johannesburg, *Reynolds 557* (PRE, holo.!).

Derivation: Named after Mr. Harold *Voss*.

Description: Succulent, sessile or occasionally caulescent, solitary (Figure 129) or in clumps (Figure 126). *Leaves* succulent, 14–20, up to 500 × 30 mm; upper surface concave becoming canaliculate at the apex, green with scattered elongated white spots; lower surface convex, with predominantly raised white markings at the base, occasionally spinescent. *Inflorescence* simple, up to 500 mm tall, raceme capitate, up to 80 × ∅ 70 mm, slightly conical, buds densely congested, becoming lax after anthesis; peduncle terete ∅ 80–100 mm; bracts ovate-acute, 16 × 11 mm, clasping; pedicel 30 mm. *Perianth* scarlet-orange, 28 × ∅ 8–9 mm (Figure 124), trigonous in outline, narrowing towards apex, base rounded; outer segments, inconspicuously nerved, apex greenish; inner segments free, with white margins, apex greenish. *Capsule* woody splitting in three at maturity, 18 × ∅ 8–9 mm. For flowering and fruiting periods see Figure 123.

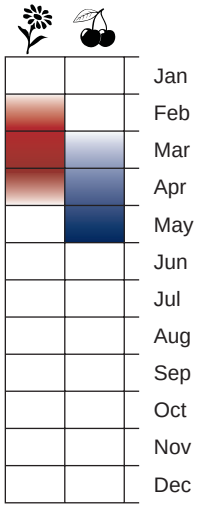


Figure 123.

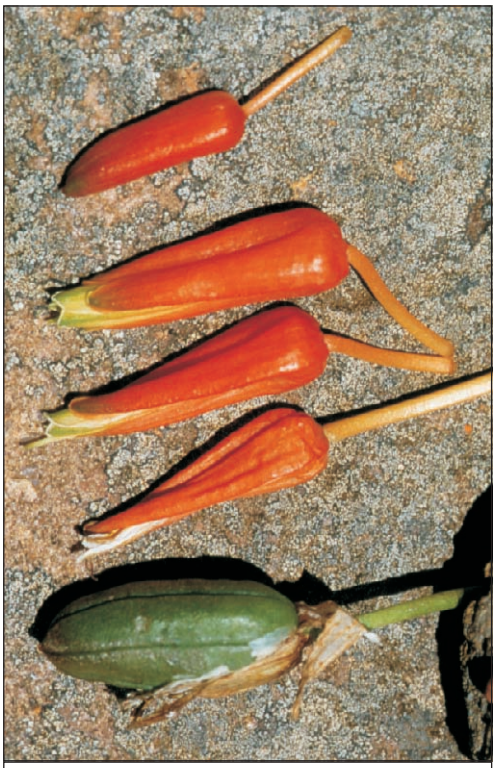


Figure 124: *Aloe vossii's* flowers and fruit.

Diagnostic features: *Aloe soutpansbergensis* is the only other grass *Aloe* known to occur on the Soutpansberg. *Aloe soutpansbergensis* is a caulescent small allopatric succulent occupying a totally different

habitat, occurring towards the west of the range whereas *A. vossii* occurs towards the southern central ridges of the range.

Taxonomic notes: Within the context of the Soutpansberg this taxon is well defined. Possible intermediates of *Aloe vossii* and *A. verecunda* Pole Evans have been observed at Haenertsburg (*pers. obs.*).

Related taxa: *Aloe vossii* is most closely related to *A. verecunda*.

Habitat: An attractive, but cryptic grass *Aloe* growing in grassland (Figure 128) and among shrubbery on the high mountain plateau. If not damaged, plants are solitary. However, because of their brittle nature, plants tends to break very easily and coppice (Figure 126). When this process continues, large clumps are formed.

Figure 126: Large clump of *A. vossii*.

Global distribution: Endemic to the cental southern regions of the Soutpansberg.

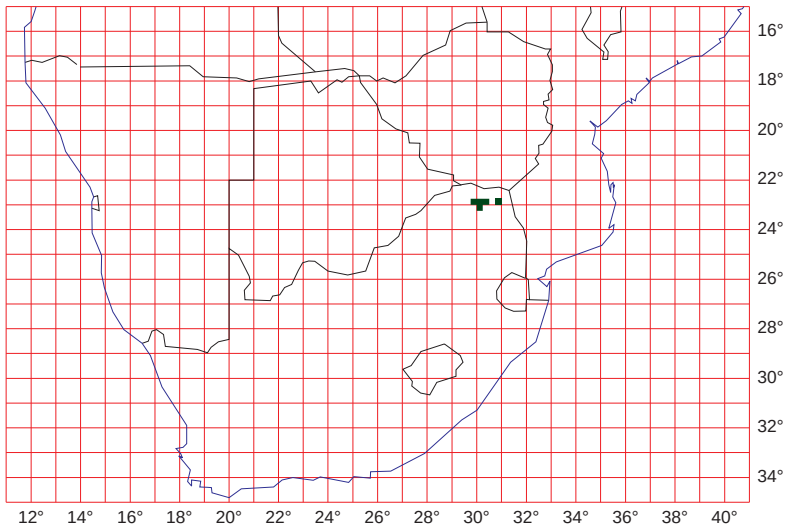


Figure 125: The known distribution of *A. vossii*. Plot resolution equals to a ¼° grid.

Local distribution: Occurring in a narrow strip along on the southern edge of the range.

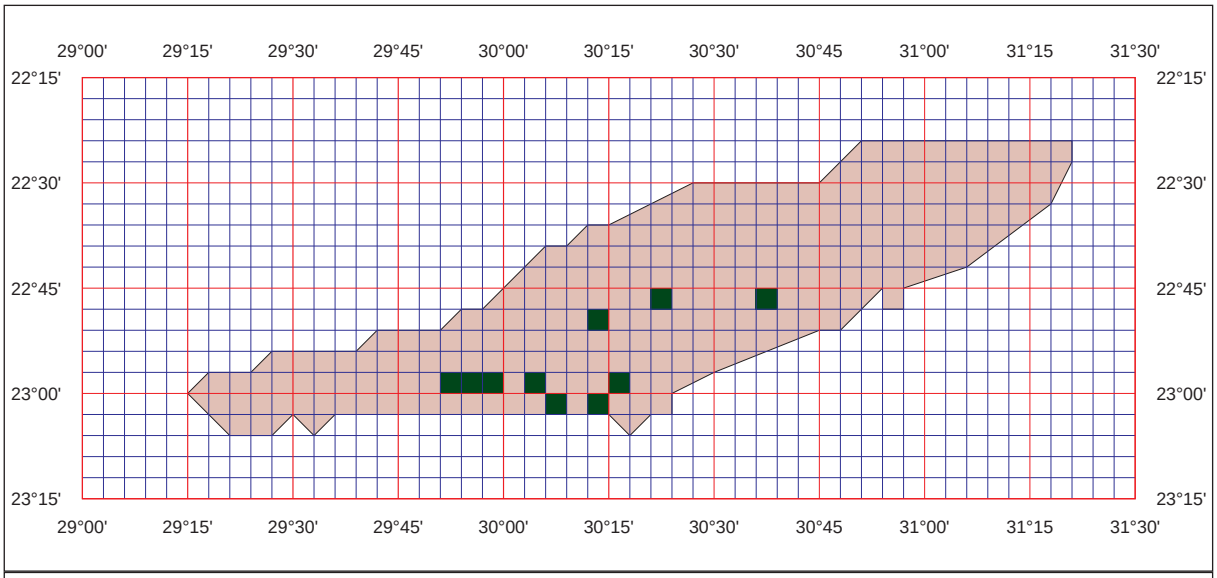


Figure 127: The known distribution of *A. vossii* on the Soutpansberg. Plot resolution equals to a $\frac{1}{20}°$ grid.

Red data listing: Listed as *Rare* by Hilton-Taylor (1996).

Threats: This species has been observed in degraded habitats where bush encroachment is evident. Along a fire break at the Entabeni Forest Area, a community has managed to survive successive annual burning followed by grazing by cattle. Taking into account the present distribution of the species and its habitat preference one can be certain that the planting of commercial timber plantations and bush encroachment have seriously affected populations (Figure 32). Indiscriminate collecting of this plant by succulent enthusiasts has led to the extermination of certain populations.

Natural hybrids: × *Aloe vogtsii*

Uses: Collected as an ornamental plant by succulent enthusiasts.

Voucher specimens: 2229: Hanglip, (–DD), *N. Hahn 336* (ZPB), farm Clydesdale, (–DD), *N. Hahn 1086* (ZPB), farm Schyffontein, (–DD), *Reynolds 557* (PRE, holotype).

Literature references: Jeppe (1969: p. 123), Reynolds (1936b; 1950: p. 136–137), van Wyk & Smith (1996: p. 296).

Figure 128: *A. vossii* flowering in habitat.

Figure 129: Typical growth form of *A. vossii*.

Asteraceae

Derivation: (Gr. αστρον, *astron*, a star) referring to the shape of the capitula of certain genera within this family.

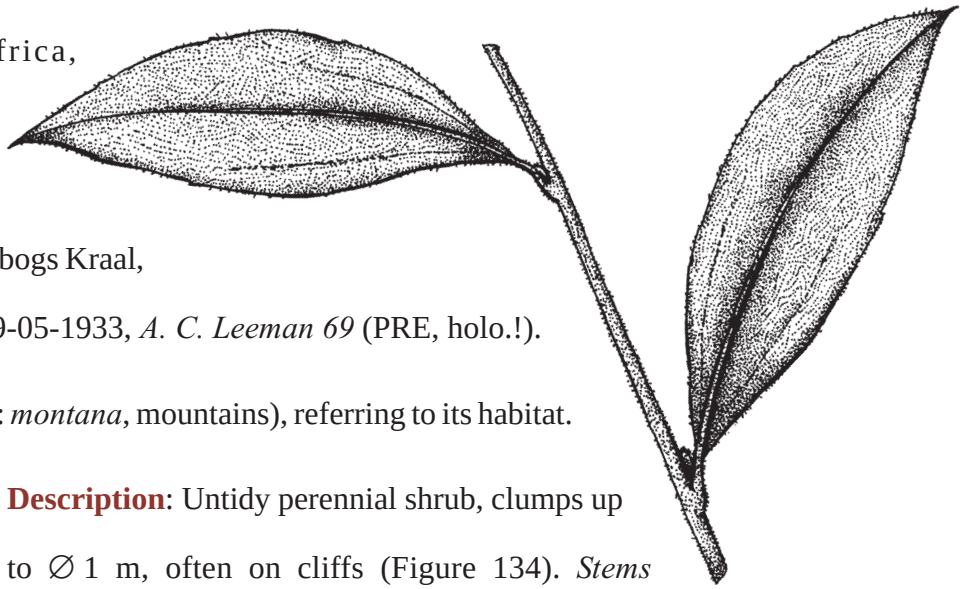
Dicoma Cass.

Derivation: (Gr. δι–, *di-*, two + χομα, *coma*, tuft of hairs), referring to the double pappus of *Dicoma tomentosa* .

Taxa recorded within the Soutpansberg: *D. galpinii* Wilson, *D. gerrardii* Harv. ex F.C.Wilson, *D. montana* Schweick., *D. schinzii* O.Hoffm., *D. tomentosa* Cass. and *D. zeyheri* Sond. subsp. *zeyheri*

Dicoma montana Schweickerdt

in Kew Bulletin 1935: 207 (1935).



Type: South Africa, Limpopo Province, Blouberg, on the way to Malabogs Kraal, alt. 1524–1555m, 9-05-1933, *A. C. Leeman 69* (PRE, holo.!).

Derivation: (Latin: *montana*, mountains), referring to its habitat.

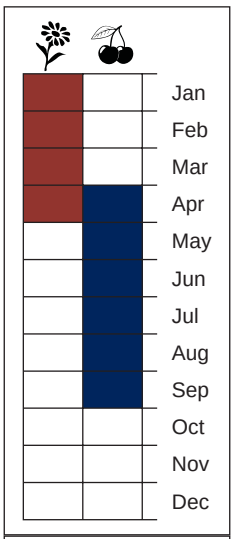


Figure 130.

Description: Untidy perennial shrub, clumps up to ∅ 1 m, often on cliffs (Figure 134). *Stems* woody, much branched, brittle, erect. *Leaves* broadly lanceolate to ovate, up to 20 × 10 mm, petiole short or absent, base cuneate, apex acute to obtuse, margins minutely serrated; upper surface dull green, sparingly woolly, eglandular; lower surface indumentum dense, white. *Capitulum* solitary (Figure 133), pedunculate, broadly bell-shaped, ±15–∅ 20 mm. *Bracts* ± 7-cerate, linear lanceolate, scabrid outside, hairs

fine, glabrous inside; apex attenuate, rigid, recurved. *Pappus* bristled (Figure 132), straw-yellow, 4–5 mm long, with short stiff hairs. *Achene* finely woolly, straw. For flowering and fruiting periods see Figure 130.

Figure 132: *D. montana* capitulum.

Related taxa: *D. galpinii* and *D. nachtigalii* O. Hoffm.

Habitat: Growing in fissures in quartzite and Clarens sandstone.

Global distribution: Endemic to the Soutpansberg and Blouberg.

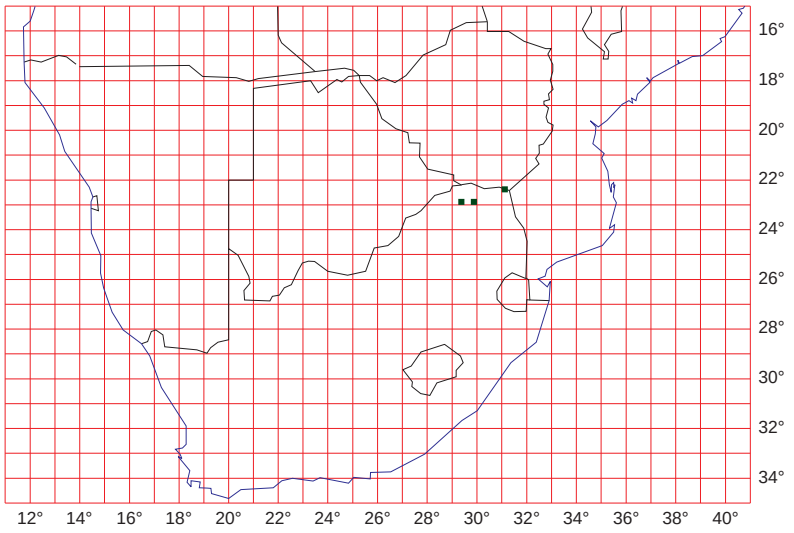


Figure 131: The known distribution of *D. montana*. Plot resolution equals to a ¼° grid.

Local distribution: Distributed across the Soutpansberg up to the Luvuvhu Gorge in the east.

Red data listing: Not listed by Hilton-Taylor (1996).

Voucher specimens: 2231: Luvuvhu Gorge, (–AC), 4-5-1996, *N. Hahn s.n.* (ZPB)

Literature reference: Schweickerdt (1935).

Figure 133: Various stages of development of *D. montana* capitula.

Figure 134: *D. montana* in habitat.

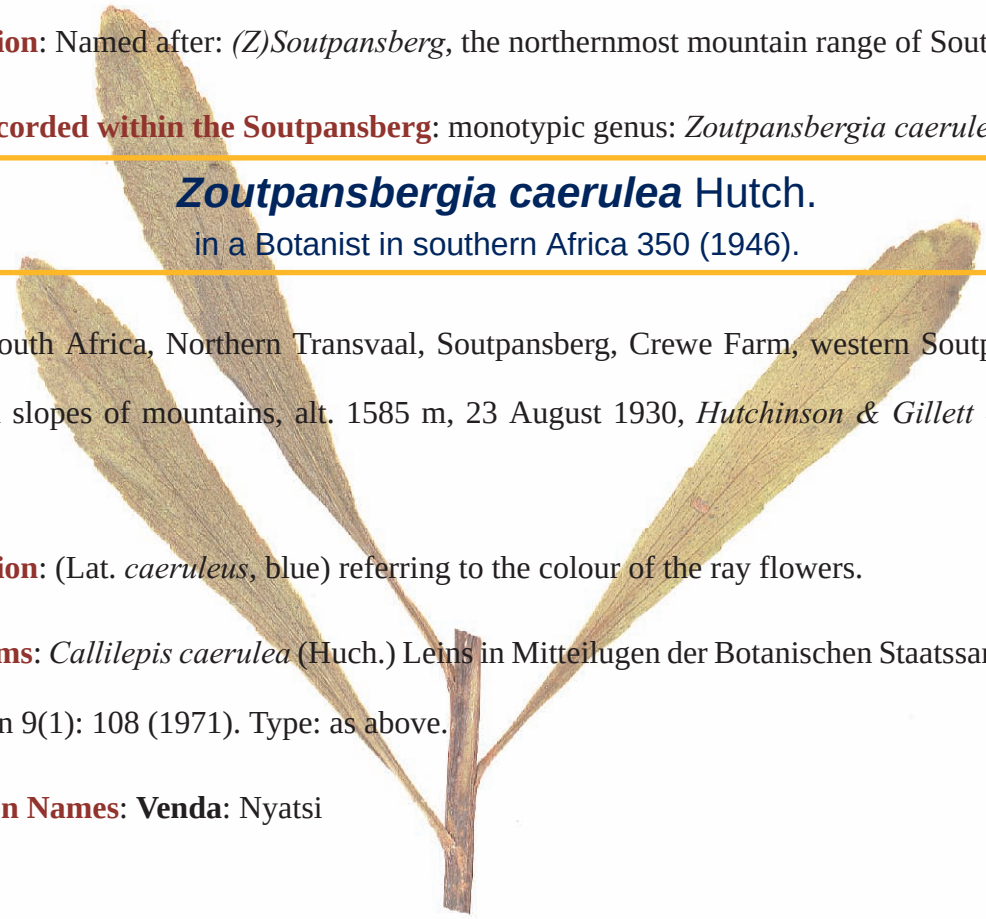
Zoutpansbergia Hutch.

Derivation: Named after: *(Z)Soutpansberg*, the northernmost mountain range of South Africa.

Taxa recorded within the Soutpansberg: monotypic genus: *Zoutpansbergia caerulea* Hutch.

Zoutpansbergia caerulea Hutch.

in a Botanist in southern Africa 350 (1946).



Type: South Africa, Northern Transvaal, Soutpansberg, Crewe Farm, western Soutpansberg, northern slopes of mountains, alt. 1585 m, 23 August 1930, *Hutchinson & Gillett 4435* (K, holo.)[1].

Derivation: (Lat. *caeruleus*, blue) referring to the colour of the ray flowers.

Synonyms: *Callilepis caerulea* (Huch.) Leins in Mitteilugen der Botanischen Staatssammelung München 9(1): 108 (1971). Type: as above.

Common Names: **Venda**: Nyatsi

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1 In 1946 J. Hutchinson published the genus *Zoutpansbergia* and subsequent species *Z. caerulea* in his book *A botanist in southern Africa* p. 350–351. On page 351 he cites the type as: Northern Transvaal, Zoutpansberg, Crewe Farm, Western Soutpansberg, northern slopes of mountain, 5200 ft., ray flowers pale blue, 23 August 1930, *Hutchinson & Gillett 4435* (type Kew Herb.). On page 686 under a chronological list of his collection numbers he states the following:

- 4415–4441, Crewe Farm, W. Zoutpansberg, 4200–4300 ft., 23 Aug.
- 4442, main road south of Klein Australia, E. Zoutpansberg, 22 Aug.
- 4443–4454, Crewe Farm, W. Zoutpansberg, 5200 ft. 23 Aug.

The type citation given on p. 351 has been confirmed by Kew as correct (G. Pope *pers. com*. Kew), the chronological list on p. 686 is therefore in error and should be ignored. On both the type specimen and type description the ray flowers are referred to as pale blue, this would also seem to be an error as all plants observed ray flowers corolla lobes are white. The error could possibly be due to the drying of the specimen.

Description: Woody shrub or tree up to 3·6 m tall (Figure 137), branches glabrous. *Leaves* alternate, oblanceolate, glabrous, margins serrulate. *Inflorescence* solitary, shortly pedunculate (Figure 136& 140), heterogamous; involucrum campanulate, curled inwards, bracts in 5 rows, at base conspicuously keeled, becoming narrower and more membranous at the apex. *Ray florets* 15, corolla tube 2·7–5·0 mm long; lobes 9·5–13·0 × 3·8–5·0 mm, white, 6-nerved, narrowly oblong elliptical, apex tridentate; styles exserted, 5·5–6·0 mm long, forked at anthesis, tips slightly clavate, 1·3–1·5 mm long, lilac, below greenish white; ovary 3·5–4·0 mm long, with 3 setae. *Disc florets* numerous; 5-merous; corolla tube 5–6 mm long, lobes 1–2 mm long; anthers almost as long as corolla, margins membranous purple, bases caudate, tails ciliate, white; styles exserted, 6–7 mm long, becoming forked, branches slightly clavate, 1·5–2·0 mm long, lilac, below fork greenish white; ovary 4·5–5·0 mm long, setae, 2, 2·5–5·0 mm long. *Fruit* dimorphic (Figure 138). *Hypsophyllic bracts* membranous, 10–11 mm long, margins ciliate. *Ray flower achene* narrowly triangular; seta, three, 3–4 mm long, unequal in lengthe, scabrid. *Disc flower achene* flattened, margins ciliate. *Receptacle* chaff-like, flowering disc almost circular, plicate, keels ciliate. For flowering and fruiting periods see Figure 135.

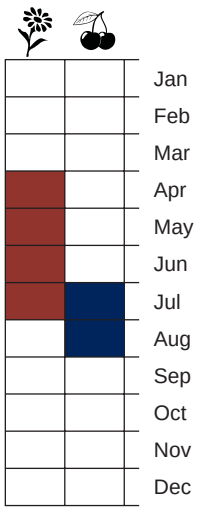


Figure 135.


Figure 136: Flowering bud of *Z. caerulea*.

Figure 137: *Z. caerulea* in habitat.

Taxonomic notes: Hutchinson (1946) considered the genus to be most closely related to *Rosenia* Thunb. According to Leins (1971a) neither the leaves nor bracts of *Zoutpansbergia* coincide with those of *Rosenia*. Leins (e.c.) considered *Zoutpansbergia* "comparative" to *Callilepis* since its bracts and bract indumentum are similar. He also considered the achenes and pappus of these two genera to be similar but the pappus scales of *Callilepis* are broader. The pollen morphology also coincides closely between the two genera. Anderberg (1991) agreed with Leins adding that he considered *Zoutpansbergia* an "autapomorphic" representative of *Callilepis*.

Figure 138: *Z. caerulea* fruit.

Habitat: Taking into account its distribution it seems that this species had a much more even distribution throughout the range. Habitat changes have resulted in distributional disjunction.

Global distribution: Endemic to the Soutpansberg and Blouberg.

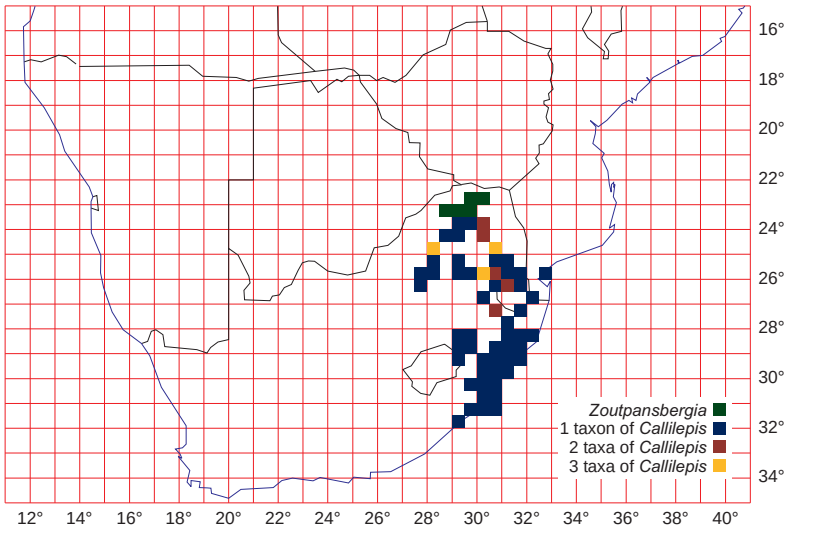


Figure 139: The distribution of the genus *Zoutpansbergia* in relation to *Callilepis*. Plot resolution equals to a ½° grid.Distribution data for *Callilepis* obtained from PRE and NU.

Local distribution: Occurring sporadically in isolated patches in the western sector of the mountain range, but between Fefe and Mabile it occurs frequently and at places grows into large populations.

Red data listing: Listed as *Not threatened* by Hilton-Taylor (1996)[2].

Voucher specimens: 2229: Ladysmit, (–DC), *N. Hahn 62* (PRU, ZPB), Davenham, (–DD), *N. Hahn 548* (ZPB); 2230: 22º44’22·2”S & E30º21’36·3”, (–CB), *N. Hahn 537* (ZPB); 2329: Lejuma, (–AB), *N. Hahn 718* (ZPB).

Literature references: Anderberg (1991), Hutchinson (1946: p. 349–351), Leins (1971a & b).

2 Listed as *Callilepis caerulea*.

Figure 140: *Z. caerulea* inflorescence.

Combretaceae

Combretum Loefl.

Derivation: Name given by Gaius Plinius Secundus (Pliny the Elder) (23–79 A.D.), Roman author of Historia Naturalis, who perished in the eruption of Mt. Vesuvius.

Taxa recorded within the Soutpansberg: *C. apiculatum* Sond. subsp. *apiculatum*, *C. celastroides* Welw. ex M.A. Lawson subsp. *celastroides*, *C. collinum* Fresen. subsp. *gazense* (Swynn. & Baker f.) Okafor, *C. collinum* Fresen. subsp. *suluense* (Engl. & Diels) Okafor, *C. collinum* Fresen. subsp. *taborense* (Engl.) Okafor, *C. erythrophyllum* (Burch.) Sond., *C. hereroense* Schinz subsp. *hereroense* var. *hereroense*, *C. imberbe* Wawra, *C. kraussii* Hochst., *C. microphyllum* Klotzsch, *C. moggii* Exell, *C. molle* R.Br. ex G. Don, *C. mossambicense* (Klotzsch) Engl., *C. padoides* Engl. & Diels, *C. vendae* A. E. van Wyk and *C. zeyheri* Sond.

Combretum vendae van Wyk

in South African Journal of Botany 3(2): 125–134 (1984).

Derivation: Named after the former republic of Venda.

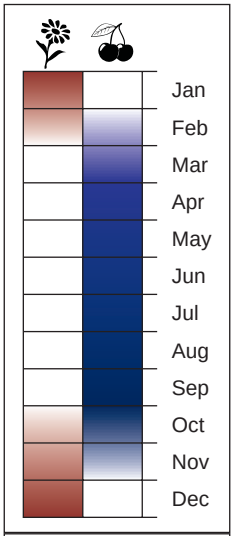


Figure 141.

Type: Limpopo Province, Venda, Vuvha, north-east of Tengwe, near the village Muledzhi, *van Wyk 3913* (PRU, holo.!).

Common Names: **Afrikaans**: Vendaboswilg; **English**: Venda bushwillow; **Venda**: Gopo-gopo, Gopokopo-bani

Description: Shrub or tree up to 4 m tall, usually multistemmed; bark grey, smooth. *Leaves* simple, opposite, rarely alternate, white when young, becoming green, reddish before abscission; elliptic, broadly elliptic, obovate or oblanceolate, (30–)40–80(–100) × (15–)25–45(–55) mm, base acute, to rounded, occasionally subcordate, apex obtuse to rounded apiculate or mucronate; upper surface waxy; lower surface with raised lateral veining. *Inflorescences* axillary, subcapitate spikes (Figure 144), 10(–15)–20(–25) mm long; bracts linear, up to 2 mm

Figure 142: *C. vendae's* flower.

long. *Flowers* 4-merous, yellowish to cream coloured (Figure 142). *Sepals* deltate, ±1 mm long. *Petals* obovate to elliptic 2·5 × 1·5 mm. *Stamens* 8, 6 mm long, anthers 800–900 µm long; disc 500 µm; style 4 mm long. *Fruit* 4-winged, initially green flushed with red (Figure 143), becoming wine red, 16–22 × 12–15 mm, apical peg 0–500 µm long, wings up to 6 mm wide, stipe 4–7 mm long. For flowering and fruiting periods see Figure 141.

Diagnostic features: The following synopsis should aid with the differentiation from related species occurring in the Limpopo Province (see Table 12& 13).

Table 12: A comparison between the two forms of *C. vendae* and the section *Angustimarginata*.

	C. vendae glabrous form	*C. vendae* typical form	*C. erythophyllum*	*C. kraussii*	*C. nelsonii* Dümmer
Habitat	rocky or sandy areas	rocky or sandy areas	river banks	Afro-montane forests	Waterberg plateau
Growth habit	multi-stemmed small tree	multi-stemmed small tree	single stemmed tree	single-stemmed tree	multi-stemmed small tree
Leaf upper surface	waxy	waxy	waxy	not waxy	slightly waxy
Leaf lower surface	glabrous	pubescent	slightly hairy	glabrous	glabrous
Tertiary net-veining	raised	raised	raised	not raised	not raised

Taxonomic notes: Two forms of *C. vendae* are found on the Soutpansberg. It was proposed that the two forms should be separated into variants, the eastern form becoming *Combretum vendae* van Wyk var. *vendae* and the western form becoming *Combretum vendae* van Wyk var. *glabrata*

Table 13: A comparison between the two forms of *C. vendae* and the species outside the section *Angustimarginata*.

	C. vendae glabrous form	*C. vendae* typical form	*C. apiculatum* subsp. *apiculatum*	*C. collinum* subsp. *gazensis*	*C. collinum* subsp. *taborense*	*C. moggii*
Leaf upper surface	waxy	waxy	glabrous	glabrous	glabrous	with silky indumentum
Leaf lower surface	glabrous	pubescent	glabrous	pubescent	glabrous, silver	with silky indumentum
Inflorescence	capitate	capitate	spicate	spicate	spicate	spicate
Fruit length	< 25 mm	< 25 mm	30 mm	>35 mm	>35 mm	25 mm

Hahn & van Wyk. At present it does not seem feasible to sink the *C. vendae* group under *C. nelsonii* or any other related taxa.

Related taxa: *Combretum vendae* most closely related to *C. nelsonii* which occurs on the Waterberg and Wolkberg. The plants are morphologically very similar sharing very similar ecological niches. Within the Soutpansberg the nearest allies are *C. kraussii* and *C. erythrophyllum* (see table 12).

Figure 143: Fruit of *C. vendae*.

Habitat: Both forms of *C. vendae* inhabit arid sandy soils derived from weathered quartzitic sandstone and quartzite. Plants often grow on rock outcrops or in rock strewn ground. Occa-

Figure 144: Flowering branch of the glabrous form of *C. vendae*.

sionally they can be found in deeper soils in arid areas but in areas of higher rainfall they are confined to shallow soils among rock outcrops.

The typical form is mostly confined to Acocks veld type 19 (Sour Mixed Bushveld) whereas the glabrous form, from Tswende in the west is mostly confined to Acocks veld type 18 (Mixed Bushveld) and 20 (Sour Bushveld). Neither variety has been recorded from veld type 8 (North-Eastern Mountain Sourveld). They do, however, occasionally occur along the border of it.

Habitat preference and vestiture seem to be somehow interrelated. The glabrous variety occurring in the more arid areas and the pubescent form being confined to the slightly higher moisture areas. Where the two occur sympatrically the habitats are intermediate.

Voucher specimens: **Typical form**: 2229: Little Leigh, (–DD), *N. Hahn 30* (PRU, ZPB), (–DD), Zwarthoek, *N. Hahn 106* (PRU, ZPB); 2230: Gombani, (–CB), *N. Hahn 630* (ZPB), Sambandou, (–DA), *N. Hahn 583* (ZPB), Muledzhi, (–DA), *van Wyk 3913* (PRU).

Glabrous form: 2229: Bluebell (–CD), *N. Hahn 316* (PRU, ZPB); 2229: Little Leigh, (–DD), *N. Hahn 27* (PRU, ZPB), *N. Hahn 122* (PRU); 2230: Gombani(–CB), *N. Hahn 631* (ZPB).

References: Acocks (1988), Carr (1988), Exell (1978: p. 100–183), Van Wyk (1984).

Convolvulaceae

Derivation: (Lat. *convolvere*, to entwine), referring to the growth habit of *Convolvulus arvenis* L.

Ipomoea L.

Derivation: (Gr. ιπες, *ipes* bindweed + ομοιος, *omoios* resembling)

Taxa recorded within the Soutpansberg: *I. coptica* (L.) Roth ex Roem. & Schult. var. *coptica*, *I. eriocarpa* R. Br., *I. adenioides* Schinz, *I. albivenia* (Lindl.) Sweet, *I. bisavium* A. Meeuse, *I. cairica* (L.) Sweet, *I. crassipes* Hook., *I. hackeliana* (Schinz) Hallier f., *I. hochstetteri* House, *I. involucrata* P. Beauv., *I. lapathifolia* Hallier f., *I. magnusiana* Schinz var. *eenii* (Rendle) A. Meeuse, *I. magnusiana* Schinz var. *magnusiana*, *I. obscura* (L.) Ker Gawl. var. *fragilis* (Choisy) A. Meeuse, *I. papilio* Hallier f., *I. plebeia* R.Br. subsp. *africana* A. Meeuse, *I. shirambensis* Baker, *I. simplex* Thunb., *I. sinensis* (Desr.) Choisy subsp. *blepharosepala* (Hochst. ex A. Rich.) Verdc., *I. wightii* (Wall.) Choisy

Ipomoea bisavium A. Meeuse

in Bothalia 7(1): 26–27 (1958).

Derivation: Latin pun devised in honour of Dr. Allan V. *Bird* of Johannesburg and his son Peter, for their assistance in the collecting of specimens in dense thorn shrub (Latin: *bis*, two + *avis*, bird).

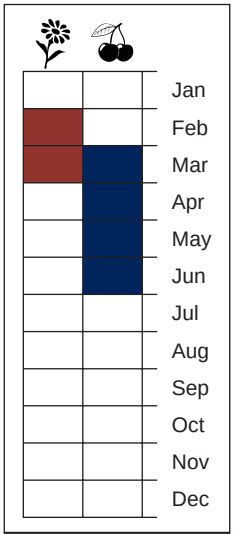


Figure 145

Type: South Africa, Limpopo Province, Soutpansberg, 3,2 km south of Wylie's Poort, 02-04-1957, *Meeuse 10181* (PRE, holo.!).

Description: A perennial climber, older branches woody; bark dark brown, young bark grey. *Leaves* broadly to narrowly cordate, up to 80 × 50 mm, upper surface green, lower surface ashen green, net-veining prominent; both surfaces minutely adpressed puberulous especially along the nerves; petiole 10–50(–90) mm long. *Inflorescences* single or few flowered; peduncle up to

70 mm long; bracteoles paired, foliaceous becoming membranous, ovate-lanceolate to oblong, 6 × 2–3 mm. *Sepals* 5, erect, unequal; outer sepals 2, cordate-triangular, auriculate at the base, 14 × 8–9 mm; third sepal obliquely subcordate, 10–11 × 4–5 mm, auricle on one side only; inner sepals 9–10 × 2·0–4·5 mm, oblong-lanceolate. *Corolla* funnel-shaped (Figure 149), white or shell pink, 20 × ∅ 60 mm, 5-angled, inside of tube deep purple (Figure 146), glabrous, petals medially strigose. *Stamens* unequal, white, shortly glandular-pilose; anthers pale pink. *Pistil* white glabrous. *Capsule* ovoid, brown when ripe, 10–12 × ∅ 8 mm, dehiscent. *Seed* brown, covered with long cottony hairs.

Figure 146: Front view of *I. bisavium's* flower.

Taxonomic notes: Well defined taxon. For flowering and fruiting periods see Figure 145.

Related taxa: Most closely related to *Ipomea heterosepala* Baker which occurs in Somalia (Meeuse 1958).

Habitat: Growing amongst shrubbery, in quartzitic soils.

Global distribution: This species is endemic to the Soutpansberg.

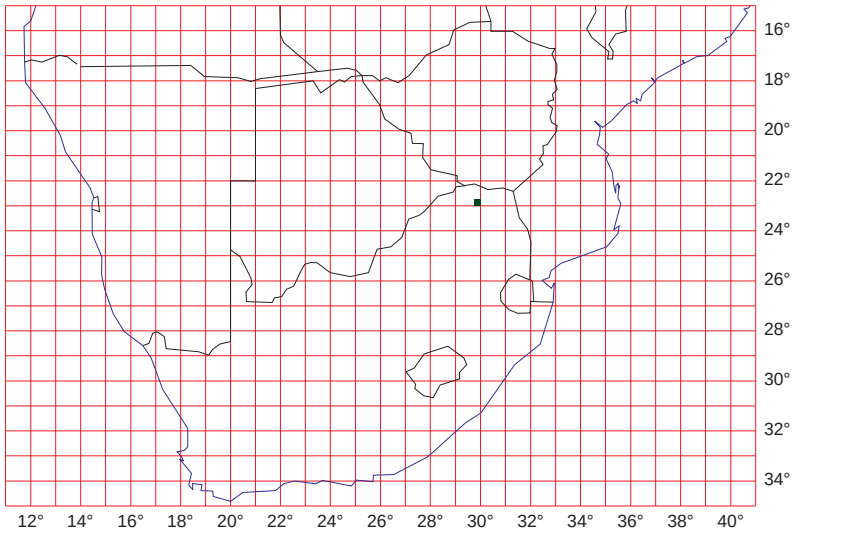


Figure 148: The known global distribution of *I. bisavium*. Plot resolution equals to a ¼° grid.

Local distribution: Only known from near the type locality.

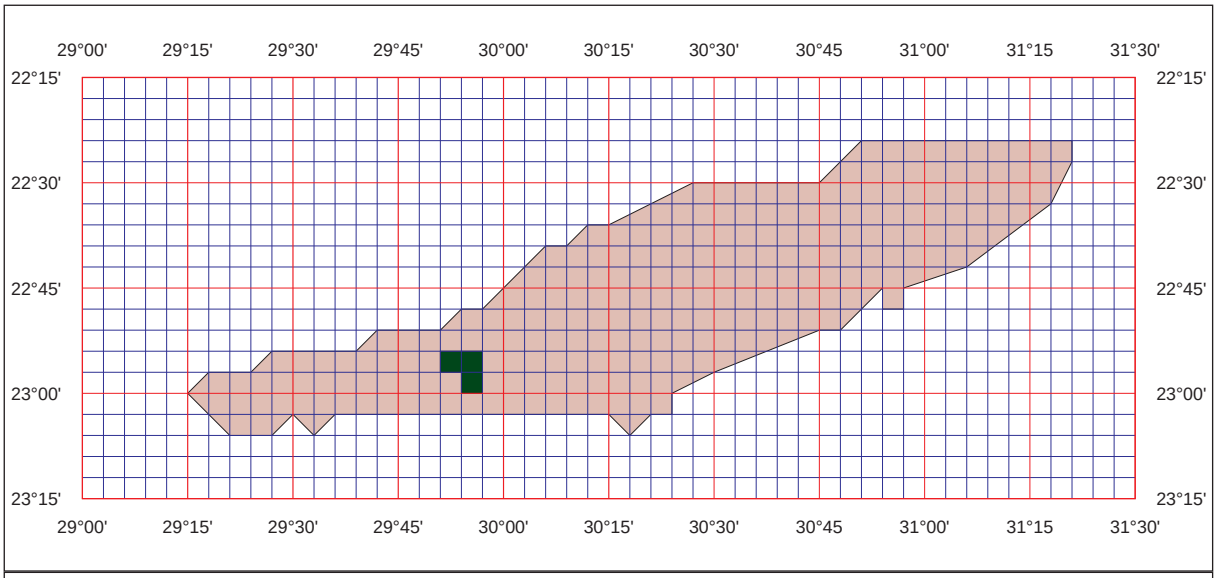


Figure 147: The known distribution of *I. bisavium* on the Soutpansberg. Plot resolution equals to a 1/20° grid.

Red data listing: Not listed by Hilton-Taylor (1996).

Threats: It is difficult to ascertain possible threats however due to the rocky nature of the habitat, degradation by man is unlikely. The population found by Meeuse 30 years ago still seems viable.

Uses: This plant shows horticulture potential.

Voucher specimens: 2229: farm Wallacedale, (–DD), *Meeuse 10181* (PRE, holotype), *Meeuse 10237* (PRE), *N. Hahn 1498* (ZPB), Wylie's Poort, (–DD), *N. Hahn 1720* (ZPB).

References: Meeuse (1958 & 1961).

Figure 149: Side view of *I. bisavium's* flower

Crassulaceae

Kalanchoe Adans.

Taxa recorded within the Soutpansberg: *K. brachyloba* Welw. ex Britten, *K. crundallii* Verdoorn, *K. lanceolata* (Forssk.) Pers., *K. longiflora* Schltr. ex J.M. Wood, *K. paniculata* Harv., *K. rotundifolia* (Haw.) Haw., *K. sexangularis* N.E. Br. var. *sexangularis*

Kalanchoe crundallii Verdoorn

in Flowering Plants of Africa 25: plate 967 (1946).

Type: South Africa, Limpopo Province, Soutpansberg, Lejuma (collected July 1938), (cultivated Pretoria fl. March 1943) *Crundall* in PRE 27157 (PRE, holo.!).

Derivation: Named after: *Crundall*, Albert Henry.

Description: Single-stemmed succulent, up to 900 mm tall, stems up to ∅ 15 mm near the base.

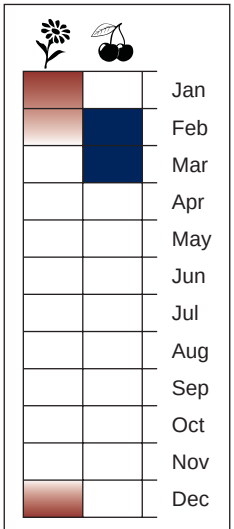


Figure 150.

Leaves succulent, opposite, broadly oblong to suborbicular, about 70 × 55 mm, green to yellowish-green, margin crenate to subentire often partly red; apex broadly rounded, base cuneate, petiole 5–20 × ∅ 5 mm not clasping. *Inflorescence* a short cymose panicle more or less oblong in outline (Figure 151); bracts green, 20–90 mm long; pedicel slender 10–1·5 mm long; calyx 4 lobed, deltoid, 5–2 mm. *Corolla* red, parts not exposed to direct sunlight greenish-yellow, tube 4-angled, 14–15 mm long, very slightly contracted at the throat; lobes 4, 3–4 × 3 mm. Anthers 1·2–1·5 mm long. *Fruit* oblong, squamae 2·0–2·5 mm long. *Seed*: ± ∅ 1·5 mm. For flowering and fruiting periods see Figure 150.

Diagnostic features: *Kalanchoe crundallii* when not in flower can at times be difficult to distinguish from *K. sexangularis* var. *sexangularis*, as the latter shows considerable variation in leaf shape and colour, depending on environment. Flower colour is the most reliable characteristic to distinguish the two. *Kalanchoe crundallii* has red flowers whereas *K. sexangularis* has yellow flowers.

Related taxa: *Kalanchoe crundallii* seems nearest to *K. thyrsiflora* Harv. both having contracted cymes, oblong in outline and corolla of similar size and shape (Verdoorn 1945). In *K. crundallii* flowers are coral-red with darker red patches, whereas in *K. thyrsiflora* flowers are pale green with bright waxy-yellow lobes. In *K. thyrsiflora* corolla lobes are suffused with red at their tips, *K. crundallii* are tinged with yellow. *K. thyrsiflora* differs in having larger sessile leaves.

Habitat: A succulent found in the mist-belt regions of the western mountain where it grows in woodlands in humus-rich soils.

Figure 151: *K. crundallii* inflorescence.

Global distribution: Endemic to the western Soutpansberg

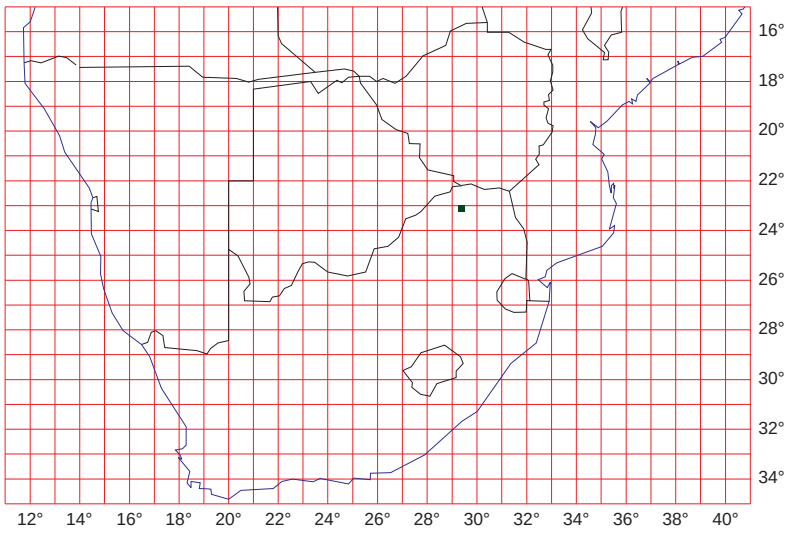


Figure 152: The known distribution of *K. crundallii*. Plot resolution equals to a ¼° grid.

Local distribution: Only known from the extreme western sector of the mountain range.

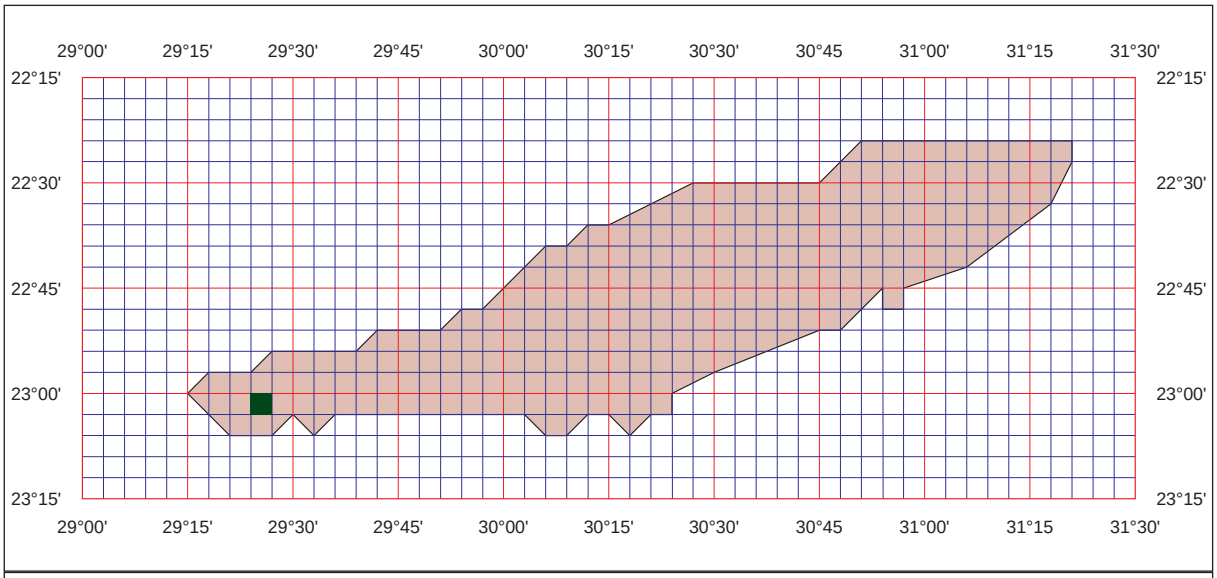


Figure 154: The known distribution of *K. crundallii* on the Soutpansberg. Plot resolution equals to a $\frac{1}{20}°$ grid.

Figure 153: *K. crundalli* in habit.

Red data listing: Listed as *Rare* by Hilton-Taylor (1996).

Threats: Presently the species is not threatened although it occurs over a very small area. The impact of succulent collectors appears minimal.

Voucher specimens: 2229: Lejuma, (–AB), *Crundall* in PRE 27157 (PRE, holotype), *N. Hahn 1481* (ZPB).

Literature reference: Tölken (1985: p. 69), Verdoorn (1946).

Euphorbiaceae

Euphorbia L.

Derivation: named after the 1st century physician King Juba of Mauritania, *Euphorbus*, who presumably used plants of this genus for medicine.

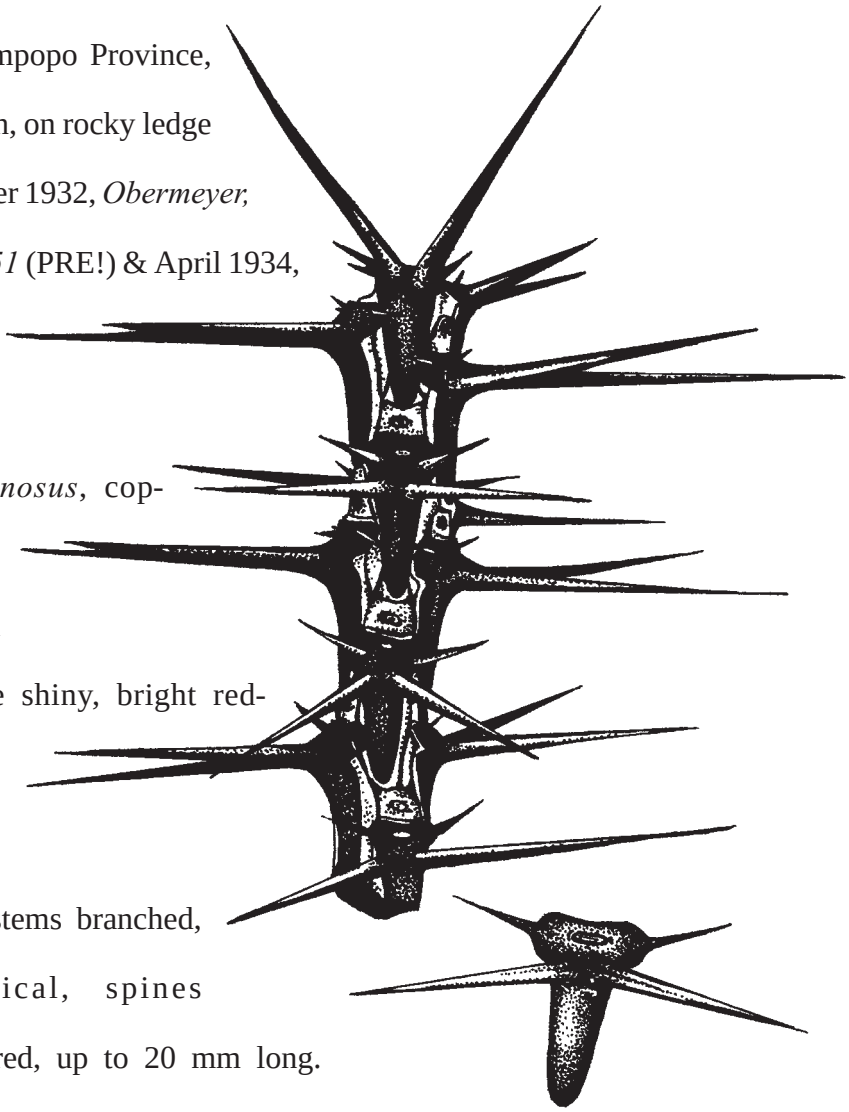
Taxa recorded within the Soutpansberg: Succulent species: *E. aeruginosa* Schweick., *E. confinalis* R.A. Dyer subsp. *confinalis*, *E. cooperi* N.E. Br. ex A. Berger var. *cooperi*, *E. excelsa* White, Dyer & Sloane, *E. griseola* Pax subsp. *griseola*, *E. maleolens* Phill., *E. monteiroi* Hook. f. subsp. *ramosa* L.C. Leach, *E. limpopoana* L.C.Leach ex S.Carter, *E. pulvinata* Marloth, *E. rowlandii* R.A. Dyer, *E. tirucalli* L., *E. zoutpansbergensis* R.A. Dyer

Non-succulent species: *E. epicyparissias* E. Mey. ex Boiss. var. *epicyparissias*, *E. espinosa* Pax, *E. guerichiana* Pax, *E. kraussiana* Bernh. var. *kraussiana*, *E. natalensis* Bernh., *E. transvaalensis* Schltr.

Figure 155: *Euphorbia confinalis* subsp. *confinalis*

Euphorbia aeruginosa Schweick.

in Kew Bulletin 1935: 205 (1935).



Syntype: South Africa, Limpopo Province, Soutpansberg, Farm Zoutpan, on rocky ledge behind homestead, November 1932, *Obermeyer, Schweickerdt & Verdoorn 151* (PRE!) & April 1934, *Schweickerdt & Verdoorn 688* (PRE!).

Derivation: (Lat. *aeruginosus*, copper-rust), referring to the copper-green stems which contrast strongly with the shiny, bright reddish-brown spines.

Description: A thorny succulent, stems branched, cylindrical, spines paired, red, up to 20 mm long. *Synflorescence* cymose (Figure 161), solitary, cyathia 3 sessile (Figure 160), central male, outer bisexual, distributed horizontally, bracts 2 subtending the lateral involucre. *Involucre* funnel shaped, ∅ 3 mm, glabrous, yellow; glands 5 oblong, entire, margins recurved; ovary shortly pedicelled, glabrous; style 2 mm long. *Fruit* shortly pedicellate, partly exserted from the involucre, ∅ 3 mm, 3-lobed, glabrous. *Seeds* spherical, surface pitted, brown. Flowering and fruiting periods Figure 156.

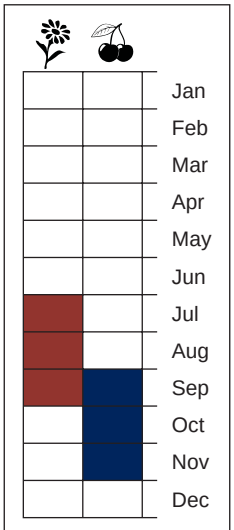


Figure 156.

Taxonomic notes: Plants show considerable variation in growth habit (Figure 157& 159), favouring the more arid parts of the mountain. This taxon is closely related to other members of

Euphorbia section *Tetracanthay*. Its status as an endemic is upheld although future scientific investigation within this group may prove it to be conspecific with plants further afield.

Habitat: Growing amongst rocky outcrops in the drier areas of the mountain range.

Figure 157: Typical form of *E. aeruginosa*.

Global distribution: Small succulent *Euphorbia* occurring from the Blouberg across to the Kruger National Park. Mostly confined to the northern sector of the range.

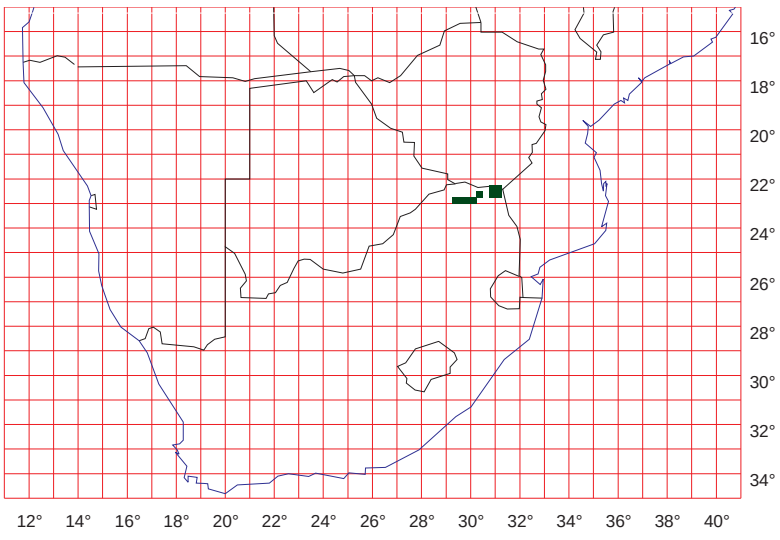


Figure 158: The known global distribution of *E. aeruginosa*. Plot resolution equals to a ¼° grid.

Red data listing: Not listed by Hilton-Taylor (1996).

Natural hybrids: Possibly with *E. limpopoana*.

Voucher specimens: 2229: Zoutpan, (–CD), *Obermeyer, Schweickerdt & Verdoorn 151* (PRE, syntype) & April 1934, *Schweickerdt & Verdoorn 688* (PRE, syntype), Morningsun, (–DD) *N. Hahn 194* (ZPB)[1], Davenham, *N. Hahn 261* (ZPB)[2]; 2230, Maangani, (–CC), *N. Hahn 203* (ZPB)[3].

Literature references: Schweickerdt (1935), Obermeyer *et al.* (1937: p. 242) White *et al.* (1941: p. 741–742).

Figure 159: Eastern form of *E. aeruginosa*.

1 Typical form.

2 Long stemmed form.

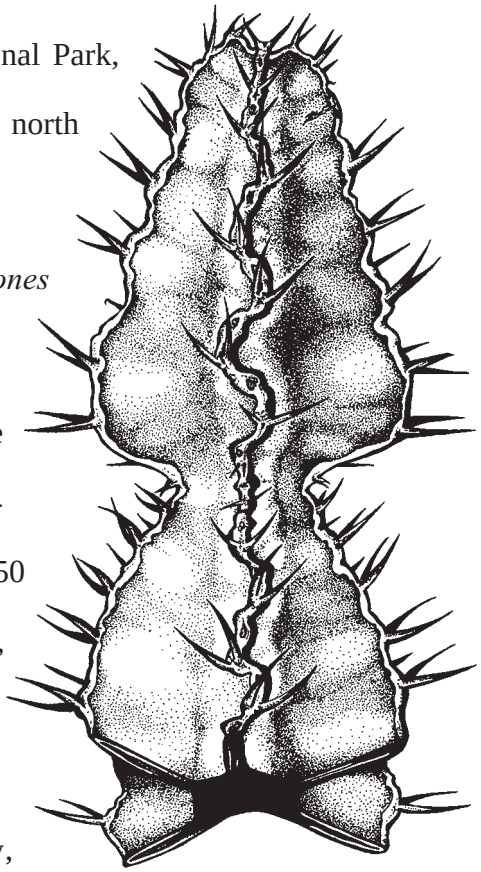
3 Form showing some characteristics akin to *E. limpopoana*.

Figure 160: *E. aeruginosa* cyathia.

Figure 161: *E. aeruginosa* inflorescence.

Euphorbia rowlandii R. A. Dyer

in Bothalia 7(1): 28-29, t. 2 (p. 38) (1958).



Type: South Africa, Limpopo Province, Kruger National Park, Punda Maria, on sandstone ridge's 8 miles [12·875 km] north of Punda Maria, *Rowland-Jones 48* (PRE, holo.!).

Derivation: Named after: Lt. Col Maurice *Rowland-Jones* (1899–1959).

Description: Stemless succulent up to 2 m tall (Figure 166). *Branches* 4–7 winged, constricted into segments up to 150 × 50 mm, spreading, spines in paired, grey, along a continuous spine shield approximately 10 mm apart (Figure 164). *Cymes* solitary, peduncle 2 mm long, situated above the spines, consisting of three cyathia arranged parallel to the main axis, central cyathia male, 2 lateral bisexual; peduncle ∅ 2 × 2 mm, bibracteate; involucre cup-shaped,glabrous, ∅ 4·5–5 mm, glands 5, lobes 5 subquadrate; glands contiguous, transversely oblong, 2·5–3 mm wide, yellow. Ovary on a 1 mm gynophore; styles 1·5 mm long. *Fruit* 3-lobed, ∅ 9 mm, seeds (Figure 167), globose about ∅ 2·5 mm (Figure 168). For flowering and fruiting periods see Figure 162.

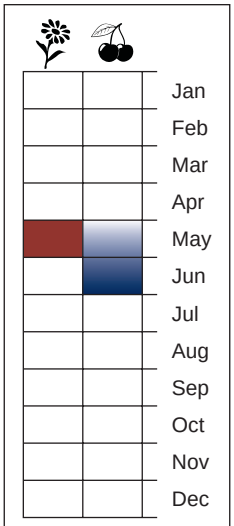


Figure 162.

Diagnostic features: *Euphorbia rowlandii* can be confused with *E. cooperi* var. *cooperi*, it however lacks a central trunk. *Euphorbia rowlandii* branches are slender, up to 50 mm broad 4–7 winged, whereas the branches of *E. cooperi* are robust, triangular in outline, 120 mm broad and 4–6 winged.

Related taxa: Dyer (1958) mentions that this species is affiliated to *E. waterbergensis* R.A. Dyer.

Figure 164: Inflorescence of *E. rowlandii*. Note the continuous spine shield.

Habitat: Those communities observed are restricted to soils derived from the Fripp Sandstone and Clarens formations, growing either in pure *Androstachys* woodland, in mixed *Androstachys*—*Colophospermum* woodlands or in adjacent *Colophospermum* woodland.

Global distribution: Endemic to the north eastern sector of the Soutpansberg. A community has been recorded 6·4 km north of the Limpopo in Zimbabwe.

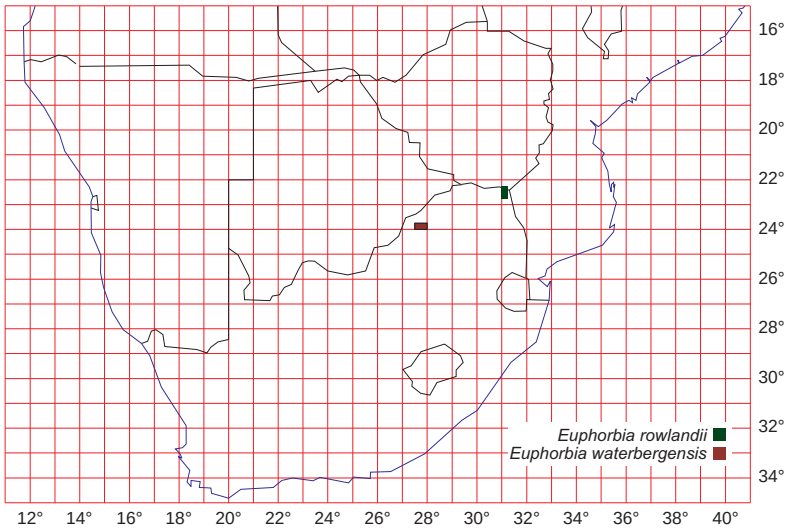


Figure 163: The known distribution of *E. rowlandii* and its nearest ally. Distribution data for *E. waterbergensis* obtained from PRE. Plot resolution equals to a ¼° grid.

Local distribution: Plant endemic to the far north-eastern sector of the Soutpansberg and south-eastern corner of Zimbabwe, having been recorded from the far northern sector of the Kruger National Park and the far north-eastern sector of the Soutpansberg mountain range adja-

cent to the Kruger National Park. In Zimbabwe the plant has been recorded 19·3 km west of Pafuri and 6·4 km north of the Limpopo at Pesu Gorge.

Figure 165: The known distribution of *E. rowlandii* on the Soutpansberg. Plot resolution equals to a 1/20° grid.

Red data listing: Listed as *Rare* by Hilton-Taylor (1996).

Threats: The expansion of rural communities and possible mining activities.

Voucher specimens: *Rowland-Jones 48* in PRE number 28636 (PRE, holotype); 2231: Tshikondeni (–CA), *N. Hahn 1107* (ZPB).

Figure 166: *E. rowlandii* in habitat.

Literature reference: Dyer (1958), Fourie (1982: p. 121).

Figure 167: *E. rowlandii* fruit.

Figure 168: *E. rowlandii* open capsule with seed.

Euphorbia zoutpansbergensis R. A. Dyer

in Flowering Plants of South Africa plate 18: 715 (1938).

Type: South Africa, Limpopo Province, Soutpansberg, on rocky slopes at the southern entrance of Wylie's Poort, *Dyer* in PRE number 23393 (PRE, holo.!).

Derivation: Named after the *(Z)Soutpansberg.*

Common Names: **Afrikaans**: Soutpansbergnaboom; **English**: Soutpansberg euphorbia; **Venda**: Mukonde-ngala

Description: A canilabtiform single stemmed, spiny succulent tree up to 5 m tall (Figure 170), all parts with milky latex. *Branches* spreading, ∅ 20–35 mm, with a solid core of up to 15 mm, 4–7 winged, constricted at intervals of 50–100 mm, up to 1·5 m long usually unbranched but occasionally branched near the apex when old, wings narrow, rarely interrupted with continuous horny margins. *Spines* paired, up to 10 mm long being smaller at constricted regions of the branches, very sharp, up to 20 mm apart. *Cymes*: 1–3 just above the spine pairs, shortly peduncled. *Cyathia* 3 arranged vertically to the main axis (Figure 172), central one usually male, lateral ones bisexual. *Fruit* a 3-locular capsule up to ∅ 10 mm situated on a 6 mm bent downward pedicel (Figure 173). For flowering and fruiting periods see Figure 169.

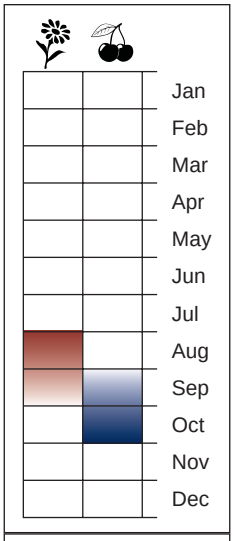


Figure 169.

Diagnostic features: *Euphorbia zoutpansbergensis* superficially resembles, *E. confinalis* subsp. *confinalis* (Figure 155), *E. cooperi* var. *cooperi*, *E. excelsa*. It can be separated from *E. confinalis* by its more numerous winged branches being up to ∅ 70 mm. *E. cooperi* has distinctly triangular segmented branches, *E. excelsa* branches are very slightly constricted hardly forming a distinct wing being 3–5 angled, repeatedly branched.

Related taxa: *Euphorbia zoutpansbergensis* is most closely related to *E. sekukuniensis* R.A. Dyer endemic to Sekukuniland (*pers. obs*).

Habitat: Occurring in a variety of habits from the drier mistbelt region up to the dry central, north-facing slopes. Associated with rocky regions growing on cliffs and talus in shallow humus-rich, sandy soils derived from quartzites.

Figure 170: *E. zoutpansbergensis* in habitat.

Global distribution: Endemic to the Blouberg and Soutpansberg.

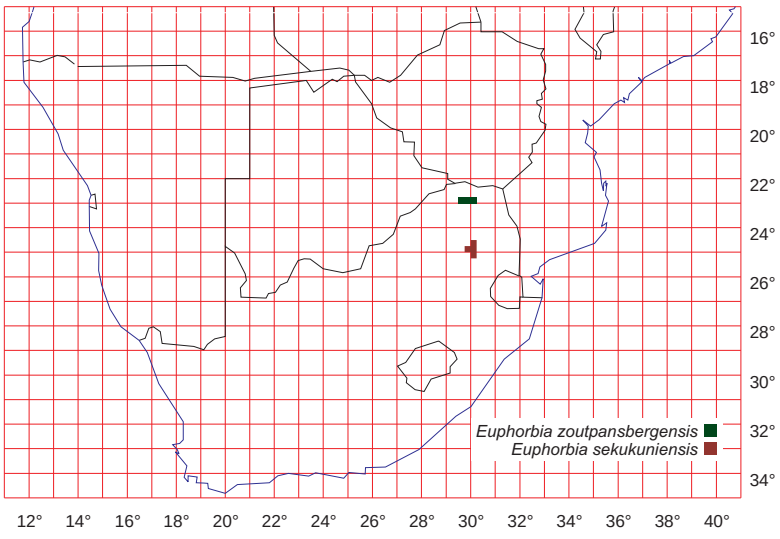


Figure 171: The known global distribution of *E. zoutpansbergensis* and its nearest ally *E. sekukuniensis*. Distribution data for *E. sekukuniensis* obtained from PRE and R. H. Archer (*pers. com*). Plot resolution equals to a ¼° grid.

Local distribution: Occurring from the Blouberg in the west up to Nwanetsi in the east.

Red data listing: Listed as *Rare* by Hilton-Taylor (1996).

Threats: This species is very hardy, even in extreme droughts few plants perish. Its formidable sharp spiny branches, in combination with its poisonous latex, help to protect the plant from predation.

Voucher specimens: 2229: Surprise, (–DC), *N. Hahn* 1518 (ZPB), Wylie's Poort, (–DD), *Dyer* in PRE number 23393 (PRE, holotype), *van der Merwe* in PRE number 23394 (PRE).

Literature reference: Dyer (1938).

Figure 172: *E. zoutpansbergensis* inflorescences.

Figure 173: *E. zoutpansbergensis* fruit.

Fabaceae

Rhynchosia Lour.

Derivation: (Greek: ρυγχος, *rhynchos*, beak) referring to the shape of the keel.

Taxa recorded within the Soutpansberg: *R. caribaea* (Jacq.) DC., *R. clivorum* S.Moore, *R. crassifolia* Benth., *R. densiflora* (Roth) DC. subsp. *chrysadenia* (Taub.) Verdc., *R. hirta* (Andrews) Meikle & Verdc., *R. komatiensis* Harms, *R. minima* (L.) DC. var. *minima*, *R. minima* (L.) DC. var. *prostrata* (Harv.) Meikle, *R. monophylla* Schltr., *R. nervosa* Benth. & Harv. var. *nervosa*, *R. reptabunda* N.E. Br., *R. sordida* (E.Mey.) Schinz, *R. spectabilis* Schinz, *R. sublobata* (Schumach.) Meikle, *R. totta* (Thunb.) DC. var. *totta*, *R. vendae* C.H. Stirton, *R. venulosa* (Hiern) K. Schum. and *R. woodii* Schinz.

Rhynchosia vendae C. H. Stirton

in Bothalia 14(1): 76 (1982).

Type: South Africa, Limpopo Province, Kruger National Park, Punda Maria, *van der Schijff 3596* (PRE, holo.!)[1].

Derivation: Named in honour of the *Venda* people.

Common names: **Venda**: Lufoko

1 On p. 76 Stirton (1982) quotes the type locality as “Cape, 2230 (Messina): Punda Maria, (–CA)”, it should read: Limpopo Province, 2231, Kruger National Park, Punda Maria, (–CA). On p. 77 he states the plant occurs in Acocks veld type 8. None of the known populations occur in this veld type.

Description: Perennial twiner, stems terete, densely clothed with appressed soft hairs. *Leaves* trifoliolate (Figure 177), terminal leaflet 45–87 × 36–65 mm almost rhomboid; lateral leaflets smaller, asymmetrical; upper surface finely pubescent with a few capitate glands, under surface coarsely pubescent, with hairs angled on veins, venation prominently raised on both surfaces; petiole 25–60 mm long; petiolules 2–3 mm long. *Inflorescences* 1–2 axillary racemes, 15–25-flowered; bracts ovate 4–5 mm long. *Flowers* 16–18 mm long, yellowish brown (Figure 174& 178); *calyx* finely pubescent on the outside, tube 3·5–4·0 mm long, lobes narrowly triangular; corolla papilionoid, keel up to 10 mm long, standard broadly obovate, 18 × 13 mm, claw auriculate 3 mm long; wings 13 × 4 mm, yellow, half the length of the keel; keel petals 20 × 8 mm, claw 5 mm long. *Stamens* diadelphous, sheath splitting adaxially; anthers monomorphic, alternately basified and dorsifixed, 1,0–1,3 mm long. *Pistil* 4·5 mm long, bi-ovulate, densely pubescent, style 6 mm long. *Fruit*: 35–40 mm long, oblong-falcate in outline, narrowing towards the base (Figure 177). For flowering and fruiting periods see figure 175.

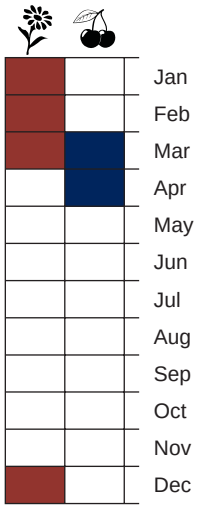


Figure 175.

Taxonomic notes: Well defined taxon.

Related taxa: None known.

Habitat: Savanna.


Figure 174: Front view of *R. vendae* flower

Global distribution: Endemic to the eastern Soutpansberg, possibly occurs in neighbouring Moçambique.

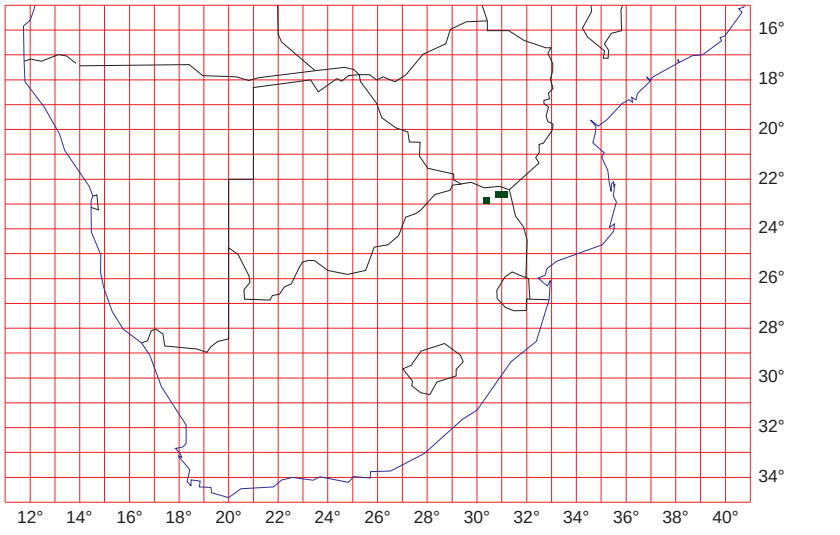


Figure 176: The known global distribution of *R. vendae*. Distribution data obtained from Stirton 1982. Plot resolution equals to a ¼° grid.

Local distribution: Occurring from Tengwe in the west up to Klopper Fontein in the east.

Red data listing: Listed as *Insufficiently known* by Hilton-Taylor (1996).

Uses: Rootstocks used as a cough remedy (Stirton 1982).

Voucher specimens: 2230: Dongadziva, (–DB), *N. Hahn 1741* (ZPB); 2231: Punda Maria, (–CA), *Van der Schijff 3596* (PRE, holotype).

Literature reference: Stirton (1982).

Figure 177: Fruit and leaf of *R. vendae*. Note the prominent raised venation characteristic of this species.

Figure 178: Side view of *R. vendae* flower.

Gesneriaceae

Streptocarpus Lindl.

Derivation: (Greek: στρεπτος, *streptos*, twisted + καρπος, *karpos*, fruit) referring to the twisted capsules.

Taxa recorded within the Soutpansberg: *S. caeruleus* Hillard & Burtt, *S. cyaneus* S. Moore subsp. *nigridens* Weigend & T. J. Edwards, *S. parviflorus* Hook. f. subsp. *soutpansbergensis* Weigend & T. J. Edwards and *S. parviflorus* Hook. f. subsp. *soutpansbergensis* Weigend & T. J. Edwards

Streptocarpus caeruleus Hillard & Burtt

Streptocarpus, an African plant study 261 (1971)

Type: Limpopo Province., Blouberg, cult. R. B. G. Edinburgh (collected, 1960, *R. Story 6512*), C. 3824 (E, holo.; NU! iso.)

Derivation: (Lat. *caeruleus*, blue) referring to the corolla being violet blue.

Description: Perennial, weakly rosulate. *Phyllomorphs* seldom more than four, ovate-elliptic or oblong or oblong-lanceolate, 80–150 × 30–80 mm, the midrib usually slightly curved, young leaves sub-sessile, petiole 0–20 mm. *Inflorescence* arising near the base of the petiolode, shortly pilose with spreading glandular and eglandular hairs, flowers usually 4–8 (–12); peduncles 60–100 (–200) mm; bracts 4 × 0·75 mm; linear; pedicel 10 mm. *Calyx* five, 2·5–5 long, segments with glandular and eglandular hairs. *Corolla* 25–30 mm long, violet-blue to magenta, with 2 yellow lateral spots (Figure 184) or short bars within the throat(Figure 183); upper lobes 5–9 × 5–11 mm; lower lip 14–17 mm, lobes 6–11 × 5–11 mm. *Stamen* arising in lower third of corolla tube; filaments 5 mm long. *Fruit* a capsule 30–50 × ∅ 2 mm (Figure 185). *Seeds* reticulate, 600–800 µm long. For flowering and fruiting periods see Figure 179.

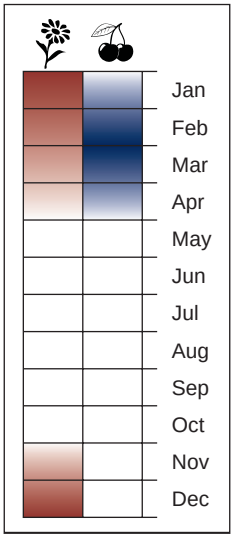


Figure 179.

Diagnostic features: See Table: 14.

Table 14: Comparison between *Streptocarpus caeruleus* and *S. longiflorus*.

	Streptocarpus caeruleus	***Streptocarpus longiflorus***
Distribution	Blouberg and western Soutpansberg	Blouberg
Leaves	Seldom more than 4	up to 10
Corolla	less than 30 mm long	up to 50 mm long
Corolla throat with	2 yellow spots or short bars	A Y-shaped yellow bar
Capsule	up to 50 mm long	90–100 mm long

Taxonomic notes: Burtt (1962: p. 42) suggested that the long and short- flowered plants of *S. longiflorus* and *S. caeruleus* may represent floral dimorphism. Hilliard & Burtt (1971) rejected this statement due to the intermediate flowers produced by F1 hybrids. To accommodate this genetic distinction Hilliard & Burtt (1971) placed the taxa together under *S. caeruleus* but distinguished the two as subspecies *S. caeruleus* subsp. *caeruleus* and *S. caeruleus* subsp. *longiflorus*. Edwards *et al.* (1992), raised the two taxa to specific level by virtue of their distinctive morphology, distributions which overlap, intermediate F1 hybrids and the occurrence of breeding barriers between these taxa.

Figure 180: *S. caeruleus* in habit.

Habitat: Plants have been observed growing in a variety of habitats. They have been found growing in forests next to streams and waterfalls. Within this habitat plants grow amongst moss and in humus rich soils (Figure 180). Plants have also been found growing on sheltered vertical south facing cliffs amongst sedges and moss.

Global distribution: Endemic to the Soutpansberg and Blouberg.

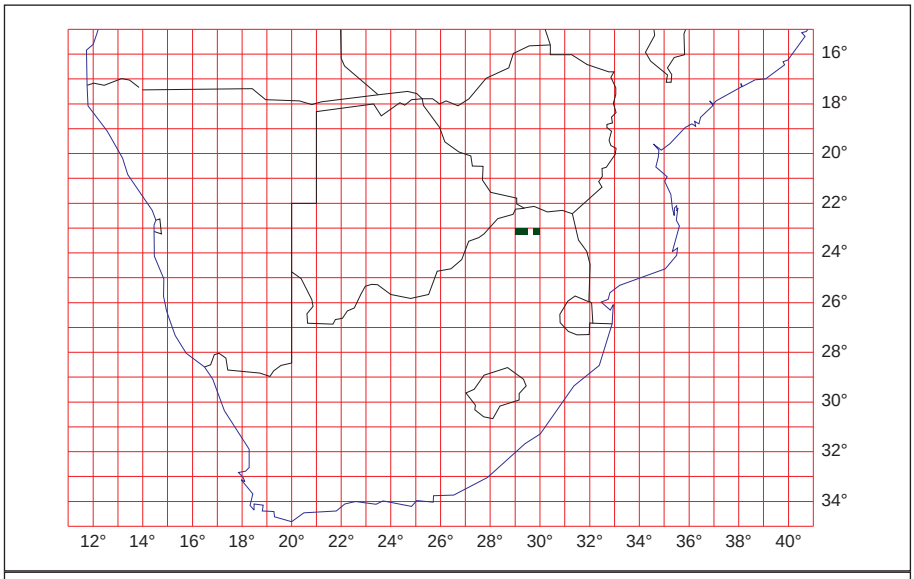


Figure 181: The known global distribution of *S. caeruleus*. Plot resolution equals to a ¼° grid.

Local distribution: Occurring along the high mist-belt regions of the western Soutpansberg.

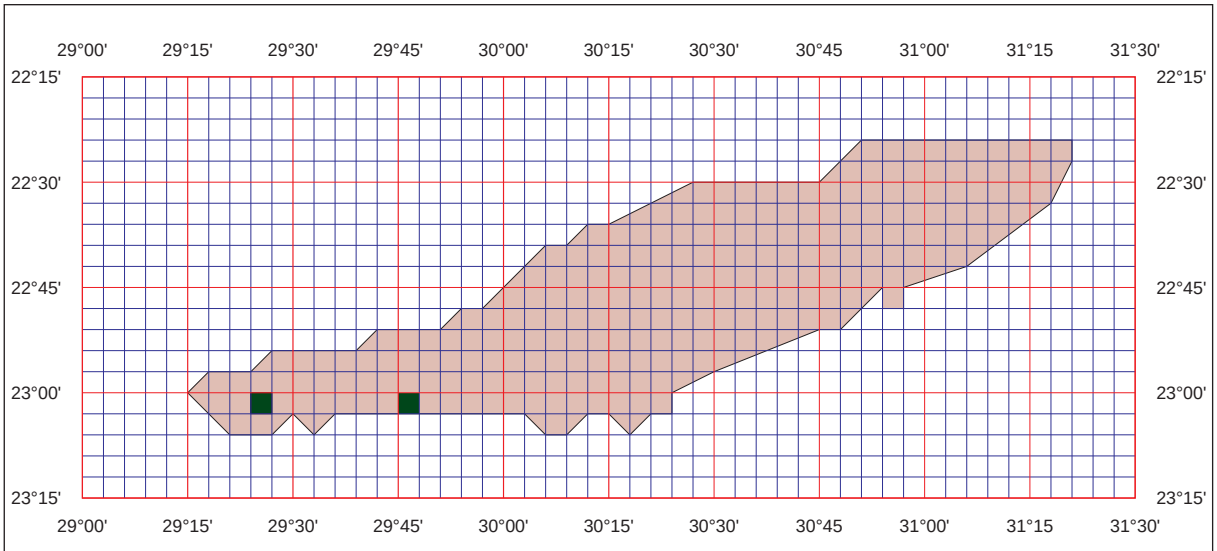


Figure 182: The known distribution of *S. caeruleus* on the Soutpansberg. Plot resolution equals to a $\frac{1}{20}$° grid.

Red data listing: Not listed by Hilton-Taylor (1996)

Uses: Could possibly find appeal as an ornamental plant.

Voucher specimens: 2329: Lejuma, (–AB), *N. Hahn 1484* (ZPB), *Hillard 4760* (NU), Tromp, (–BB), *N. Hahn 1716* (ZPB).

Literature reference: Burtt (1962), Hilliard & Burtt (1971: p. 261–263), Edwards *et al*. (1992).

Figure 183: Side view of *S. caeruleus* flower.

Figure 184: *S. caeruleus* 2 yellow flanking spots.

Figure 185: Fruit of *S. caeruleus*.

Streptocarpus parviflorus Hook. f. subsp. ***soutpansbergensis*** Weigend & T. J. Edwards

in Sendtnera 2: 369 (1994).

Type: Northen Province, Soutpansberg, Waterpoort, 12 km from Mountain Inn to Bluegumspoort, *Stirton 10572* (PRE, holo.).

Derivation: (Lat. *parvus*, little, small + *florum*, flower).

Description: Perennial, rosulate. *Phyllomorphs* oblong-lanceolate, 200–270 × 35–55 mm, pubescent; petiolode 40–60 mm. *Inflorescences* up to 20 flowered, peduncle up to 250 mm. Sepals linear-lanceolate five, 5–8 × 1 mm, pilose. *Corolla* soft pink, widely funnel-shaped, 25–30 mm long, tube 12–25 mm long; lobes suborbicular or elongate; lower lobes with bold lines, sometimes forked. *Stamen* 4–9 mm long, filaments dark purple. *Ovary* 6–8 mm long. *Capsule* 30–50 × ± ∅ 2 mm. *Seeds* reticulate, 0·6–0·8 mm long.

Diagnostic features: Its light pink flowers separate it from all other *Streptocarpus* occurring in the Soutpansberg.

Related taxa: *S. p.* subsp. *parviflorus*.

1(0) Corolla white, limb porrect, filaments usually white . . . . . subsp. *parviflorus*
Corolla pip, limb shredding, filaments blackish blue . . subsp. *soutpansbergensis*

Habitat: Afromontane forest.

Global distribution: Endemic to the high southern central regions of the Soutpansberg.

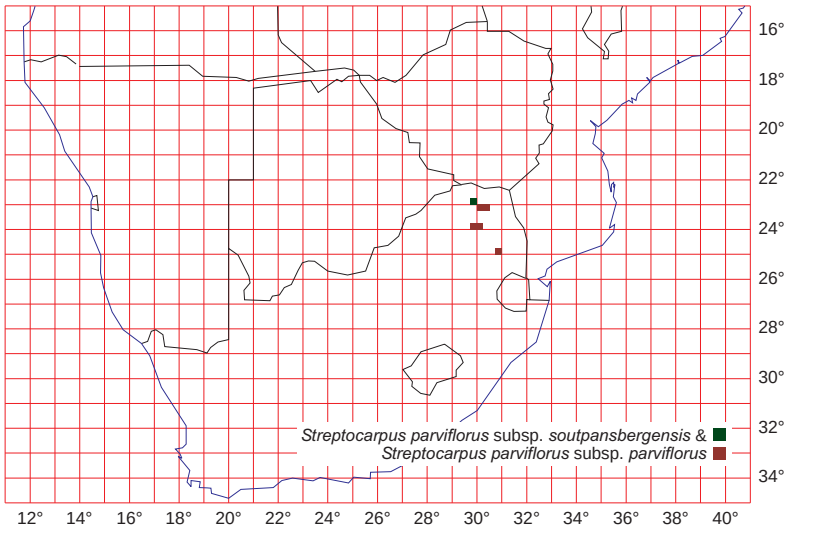


Figure 186: The known global distribution of *S. p.* subsp. *parviflorus* and *S. parviflorus* subsp. *soutpansbergensis*. Distribution data for obtained from Weigend & Edwards (1992). Plot resolution equals to a ¼° grid.

Local distribution: Known from Hanglip west up to the type locality.

Red data listing: Not listed by Hilton-Taylor (1996).

Uses: Could find appeal as an ornamental plant.

Voucher specimens: 2229: (–DD), *Stirton 10572* (PRE).

Literature reference: Weigend & Edwards (1992).

Mesembryanthemaceae

Delosperma N. E. Br.

Derivation: (Greek: δηλος, *delos*, visible + σπερμα, sperma, seed).

Delosperma zoutpansbergense L. Bol.

in the Journal of South African Botany 25: 372 (1959).

Type: Limpopo Province, Soutpansberg, summit of Clouds End, above Mountain Inn, 31 December 1958, flowered April, *A.O.D. Mogg* (NBG 2/59).

Figure 188: *D. zoutpansbergense* flowers seen from the top.

Derivation: Named after the *(Z)Soutpansberg*.

Description: Slender succulent herb, taproot central; branches prostrate, internodes 10–45 mm long up to ∅ 1·5 mm. *Leaves* paired, amplexicaul, lanceolate, 30–50 × 2–4 mm, green, papillate, triangular in cross section, apex tapering. *Inflorescence* of single flowers, flowers ∅ 15–30 mm (Figures 188& 193), pedicel up to 15 mm long; receptacle obconical, 2·7–3 × ∅ 4 mm; sepals 5; 2 exterior sepals 8–9 mm, 3 interior 4–5 mm, up to 1·5–2 mm broad at base; petals unequal, 10–13 × 0·17–2·25 mm, pinkish purple. *Capsule* 5-locular (Figure 190). For flowering and fruiting periods see Figure 187.

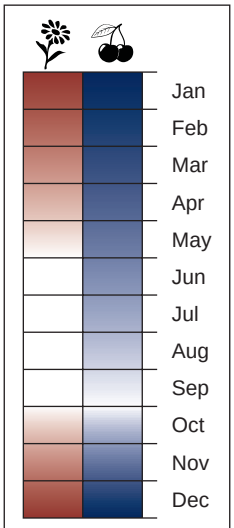


Figure 187.

Taxonomic notes: Quite a variable species depending on its habitat.

Related taxa: *Delosperma mahonii* (N. E. Br.) N. E. Br. is a close ally but has not been recorded in the Soutpansberg Range.

Habitat: Found primarily within the wet mist belt region where it grows amongst vegetation or in humus-rich pockets rarely in the open (Figure 190).

Figure 190: *D. zoutpansbergense* in habitat.

Figure 189: Fruit of *D. zoutpansbergense*.

Global distribution: Endemic to the Soutpansberg possibly also occurring on the Blouberg.

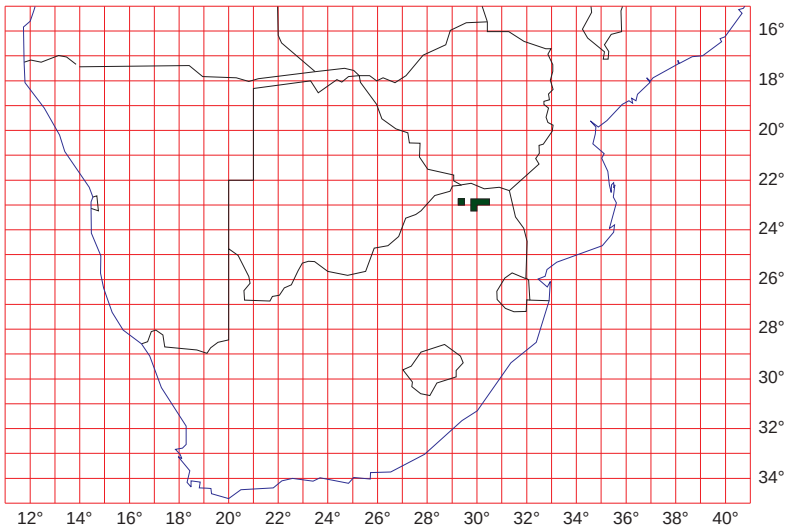


Figure 191: The known distribution of *D. zoutpansbergensis*. Plot resolution equals to a ¼° grid.

Local distribution: Found along the southern slopes of the mountain from approximately 29·41° to 30·15° east.

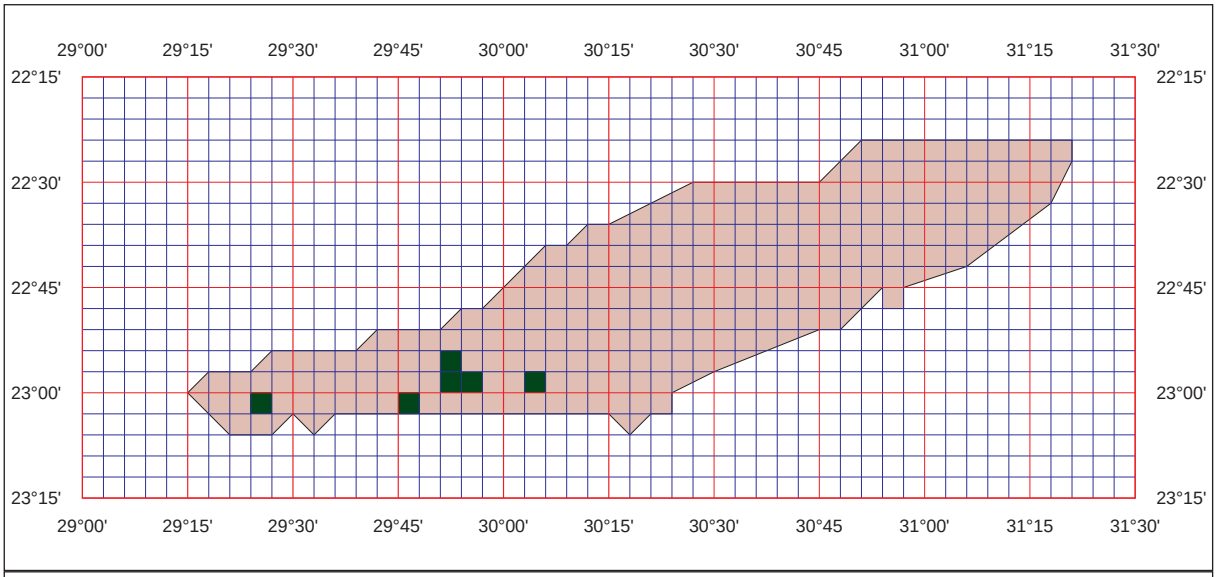


Figure 192: The known distribution of *D. zoutpansbergensis* on the Soutpansberg. Plot resolution equals to a $\frac{1}{20}$° grid.

Red data listing: Not listed by Hilton-Taylor (1996).

Voucher specimens:2229: Zwarthoek, (–DD), *N. Hahn 593* (ZPB), LaRoch, (–DD), *N. Hahn 605* (PRE, ZPB), New Gate, (–DD), *N. Hahn 635* (PRE), Hanglip, (–DD), *N. Hahn 645* (ZPB).

Literature reference: Bolus (1959).

Figure 193: Side view of *D. zoutpansbergense* flower.

Khadia N. E. Br.

Khadia borealis L. Bol.

in Notes on the Mesembryanthemum and allied Genera 3: 6 (1936).

Types: Limpopo Province, Soutpansberg, farm, *Crundall s.n.* (BOL, lecto.) & Limpopo Province, Soutpansberg, farm Franzhoek, *Vogts s.n.* BOL 21638 (BOL, paralecto.).

Figure 194: Side view of K. borealis flower.

Derivation: (Lat. *borealis*, northern) referring to its geographic disposition being the northern member of the genus.

Description: Prostrate succulent (Figure 200) taproot central, branches prostrate, internodes 15–40 mm long, stoloniferous, rosettes produced at nodes. *Leaves* paired, amplexicaul, triangular in cross section, glaucous to dark green, covered with pellucid glands concentrated along margin, apex abruptly tapering to a hyaline point. *Flowers* solitary, ± ∅ 15 mm (Figure 194 & 197); sepals 5, 2 long and 3 short, margins membranous; petals white to pink (Figure 202); petaloid staminodes present; nectary dark green, crenulate; filaments in 3 tiers, outer 3·5–5·0 mm long papillate or epapillate, middle ± 3·6 mm long, inner 2·1–2·7 mm long; stigma ± 3·5 mm long. *Capsule* (Figure 201) with varying number of locules on same plant, locules 5–6(7) (Figure 196); lower part of capsule concave, top of capsule low, rims recurved. *Seeds* orange. For flowering and fruiting periods see Figure 195.

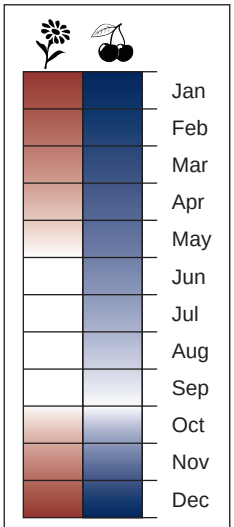


Figure 195.

Diagnostic features: Separating *K. media* P. Winter & N. Hahn from *K. borealis*.

No. locules	Frequency
5	64·22 %
6	30·08 %
7	5·69 %

Figure 196.

Taxonomic notes: This species displays a similar growth habit to *Mossia intervallaris* (L. Bol.) N. E. Br. (occurring in Gauteng, Free Sate and Lesotho). Until recently, the generic circumscription of this taxon was uncertain as it is the only *Khadia* species with elongated branches and long internodes.

Figure 197: Flower of *K. borealis*.

Related taxa: *Khadia media* endemic to the Haenertsburg area.

Habitat: Favours a drier habitat than *Delosperma zoutpansbergense,* growing in shallow soil pockets on flat rock strata sheets within the mist belt.

Global distribution: Endemic to the Soutpansberg.

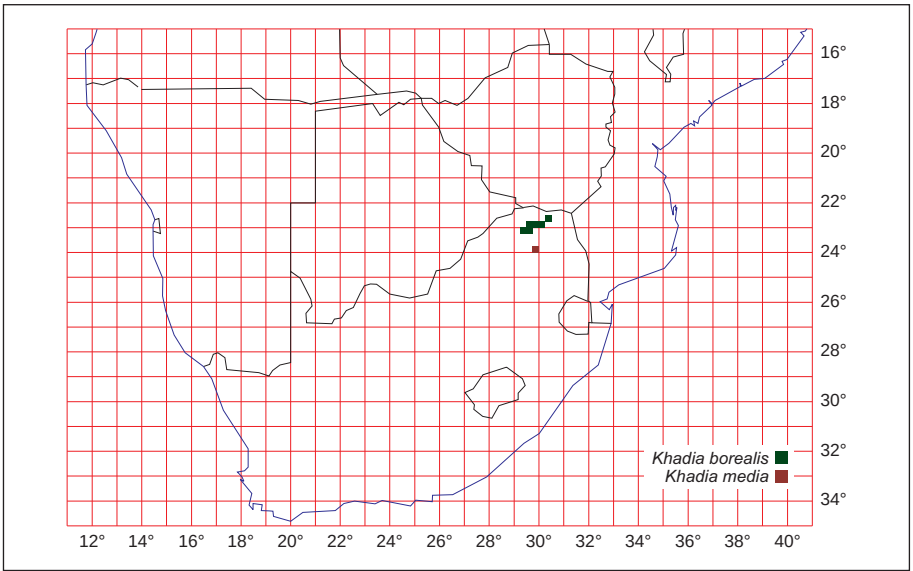


Figure 199: The known distribution of *K. borealis* and *K. media*. Plot resolution equals to a ¼° grid.

Local distribution: Has been found from approximately 29·26° to 30·26° east at an altitude of above 1250 m.

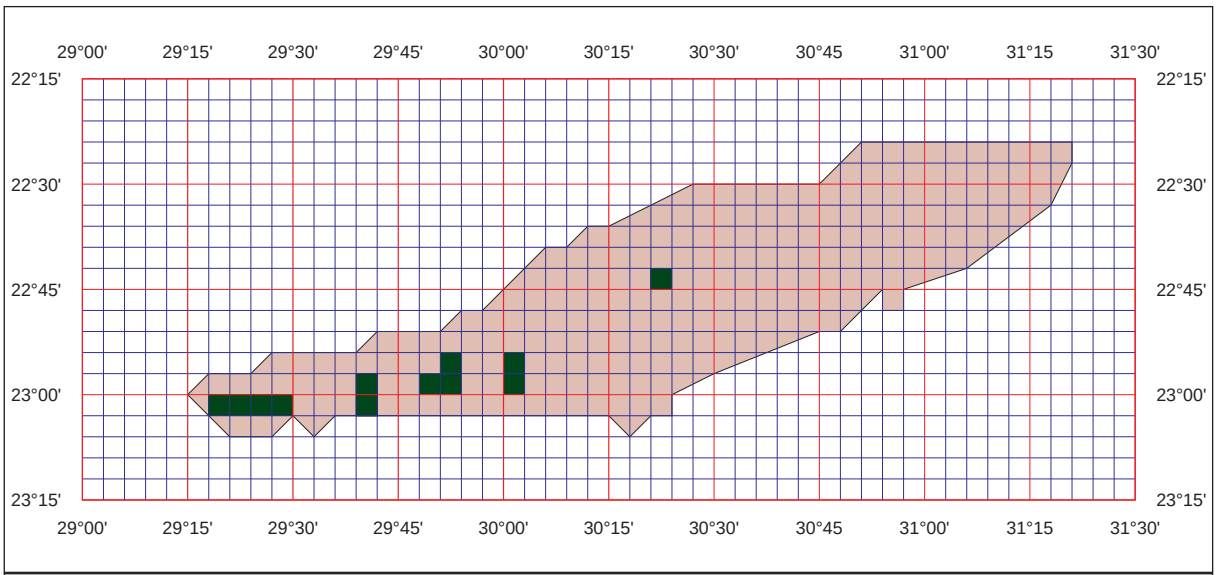


Figure 198: The known distribution of *K. borealis* on the Soutpansberg. Plot resolution equals to a $\frac{1}{20}$° grid.

Biology: Seed dispersal is set into action when the capsule gets wet its valves open, internally, the seeds get pushed out by expanding internal hairs. A combination of water and air movement facilitates further dispersal of the seeds.

Conservation status: Not listed by Hilton-Tylor (1996)

Uses: The plants are eaten by baboons.

Voucher specimens: 2229, LaRoch, (–DD), *N. Hahn 430* (ZPB), *N. Hahn 604* (PRE, ZPB); 2230, Mavhode, (–CB), *N. Hahn 539* (ZPB).

Literature reference: Bolus (1936), Chesselet *et al*. (1998), Winter & Hahn (1999).

Figure 200: *K. borealis* in habit.

Figure 201: Capsules of *K. borealis*.

Figure 202: Pink flowered *K. borealis*.

Orchidaceae

Mystacidium Lindl.

Generic epithet: (Gk. μυστα, *musta*, moustache) referring to the column of *M. filicorne* Lindl. being furnished with a line of hairs.

Taxa recorded within the Soutpansberg: *M. braybonіae* Summerh. and *M. venosum* Harv. ex. Rolfe

Mystacidium braybonіae Summerh.

in Kew Bulletin 1949: 442 (1949).

Type: Limpopo Province, Soutpansberg, near Louis Trichardt, 1350 m alt., November 1948, cult. K, *Mrs. H. Braybon* (K).

Derivation: Named after Mrs. *H. Braybon*.

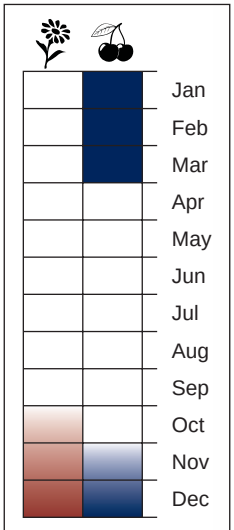


Figure 203.

Description: Short stemmed epiphyte; roots greyish with whitish streaks (Figure 207). *Leaves* 2–5, elliptic to strap shaped, 20–70 × 12–16 mm. *Inflorescence* racemose, arising below the leaves, usually 2–3, up to 120 mm long, pendent, bearing 5–11 flowers. *Flowers* translucent white, unscented, up to 20 mm (Figure 205); dorsal sepal trullate, 8–10 × 3–4 mm, apex rounded to obtuse terminating with a short point; lateral sepals trullate, up to 12 × 5 mm, recurved, apex rounded to acuminate; lateral petals up to 9 × 4 mm, apex acuminate; lip trilobed, with short side lobes near the base, up to 7·5 mm long, central lobe acuminate, conduplicate, lateral lobes cleft; spur widest at the base tapering towards the apex, 14–22 mm long. Column 3 mm tall; pollinia two, globose, ∅ 1·2 mm, orange, stipe slender 2·5 mm long, recurved, viscidia 2, oblong 1·3 mm long; rostrum 1 mm long, apex truncate; anther cap lime coloured. *Fruit* a capsule (Figure 208). For flowering and fruiting periods see Figure 203.

Diagnostic features: Within the study area one other species of *Mystacidium* has been found namely *M. venosum* flowering June. *M. venosum* grows allopatrically from *M. brayboniae*.

Taxonomic notes: Well defined taxon.

Habitat: This little epiphytic orchid is associated with high altitude mist belt regions, preferring shady places which are exposed to mist. This species is frequently associated with *Polystachya ottoniana* Reichb. f. and *Tridactyle tricuspis* Schltr.

Global distribution: Occurring across the Soutpansberg. Said to occur on the Blouberg, none the less all plants found there equate to *M. venosum*.

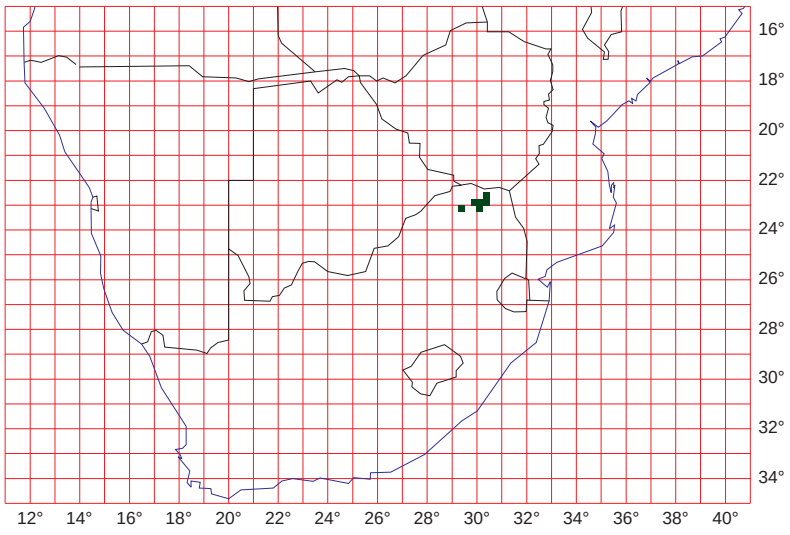


Figure 204: The known global distribution of *M. brayboniae*. Plot resolution equals to a ¼° grid.

Figure 205: Closeup of *M. brayboniae* flowers.

Local distribution:

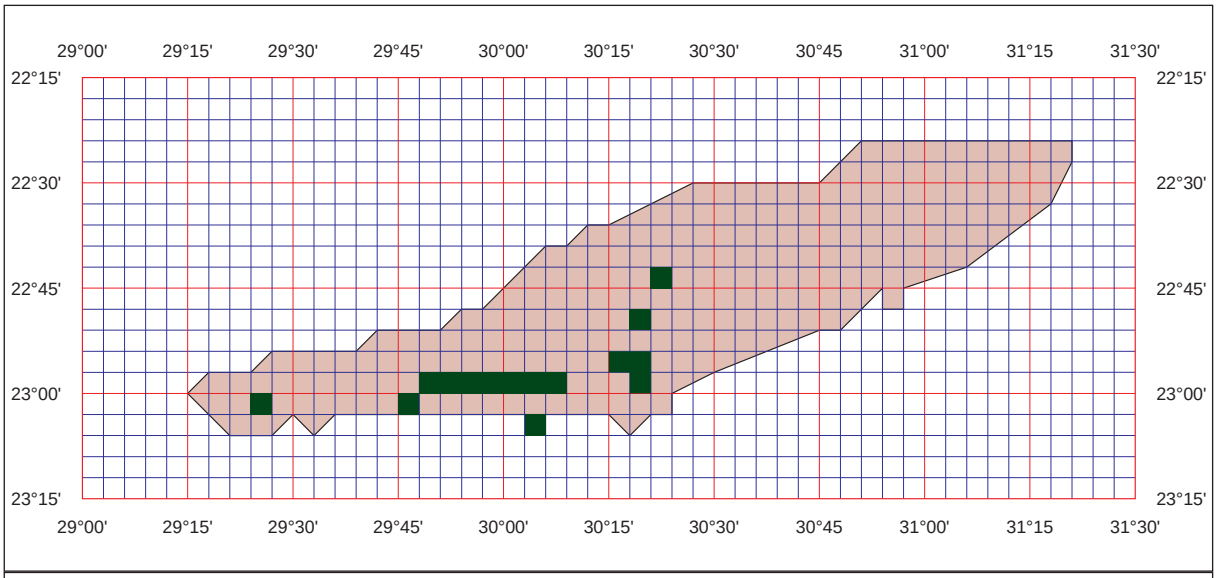


Figure 206: The known distribution of *M. brayboniae* on the Soutpansberg. Plot resolution equals to a $\frac{1}{20}$° grid.

Red data listing: Not listed by Hilton-Taylor (1996).

Natural hybrids: None known.

Uses: Has found appeal amongst orchid collectors.

Voucher specimens: 2229: Farm Zwarthoek, (–DD), (in fl.), *N. Hahn 399* (ZPB); Farm Holworth (–DD), (in fl.), *N. Hahn 431* (ZPB); Farm New Gate, (–DD), (in fl.), *N. Hahn 636* (ZPB). 2230: Venda, Mutale, Mavhode, (in fl.), (–CB), *N. Hahn* 629 (ZPB); Venda, Thathe-Vondo, (–CD), (in fl.), *N. Hahn 437* (ZPB). 2230: Farm Fig Tree, (–DD), (in fl.), *N. Hahn 620* (ZPB).

Literature reference: Stewart *et al*. (1982: p. 269), Summerhayes (1949), Harrison (1972).

Figure 207: *M. brayboniae* flowering in habitat.

Figure 208: Fruiting specimen of *M. brayboniae*.

Pedaliaceae

Derivation: (Gk. πηδαλιον, *pedalion*, a rudder or an oar) referring to the rudder-like angles of the fruit of genus *Pedalium*.

Ceratotheca Endl.

Deviation: (Greek: κερατο–, *kerato-*, horned + θηκη, *theke*, case, container) referring to the horned fruit of this genus.

Taxa recorded within the Soutpansberg: *C. saxicola* E. A. Bruce and *C. triloba* (Bernh.) Hook. *f.*

Ceratotheca saxicola E. A. Bruce

in Bothalia 6(1): 233 (1951).

Type: South Africa, Limpopo Province, Kruger National Park, 51·5 km north-east of Punda Maria, alt. 304·8 m, in sandstone krantze overlooking the Luvuvhu River, May, *Codd 5535* (PRE, holo.!).

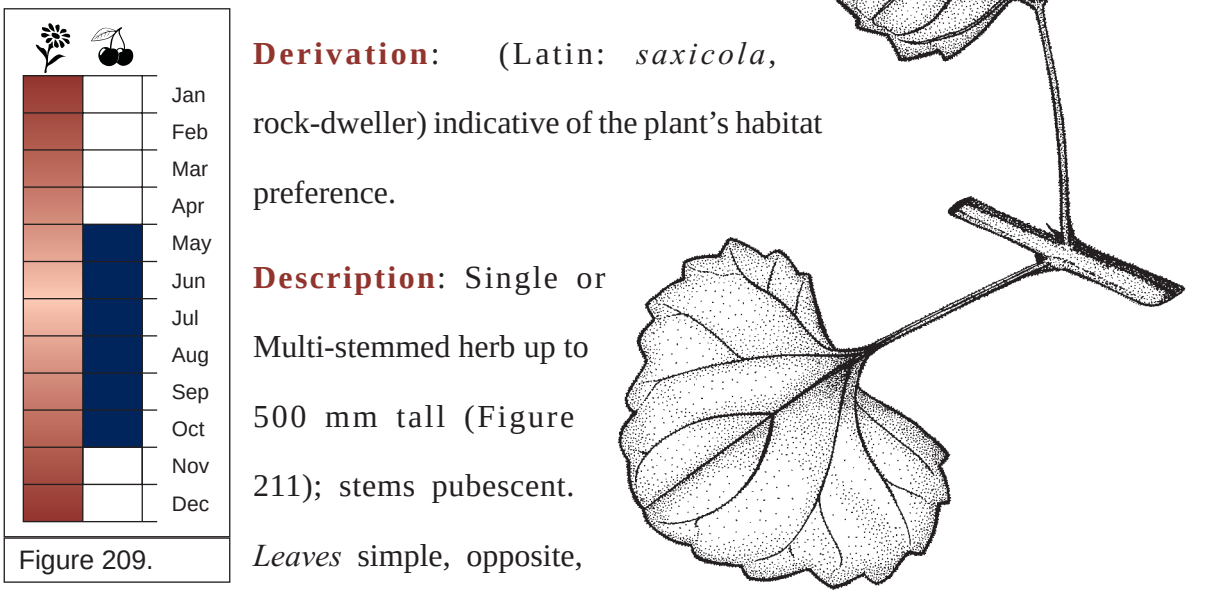


Figure 209.

Derivation: (Latin: *saxicola*, rock-dweller) indicative of the plant's habitat preference.

Description: Single or Multi-stemmed herb up to 500 mm tall (Figure 211); stems pubescent. *Leaves* simple, opposite, emitting a pungent smell when crushed, sub-circular to ovate, 13–28 × 13–28 mm, densely pubescent, green, margin crenate, petiole up to 30 mm long. *Flowers* simple, axillary, calyx 5-lobed, lobes slightly un-

equal, falcate, 5–5·5 × 2–2·5 mm; corolla tube 20 mm long, corolla lobes 5, wine red (Figure 213) to light-pink (Figure 214), 7 × 8·mm pubescent, pedicel up to 9 mm long, pubescent. Stamens 4, filament 1·mm, anther oblong 3 mm long *Fruit* a flattened capsule 8–10 × 5–6 mm, apex with two short horns, 700 µm long, base rounded. Seed subovoid ± 2 mm long (Figure 215). For flowering and fruiting periods see figure 209.

Diagnostic features: *Ceratotheca saxicola* can easily be differentiated from the common weed *C. triloba* by its branched bushy habit, wine red to light pink flowers and small fruit. *Ceratotheca triloba* is a common weed in the area, encountered on disturbed soils such as roadsides.

Taxonomic notes: Well defined taxon.

Habitat: Found growing amongst rock areas and cliffs associated with *Androstachys* woodlands.

Global distribution: Endemic to the far north-eastern sector of the Soutpansberg.

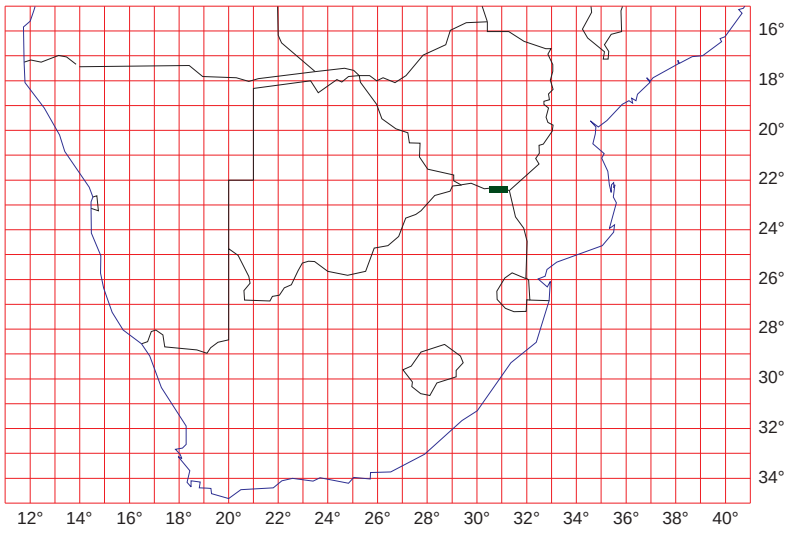


Figure 210: The known global distribution of *C. saxicola*. Plot resolution equals to a ¼° grid.

Local distribution: Known from Tshiugani in the west to Pafuri in the east.

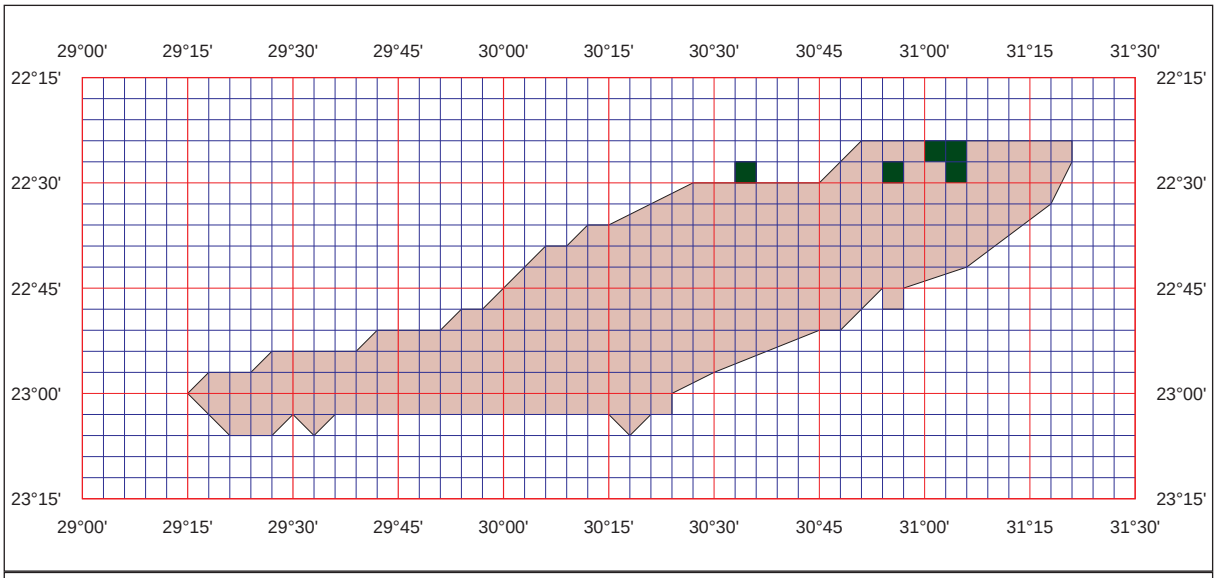


Figure212 : The known distribution of *C. saxicola* on the Soutpansberg. Plot resolution equals to a 1/20° grid.

Red data listing: Not listed by Hilton-Taylor (1996).

Threats: Habitat degradation.

Uses: Could possibly find appeal as an ornamental plant.

Voucher: 2231: Kruger National Park, (–AC), *Codd 5535* (PRE). 2230: Tshikondeni, (–BD), *N. Hahn 1159* (ZPB).

References: Bruce (1951).

Figure 211: Light pink flowering form of *C. saxicola* in habitat

Figure 213: Typical flowering colour of *C. saxicola*.

Figure 215: Fruit of *C. saxicola*.

Figure 214: Light pink colour variant of *C. saxicolsa*.

Poaceae

Panicum L.

Taxa recorded within the Soutpansberg: *P. aequinerve* Nees, *P. coloratum* L. var. *coloratum*, *P. deustum* Thunb., *P. dewinteri* J. G. Anderson, *P. heterostachyum* Hack., *P. laticomum* Nees, *P. maximum* Jacq., *P. natalense* Hochst., *P. novemnerve* Stapf, *P. repens* L., *P. schinzii* Hack. and *P. subalbidum* Kunth

Panicum dewinteri J. G. Ander.

in Bothalia 9(2): 341 (1967).

Type: South Africa, Limpopo Province, Soutpansberg, Lejuma, near Louis Trichardt, 14-02-1967, *B. de Winter 6006* (PRE, holo.!).

Derivation: Named after Bernard *de Winter.*

Description: Clumps slender, hard and woody, well branched, wiry in appearance. Stems up to 1 m high, nodes thickened. *Leaves* lanceolate, 200–800 × 1–6 mm, falling off with age, upper surface pubescent, lower surface glabrous; sheaths finely striate, longer than the internodes, glabrous or sparingly pilose; ligule ciliate; collar hispidulous. *Panicle* narrowly ovate to ovate 40–500 × 30–100 mm; primary branches solitary, 30–70 mm long; secondary branches 20–30 mm long; pedicels 1–6 mm. *Spikelets* lanceolate, few 3·5–4·0 mm long, yellowish or pale green flushed with purple; upper glumen lanceolate, 3·5–4·0 mm long, 7-nerved; lower glumen narrowly elliptic, 2·5 mm long, 3-nerved. Upper florets bisexual; lemma, sub-oblong to obtuse, 2·5 mm long; 5-nerved; palea 2·3–2·5 mm. Lower florets sterile; lemma lanceolate, 3·5–4·0 mm long, 5–7 nerved, lanceolate; palea sub-oblong to obtuse, 1·0–1·5 mm long. Anthers 1 mm long. Grain elliptic, up to 1·5 mm long. For flowering and fruiting periods see figure 216.

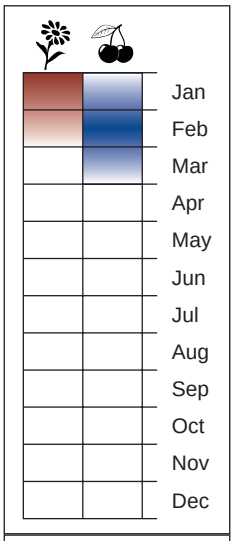


Figure 216

Taxonomic notes: Well defined taxon.

Related taxa: None known in southern Africa.

Habitat: Growing on rocky outcrops and in rock crevices at an altitude of 1070–1830 m.

Global distribution: Endemic to the Blouberg and Soutpansberg.

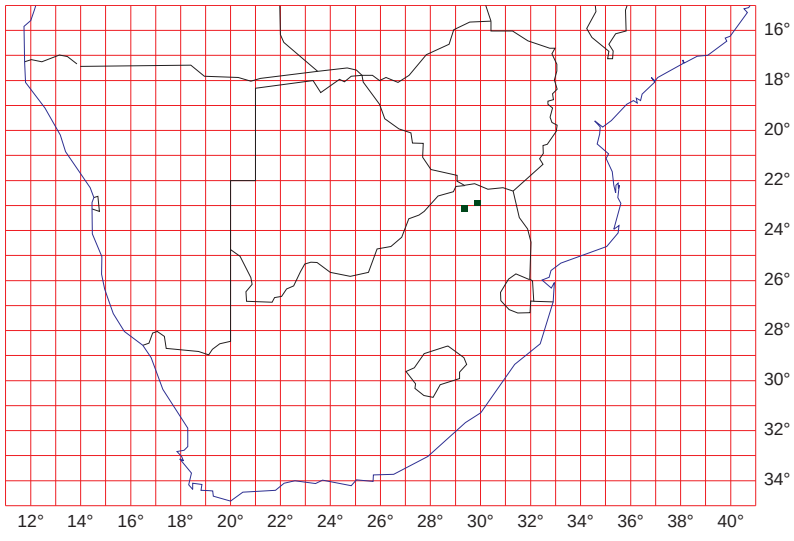


Figure 217: The known global distribution of *P. dewinteri*. Plot resolution equals to a ¼° grid.

Local distribution: Known from the Blouberg east up to Wylie's Poort.

Red data listing: Listed as *Insufficiently Known* by Hilton-Taylor (1996).

Natural hybrids: None known.

Uses: None known.

Voucher specimens: 2229: Lejuma (–AB), *De Winter 6006* (PRE).

Literature reference: Anderson (1967), Gibbs Russell *et al.* (1990: p. 236).

Rubiaceae

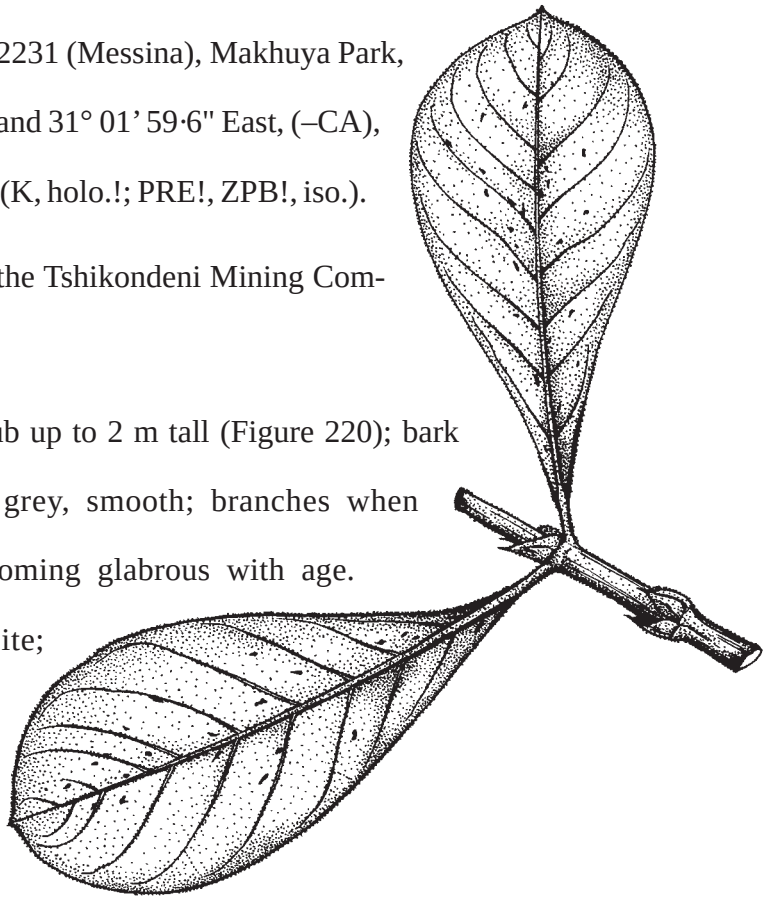
Pavetta L.

Derivation: (Sinhalese, *pawatta*, (name for *P. indica*).

Taxa recorded within the Soutpansberg: *P. eylesii* S. Moore, *P. gardeniifolia* A. Rich. var. *gardeniifolia*, *P. gardeniifolia* A. Rich. var. *subtomentosa* K. Schum., *P. harborii* S. Moore, *P. inandensis* Bremek., *P. lanceolata* Eckl., *P. schumanniana* F. Hoffm. ex K. Schum., *P. trichardtensis* Bremek. *sensu latu* & *P. tshikondeni* N. Hahn

Pavetta tshikondeni N. Hahn

in Bothalia 29(1): 109 (1999)



Type: Limpopo Province, Venda, 2231 (Messina), Makhuya Park, Worlds View, 22° 30' 24·1" South and 31° 01' 59·6" East, (–CA), 300 m, 27-01-1997, *N. Hahn* 1367 (K, holo.!; PRE!, ZPB!, iso.).

Derivation: Named in honour of the Tshikondeni Mining Company.

Description: Multi-stemmed shrub up to 2 m tall (Figure 220); bark pale to dark grey, smooth; branches when sericeous becoming glabrous with age. *Leaves* opposite; lamina obovate to spatulate, up to 78 × 22 mm; bacterial nodules randomly scattered along net-veining and on leaf lamina; principal lateral veins 5–8 pairs; apex obtuse to rounded; base attenuate to obtuse, upper surface light green, sparingly hairy, lower surface grey-green, hairy; petiole 0–2 mm long. *Inflorescences* axillary cymes; peduncle hairy; pedicels

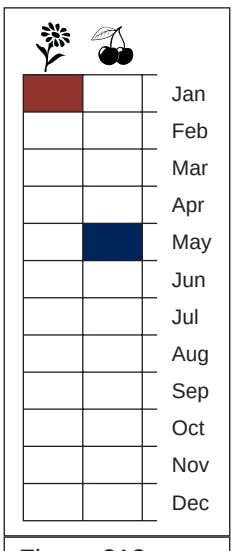


Figure 218.

0–3 mm long, hairy (Figure 223). *Calyx* ensiform, lobes fused at base, up to 9 × 0·5 mm, hairy. *Corolla* white, 4-merous, sparingly hairy; tube up to 15 mm long (Figure 222); lobes up to 6 × 2 mm, apex obtuse to acute. *Anthers* exserted, 4–5 mm long. *Style* 25–30 mm long. *Disc* glabrous. *Hypanthium* up to 1·5 mm long. *Fruit* a fleshy berry, spherical, up to 5 mm in diameter, turning black when ripe; calyx lobes persistent forming a crown at the apex (Figure 221). For flowering and fruiting periods see figure 218.

Diagnostic features: The following key should aid in the identification of all known species of *Pavetta* occurring within the Soutpansberg and its surroundings.

1(0)	Calyx lobes less than 1 mm long	2
	Calyx lobes more than 1 mm long	6
2(1)	Leaves large, circular	*Pavetta eylesii*
	Leaves not circular	3
3(2)	Leaves spathulate	4
	Leaves elliptic to lanceolate	5
4(3)	Leaves glabrous	*Pavetta gardeniifolia* var. *gardeniifolia*
	Leaves hairy	*Pavetta gardeniifolia* var. *subtomentosa*
5(3)	Petiole 5–15 mm; forest trees	*Pavetta inandensis*
	Petiole 2–6 mm; occurring in savanna or on forest margins	*Pavetta lanceolata*
6(1)	Calyx lobes acute	7
	Calyx lobes ensiform	8
7(6)	Leaves sessile	*Pavetta harborii*
	Leaves petiolate	*Pavetta schumanniana*
8(6)	Leaf lamina obovate to spathulate; calyx up to 9 mm long; *Androstachys* woodland	*Pavetta tshikondeni*
	Leaf lamina ovate; calyx up to 5 mm long; occurring in high mountain mistbelt vegetation	*Pavetta trichardtensis*

Taxonomic notes: *Pavetta tshikondeni* is distinct from other South African members of the genus *Pavetta*. Its closest ally, among local members of the genus, appears to be *Pavetta catophylla* K. Schum. However, it differs from *P. catophylla* in its calyx lobes being ensiform, forming a distinct fused tube at the apex of the fruit. In addition its flowers and fruit are not borne in as densely packed axillary cymes as those of *P. catophylla*. It may also be related to *P. gracillima* S. Moore, a species from eastern and southern Zimbabwe. *P. gracillima* is less robust in habit and its calyx-lobes are narrowly triangular in outline.

Figure 220: *P. tshikondeni* flowering in habitat.

Global distribution: Found along the North-eastern perimeters of the Soutpansberg.

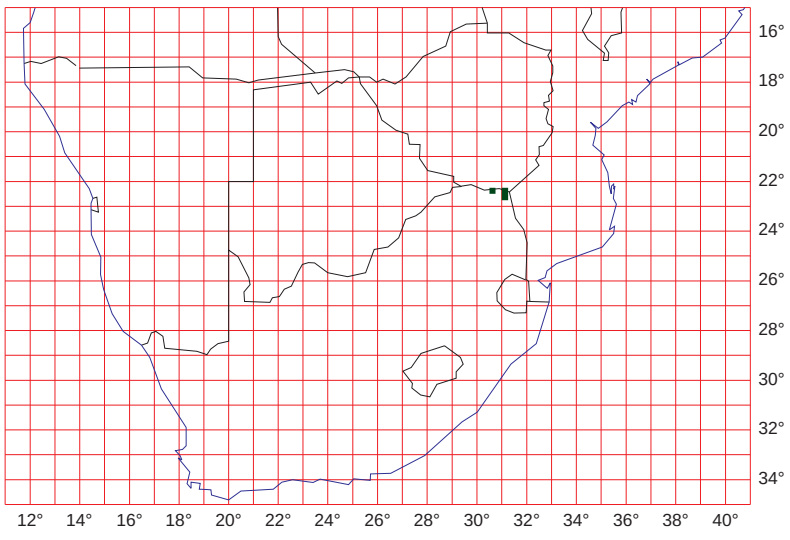


Figure 219: The known global distribution of *P. tshikondeni*. Plot resolution equals to a ¼° grid.

Local distribution: Occurring along the escarpment west of the Luvuvhu River on Frip Formation and on the Clarens Formation ridges north of the Mutale River.

Habitat: The species is associated with *Androstachys* Woodlands.

Biology: Flowering times seem to vary considerably. Plants in a given community have never been found flowering in profusion (Figure 220).

Red data listing: Not listed by Hilton-Taylor (1996).

Threats: Habitat degradation.

Natural hybrids: None known.

Uses: None known.

Voucher: 2230: Venda, Klein Tshipise, (–BC), (in fl. & fr.), 01-02-1980, *A.E. van Wyk 3606* (PRE, PRU). 2231: Kruger National Park, 32 miles North-East of Punda Maria, steep sand stone hillside overlooking Pafuri (Luvuvhu) River (–AC), *L. E. Codd & B. de Winter 5538* (PRE). Makhuya Park, Worlds View, (–CA), (in fr.), 04-05-1996, *N. Hahn s.n.* (K, ZPB), 27-01-1997, (in fl.), *N. Hahn 1367* (K, PRE, ZPB).

References: Bremekamp (1929; 1933; 1934), Hahn (1997a), Moore (1911)

Figure 223: *P. tshikondeni* inflorescence.

Figure 222: *P. tshikondeni* flowers clearly illustrating its ensiform calyx.

Figure 221: *P. tshikondeni* in fruit.

Vangueria

Derivation: Madagascan, *voa vanguer*, name for *V. edula*.

Taxa recorded within the Soutpansberg: *V. infausta* Burch. subsp. *infausta*, *V. madagascariensis* J. F. Gmel., *V. parvifolium* Sond. and *V. soutpansbergensis* N. Hahn

Vangueria soutpansbergensis N. Hahn

in Bothalia 27(1): 45 (1997).

Type: Limpopo Province, Soutpansberg, 2230 (Messina), farm Studholme, 22° 56’ 52·4” south and 30° 01’ 18·8” east, (–CC), 1440 m, 28-11-1995, (in flower), *N. Hahn 1112* (PRU, holo.!; K, PRE, ZPB, iso.).

Derivation: Named after the *Soutpansberg* mountain range.

Description: A deciduous shrub or small tree up to 2·5 m high; bark dark brown to grey-brown; branches glabrous. *Leaves* opposite or fascicled, if fascicled usually on dwarf lateral branches; lamina elliptic to almost circular, (13·6–) 16·2–25·2 (–26·7) × (9–) 12·9–18·9 (–22·8) mm; glabrous above and below, seldom very sparingly hairy when young; base obtuse to rounded; apex obtuse to rounded; margins entire; dark green above, paler below; petiole short, (0·5–) 1·1–2·4 (–2·7) mm long, glabrous to rarely sparingly hairy, lateral veins 3–5, opposite to alternate near the leaf base, otherwise alternate. *Inflorescence* dense, 2–15-flowered fascicles or pedunculate cymes; peduncle glabrous or glabrescent; pedicel (1·5–) 2·1–2·9 (–3·7) mm long (Figure 228). *Flowers*, greenish to lime-green. *Calyx* 5-merous, glabrous to sparingly hairy, (1·2–) 1·7–1·9 (–2·6) × (1–) 1·3–1·4 (–1·9) mm. *Corolla* glabrous to sparingly hairy on outside, with a distinct ring of reflexed hairs in throat; tube (2·3–) 2·5–2·7 (–3·2) × ∅ (2·1–) 2·5–2·8 (–3·4) mm at mouth; lobes elliptic-oblong, (2·9–) 3·3–3·5 (–4·1) mm long, apex occasionally recurvo-mucronate. *Stamens* 5; anthers exserted, (0·9–) 1·3–1·4 (–1·6) mm long. *Style* (3·1–) 3·6–3·9 (–4·6) mm long, glabrous, conversely curved so as to touch the throat of the tube be-

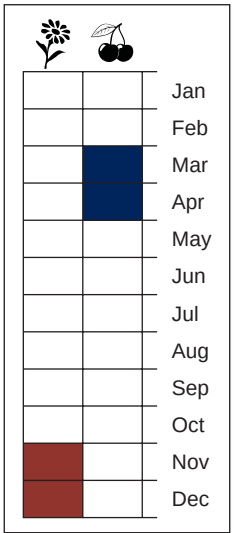


Figure 224.

tween two anthers. *Disc* (1·8–) 2·2–2·3 (–2·8) mm in diameter, depressed or tumid. *Hypanthium* (1·1–) 1·6–1·7 (–2·1) mm long. *Drupe* glabrous, globose, (15·3–) 17·9–24·1 (–27·5) × (14·7–) 17·5–25·9 (–29·4) × (13·6–) 16·3–23·7 (–27·2) mm; pedicel (0·5–) 0·8–1·9 (–2·3) mm, with 1–4 pyrenes, seed bean shaped (Figure 227). For flowering and fruiting periods see Figure 224.

Taxonomic notes: The following key should help to separate related genera of the tribe Vanguerieae occurring within the Soutpansberg region.

1(0) Calyx lobes short, linear or triangular, shorter than flowering tube . . . *Vangueria*
Calyx lobes long and leafy, as long as or longer than the flowering tube 2
2(1) Calyx lobes spathulate; fruit narrowing towards apex . . . . . *Lagynias*
Calyx lobes linear; fruit not narrowing towards apex . . . . . *Pachystigma*

The tribe Vanguerieae is notorious for its taxonomic complexities. The genera are poorly defined and at specific level, characters available for the separation of taxa are very few and at best can be seen as artificial. The morphological differences between *Vangueria soutpansbergensis* and *V. parvifolium* are very slight and concern mainly the degree of hairiness of various organs (see diagnostic features). *V. soutpansbergensis* in nevertheless recognized at species level for the following reasons:

- other similarly closely related species pairs are widely recognized in **Rubiaceae**, for example, *Vangueria infausta* subsp. *infausta* and *V. madagascariensis* and *Canthium mundianum* Cham. & Schltsl.and *Canthium gilfillanii* (N. E. Br.) O. B. Mill.
- even though *V. soutpansbergensis* and *V. parvifolium* are sympatric in some places no intermediate forms have been found.
- *V. soutpansbergensis* is endemic to the Soutpansberg, a region with a high occurrence of endemic plants and animals!

Diagnostic features: Summary of characters separating the two species of *Vangueria* see Table 15.

Table 15: A comparison between *Vangueria soutpansbergensis* and *V. parvifolium.*

	V. soutpansbergensis	***V. parvifolium***
Distribution	restricted to the Soutpansberg	occurring from the Northern Cape to the Northern Province and within southeastern Botswana
Bark colour	grey to dark brown	grey to grey brown
Young branches	glabrous seldom sparingly hairy	tomentose
Outside corolla	glabrous to sparingly hairy	densely hairy
Calyx	glabrous to sparingly hairy	densely hairy
Pedicel	glabrous	hairy

Related taxa: *Vangueria parvifolium*.

Habitat: *V. soutpansbergensis* occurs in a variety of habitats ranging from mountain mist-belt to *Androstachys* Woodland. *V. soutpansbergensis* is fairly common usually occurring within mixed woodlands and on rocky slopes. The species has only been found growing on soils derived from quartzite, an attribute shared with most endemic plant species of this region.

Global distribution: Plants endemic to the Soutpansberg.

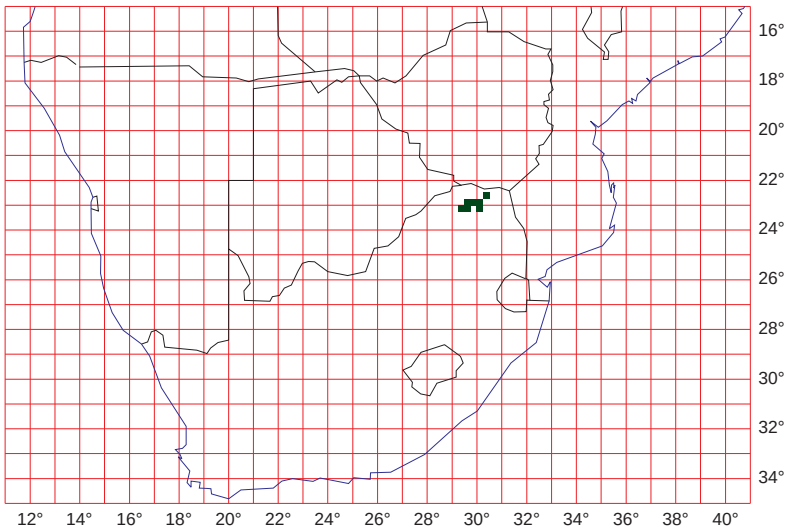


Figure 225: The known global distribution of *V. soutpansbergensis*. Plot resolution equals to a ¼° grid.

Locale distribution:

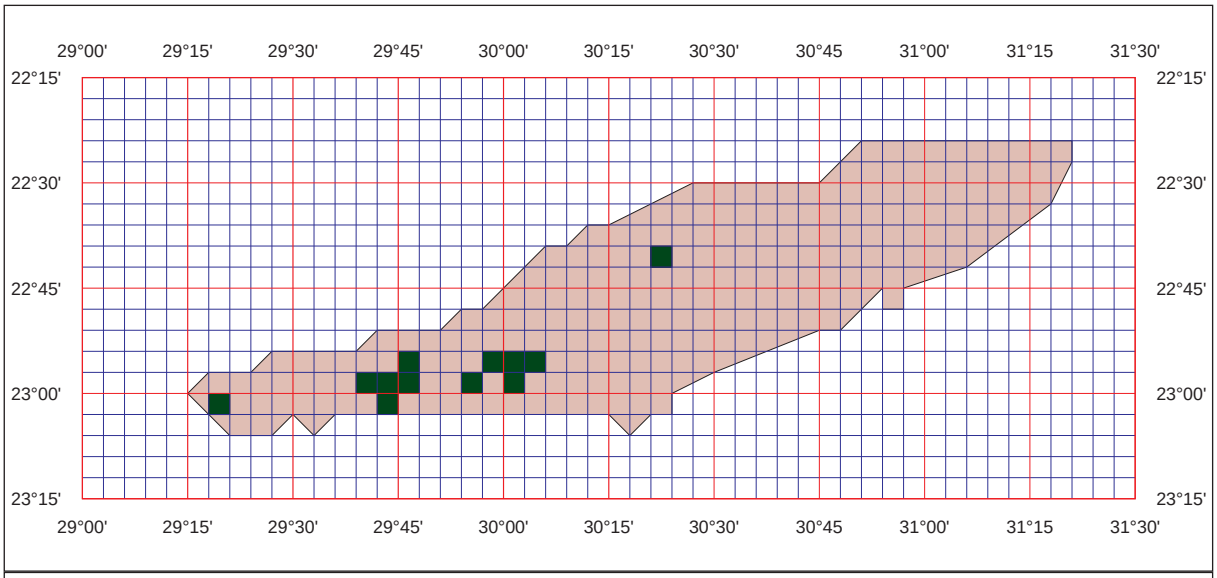


Figure 226: The known distribution of *V. soutpansbergensis* on the Soutpansberg. Plot resolution equals to a $\frac{1}{20}$° grid.

Red data listing: Not listed by Hilton-Taylor (1996).

Uses: The fruit are pleasant tasting and similar to *Vangueria infausta.*

Voucher specimens: 2229: Muswiru, Schlesinger's sawmill, (–DC), *G. Gerstner 5912* (K n.v., PRE)[1]; Farm Surprise, (–DC), *N. Hahn 454* (ZPB); Farm Uniondale, (–DC), *N. Hahn 329* (PRU, ZPB); Farm Clydesdale, (–DD), *N. Hahn 613* (ZPB); Farm Rushton, (–DD), *N. Hahn 650* (ZPB); Farm Zwarthoek, (–DD), *N. Hahn 109* (PRU, ZPB). 2230: Piesanghoek, (–AA), *G. Gerstner 5736* (PRE); Farm Studholme, (–AA), *N. Hahn 1112* (K, PRE, PRU, ZPB); *N. Hahn 1164* (K, PRU, ZPB).

References: Bridson (1996), Coates Palgrave (1992), Dyer (1975), Hahn (1997).

1 This is the oldest known collection, being collected by Gerstner in 1945.

Figure 228: *V. soutpansbergensis* in flower.

Figure 227: Fruit of *V. soutpansbergensis*.

Zamiaceae

Encephalartos Lehm.

Derivation: (Greek: εν, *en*, in + κεφαλη, *kephale*, head + αρτος, *artos*, bread). Referring to the use of making bread from top of the trunk's farinaceous pith.

Taxa recorded within the Soutpansberg: *Encephalartos hirsutus* P. J. Hurter and *Encephalartos transvenosus* Stapf & Burtt Davy.

Encephalartos hirsutus P. J. Hurter

South African Journal of Botany 62(1): 46–48 (1996)

Type: South Africa, Limpopo Province, Venda, 1000 m alt., 7 June 1994 (frond and male cone), *P. J. H. Hurter 94R/1* (PRE, holo.!).

Derivation: (Latin: *hirsutus*, covered with hair, rough) referring to the vesture of the leafs.

Description: Erect to decumbent dioecious plants, up to 3·5 m or rarely 4·2 m long, suckering from the base, trunk ∅ 350–400 mm, leaf bases persistent; crown, densely golden-tomentose, turning greyish with age (Figure 233). *Leaves* apical forming a dense crown, glaucous, 1·1–1·2 (–1·4) m long, sub-sessile, apex recurved, rigid; petiole up to 130 mm, long, bulbous basally, tomentose; rachis tomentose, becoming glabrescent with age; pinnae entire, inflexed and directed towards the apex of the frond at ± 50° to the rachis, opposing leaflets set at an angle of ± 40° to each other, overlapping, proximal leaflets gradually reduced but not to a series of spines, median leaflets 130–170 × 20–24 mm, narrowly elliptic to falcate; apex acuminate terminating in a sharp point; bases decurrent on the rachis. *Cones* dimorphous, glabrous, scale facets smooth, waxy, bluish-green, male cones up to 5 per trunk, narrowly ovoid, 500 × ∅ 90 mm, peduncle 120 mm long (Figure 231); female cones 1–3 per trunk, ovoid, 400 × ∅ 350 mm, subsessile peduncle up to 60 mm long, hidden by cataphylls (Figure 232). *Seeds* ± 200 per cone, sarcotesta orange-red, kernel 30–35 × ∅ 15–18 mm, ellipsoid, smooth.

Diagnostic features: *E. hirsutus* can easily be identified by its decumbent growth habit, its stiff, pungent, glaucous leaflets with a decurrent base and the raised veins on their abaxial surface .

Taxonomic notes: Well defined taxon.

Related taxa: *E. eugene-maraisii* Verdoorn, *E. dolomiticus* Lavranos & Goode, *E. dyerianus* Lavranos & Goode, *E. lehmannii* Lehm., *E. princeps* R. A. Dyer and *E. middelburgensis* Vorster *et al*.

Habitat: The western population is associated with steep cliffs. The eastern populations are associated with *Androstachys* Woodland growing amongst steep east to south-east facing boulder strewn slopes.

Global distribution: Endemic to the Soutpansberg.

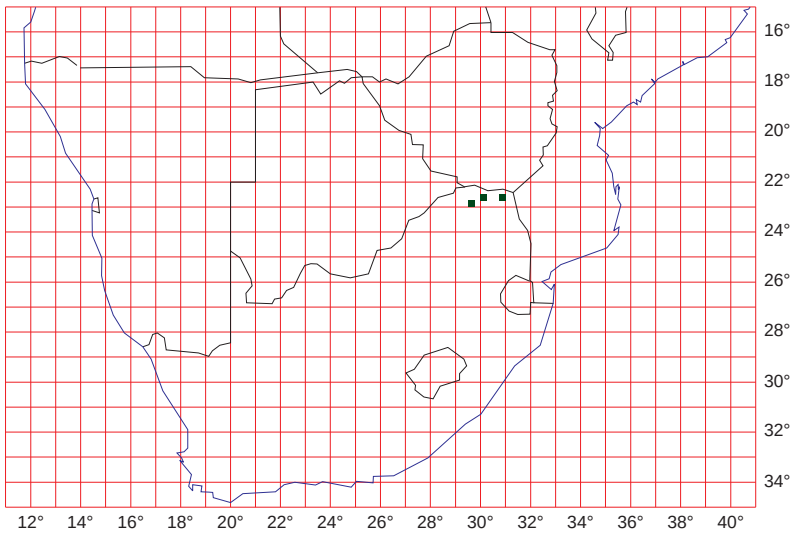


Figure 229: The known global distribution of *E. hirsutus*. Plot resolution equals to a ¼° grid.

Local distribution: Known from three disjunct populations.

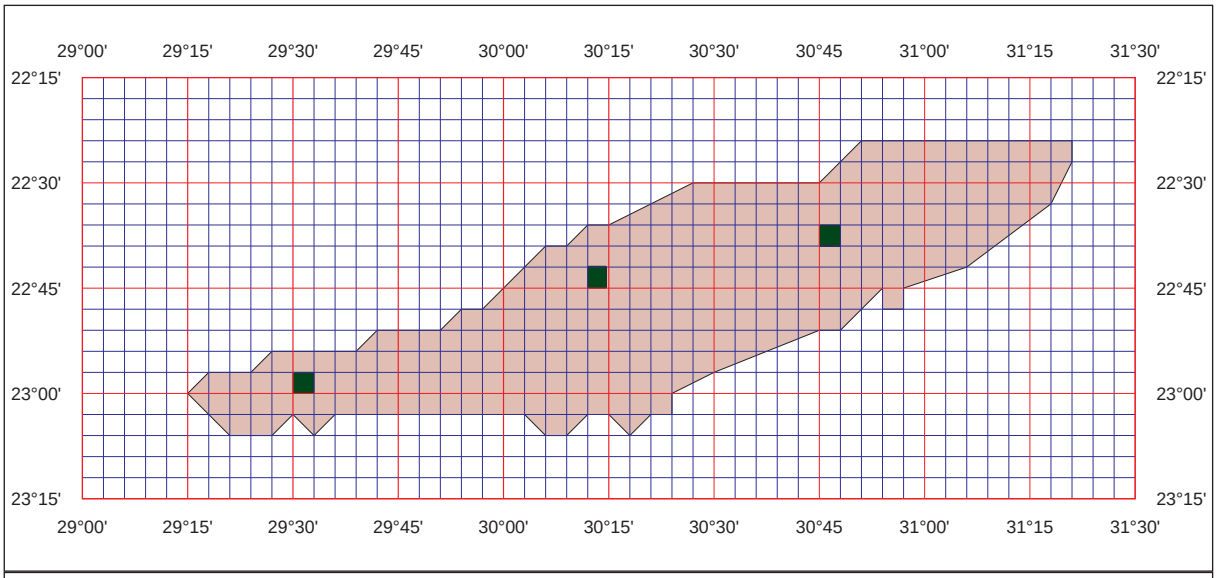


Figure 230: The known distribution of *E. hirsutus* on the Soutpansberg. Plot resolution equals to a $\frac{1}{20}°$ grid.

Conservation status: Not listed by Hilton-Tylor (1996).

Threats: The western-most population has apparently been raped in the past and only a single inaccessible specimen remains. It is hoped that its formal description will not cause destruction of the populations.

Natural hybrids: None known.

Uses: The plant has appeal amongst cycad collectors.

Voucher specimens: 2230: Lavhurala (–DB), *P. J. H. Hurter 94R/1* (PRE, holo.!).

Literature reference: Goode (1989), Hurter & Glen (1996).

Figure 231: *E. hirsutus* male cones.

Figure 232: *E. hirsutus* female cone.

Figure 233: Growth habit of *E. hirsutus* .

6 Discussion

6.1 Phytogeography

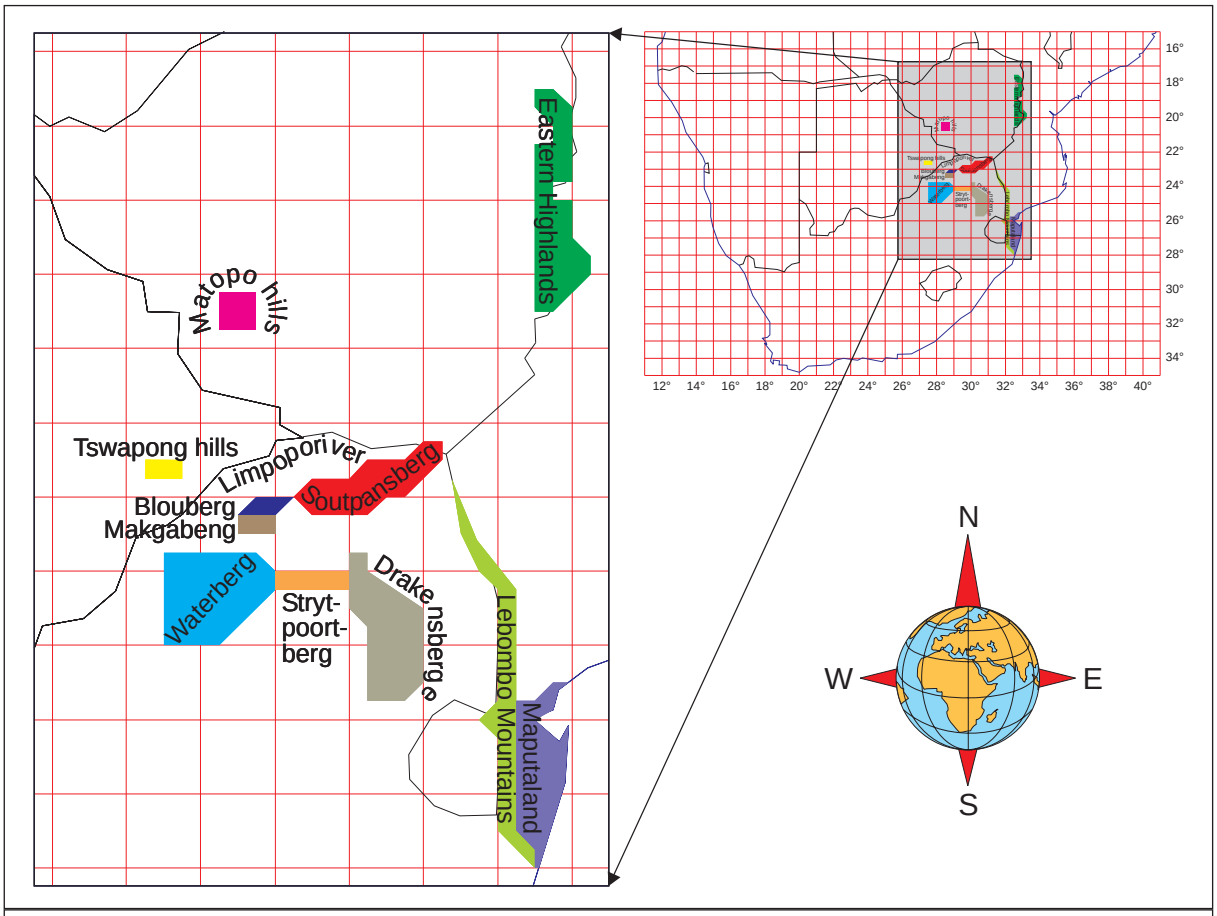


Figure 234: Central Southern African Mountainous Archipelago also showing the Limpopo Basin and Maputuland

The Soutpansberg can be referred to as an inselberg. In many respects this notion is correct, but very limited in overview of the mountains' greater geographical disposition. The Soutpansberg forms part of an array of inselbergs, which can be said to form an archipelago of mountain ranges.

The exchange of genetic material as observed in oceanic islands can also be seen in context of this mountainous archipelago. Many plants are endemic to these mountains, being either restricted to a single mountain range, or endemic to two or more of the mountain ranges.

The following is a list of mountain ranges forming part of the Central Southern African Mountainous Archipelago:

- Blouberg (quartzite)(Soutpansberg *sensu lato* CPE[1])
- Wolkberg CPE (Drakensberg north of Kaapsehoop, dolomite and quartzite; Haenertsburg includes ancient granites)
- Chimanimani-Nyanga CPE (Chimanimani Mountains quartzite; Nyanga granite)
- Lebombo Mountains (rhyolites)(not defined as a CPE)
- Matopo Hills (granite)(not defined as a CPE)
- Makgabeng (quartzite)(not defined as a CPE)
- Soutpansberg (quartzite)(Soutpansberg *sensu stricto* CPE)
- Strydpoortberge (quartzite)(forming the northern limit of the Sekhukhuneland CPE)
- Waterberg Plateau (quartzite)(not defined as a CPE)

Quartzite constitutes seven out of the above nine mountain ranges' major rock-forming component (77·78 %).

In addition, the following two non-mountainous centres of endemism play a significant part within the biodiversity of the Soutpansberg:

- Limpopo Valley (not defined as a CPE)
- Maputuland CPE

6.2 Changing environment

From the evidence given in Table 6 and the accompanying Figures 27–42, it is shown that the Soutpansberg habitat has largely been transformed from grasslands to secondary shrub-land. Out of the approximately 35% extinct mammalian herbivore species, over 70% were grazers.

Walker (1989) has shown how the Savuti Marsh in Botswana has changed over a relatively short period of time from grassland to *Acacia* woodland and back to grassland. In the late 1800s the swamp was full, at approximately the turn of the century it dried up till the early 1950's. In 1982 it dried up again. At the beginning of this century as the channel started drying up the elephants moved out of the area in search of water. At the same time the area experienced a massive outbreak of rinderpest, killing most ungulates. As a result the grasslands were transformed into *Aca-*

1 CPE = Centre of Plant Endemism as defined by van Wyk & Smith 2001.

cia veld as these trees could now mature because of the reduced predation on them. Over a period of time the ungulate numbers started to recover and elephants returned, with the result that the area is again being systematically transformed into grassland.

Leakey & Lewin (1996) have referred to the importance of what they term "keystone herbivores" in maintaining biodiversity. They refer to *Loxodonta a. africana* (Blumenbach) as being one of Africa's most important keystone species. As an example they referred to Hluhluwe Game Reserve in KwaZulu-Natal when elephants became extinct. Within a century three antelope species became locally extinct and populations of wildebeest and waterbuck were also reduced.

It is therefore no wonder that the Soutpansberg has been so drastically transformed within such a short period following the local extermination of its wild-life.

> *'I believe we face a crisis - one of our own making - and if we fail to negotiate it with vision, we will lay a curse of unimaginable magnitude on future generations'*
> – Richard Leakey (1996)

6.3 Soutpansberg centre of endemism

To try and define the term "*centre of endemism*" is a perplexing problem! In a biological context, an organism restricted to a localised area is referred to as an endemic. If this localised area has a high occurrence of endemics we generally refer to it as a "centre of endemism". Terrestrial centres of endemism are most easily understood in the context of islands. Islands are relatively isolated as they are surrounded by the sea . The problem comes when one looks at islands in close proximity of one another. As an example, should one see the Galapagos Archipelago as a centre of endemism or should one treat every individual island as a separate centre interacting with the other centres within the archipelago?

The above argument becomes more problematic when one tries to apply the above mentioned concepts of "centres of endemism" on a continental scale. Our first problem would be to try and ascertain natural boundaries to delineate centres of endemism. As an example, the Soutpansberg

Centre of Endemism is a well-defined geographic area which in turn is well delineated by its endemic fauna and flora. The problem comes once one looks beyond the narrow endemic species. There are strong floristic alliances between the Soutpansberg CPE and the Maputuland CPE (Figure 235) (van Wyk 1996). Should one consider these plants separately from the rest of the flora and thereby define them as Soutpansberg—Maputuland endemics? From a biological point

Figure 235: Sodwana, Lake Bhangazi North Maputuland Centre. Photo taken December 1994.

of view much can be gained from treating these plants separately. They can give us an indication of the probable evolution of the set biota. If one accepts the Soutpansberg—Maputuland endemics as separately delineated entities, one comes up with the following perplexing problems. If the given two areas interact in similar ways with other centres of endemism, does one define this group as an archipelago-like concept of endemism such as the Galapagos except that the surrounding areas are terrestrial? What does one call such an archipelago and where are its borders? White (1983) in his Vegetation Map of Africa named a specific floristic region the Afromontane Region defining it as an archipelago-like centre of endemism (see also p. 196). Defining floristic regions as centres of endemism poses a problem as it excludes geographic centres

of endemism. The above example nonetheless shows that it is possible for isolated regions scattered throughout Africa to interact.

Van Wyk & Smith (2001: p. 16, table 1) made a numerical comparison of the 21 CPE recognized by them (Figure 236). The one entity which stood out was the Soutpansberg's large floral diversity especially at generic and family level. Comparisons of the number of endemic species is difficult as the 45 (narrow endemic) taxa mentioned were compared to other centres' near-endemics tally which obviously is much higher. It is hoped that future studies based on the above argument can define more meaningful numerical comparisons. In addition data from the following areas is needed to make any meaningful comparison.

- Blouberg mountain (*sensu stricto*)
- Chimanimani mountain(*sensu stricto*)
- Haenertsburg area (extension of the Wolkberg Centre of Endemism?)
- Lebombo mountains (between Swaziland and Pafuri)
- Limpopo Valley
- Magabeng mountain
- Matopo hills
- Pietersburg plateau
- Strydpoortberg
- Waterberg

6.3.1 Fauna

As a result of the decline and elimination of various large mammals (Table 6), and the introduction of livestock such as cattle and goats, secondary bush encroachment has replaced much of the original grassland vegetation. At present many rare and endangered mammals are still to be found within the study area (Table 10). Habitat degradation and poaching will have a marked influence on their survival.

The avian fauna is immensely diverse, ranging from species confined to the forest to species commonly associated with the dry savanna vegetation of the surrounding area. Over 500 bird species are recorded for the Soutpansberg (Roberts' Birds 1999).

The insect fauna has been poorly studied. However, many endemic species, especially butterflies have been found (Table 8). There seems to be a definite disjunct distribution between the endemic butterflies occurring in the Soutpansberg, and those occurring in the Blouberg.

The Soutpansberg is known for its substantial number of restricted reptile species. Branch (ed.) (1988) considers the Soutpansberg and adjacent regions a sensitive area, having recorded eight restricted taxa of which seven are endemic to the mountain region (Table 9).

At present no endemic fish have been recorded in the Soutpansberg. This could be attributed to the immense age of the Soutpansberg and possibly to periodic droughts which lead to mass extinction of fishes (Gaigher *pers com*).

One endemic frog *Breviceps sylvestris taemiatus* Poynton has been recorded for the Soutpansberg. Its nearest ally *B. s. sylvestris* FitzSimons occurs in the Wolkberg region, a distribution shared with some of the endemic plants. The Soutpansberg has a relatively poor representation of frog species, an attribute shared with the fish. It is possible that the factors pertaining to the fish diversity are also relevant to those of the frogs. The only frog genus that has an endemic representative is *Breviceps*, a fossorial genus that is capable of aestivation. It is also the only group of frogs which do not need water for the development of their offspring making it more drought tolerant than others.

6.3.2 Flora

Cowling & Hilton-Talyor (1997) pointed out that there is a direct correlation between species richness and high endemism in southern Africa with the exception of Kaokoveld and Karoo Centres.

Approximately 2 500 to 3 000 vascular plant taxa comprising 1 066 genera and 240 families are known to occur in the mountain (Table 7). This is a significant number if one had to compare it to other regions. Arnold and De Wet (ed.)(1993) recorded 2 604 genera and 353 families for the entire Flora of southern Africa region (South Africa, Namibia, Botswana, Swaziland and Lesotho). The Soutpansberg therefore contains 41% of all plant genera and 68% of all plant families of the

Flora of Southern Africa region. Altogether, 33 plant taxa are known to be endemic to the Soutpansberg, comprising 25 genera and 17 families. Table 16 shows the Soutpansberg species composition in context to the Flora of southern Africa.

Table 16: Soutpansberg's species composition in context of the Flora of southern Africa.

Region	Taxa · Genus^{-1}	Species · km^{-2}	km^2 · Species^{-1}
Soutpansberg	2·81–2·35	0·3676	2·72
Flora of southern Africa (Arnold & De Wet 1993) (Gibbs Russell 1985)	9·41	0·00952	105·01

Altogether, 594 tree taxa are known in the Soutpansberg, one of the highest counts for southern Africa, and approximately one third of all known trees of southern Africa. This is a significant number representing 18% to 22% of the known flora of the mountain range. Most vegetation types within the area are predominantly woodlands, it is therefore no wonder that Soutpansberg has such a large diversity of trees.

Approximately 10% of the plants occurring within the Soutpansberg can be considered succulent. 55% of the endemic flora of the mountain can be regarded as succulents. A succulent could be defined as a plant which has the ability to store water in one or more of its morphologic components, this water being used when the plant is unable to absorb moisture through normal means namely its roots. Nonetheless the plant will need a period where it must replenish its reserves.

From this we can deduce that whatever conditions contributed to their evolution had to be related to periods of water stress. This would suggest that succulent endemics are the progeny of a far distant relative that inhabited the area in times of lower than average moisture precipitation that became isolated as the climatic situation improved. It therefore becomes clear that the Soutpansberg, throughout its history, has undergone periods of drought leading to the isolation of biological entities.

Of the 33 known endemic taxa, no fewer than 18 can be considered succulent, with eight being leaf succulents and nine stem succulents. Eight taxa can be considered trees, that is to say woody or semi-woody plants growing taller than 2 m. The greatest generic diversity within a family is displayed by the **Asclepiadaceae** with five genera and six species. *Aloe* shows the greatest species diversity with five species. The monotypic genus *Zoutpansbergia* is the only genus endemic to the mountain entailing one species. 19 species are found within the mist-belt with 10 restricted to the mist belt. Of these 10 species confined to the mist belt seven are succulents, one an epiphyte and two are herbs.

Approximately 58% of the endemic species occur within the mist belt region whereof no fewer than 30% are restricted to it. In times of drought a large percentage of the high altitude mountain flora survives on the mist. Very little is known about mist and its interaction with the environment. At Entabeni mist precipitation has been measured at an average of 1 366 mm per annum (Department of Environmental Affairs 1988). Taking into account Entabeni's average annual rainfall of 1 867 mm, the average total meteorological precipitation is 3 233 mm per annum.

Edaphic speciation has played an important role in the evolution of the southern African endemic flora. In the Cape CPE the highest levels of endemism are associated with fynbos vegetation on nutrient-poor soils largely derived from ancient, sterile quartzites (Cowling 1983). In the Wolkberg 71% of the endemics occur on soils derived from nutrient-poor quartzites (Matthews *et al.* 1993). The Pondoland CPE is exclusively associated with an outcrop of ancient quartzites (van Wyk & Smith 2001). Most of the Maputuland endemics occur on infertile sandy soils mostly associated with sea sand (van Wyk 1994). In both the Eastern Mountain Centre and Wolkberg Centre, most endemics are associated with grassland habitat (Hilliard & Burtt 1987; Matthews *et al*. 1993). Almost all of the Chimanimani endemics occur on quartzites (Wild 1964). As Wild (1964) stated, these soils form an unfavourable habitat from an evolutional perspective.

With the exemption of the epiphyte, all taxa mentioned above grow in sandy soils derived from quartzite or sandstone. *Duvalia procumbens*, *Euphorbia rowlandii* and *Ceratotheca saxicola* are apparently restricted to sandy soil derived from Karoo sediments. Except for *Euphorbia aeruginosa* and the previously mentioned three plants all other endemic plants grow on soils derived from Soutpansberg quartzite.

6.3.2.1 Endemic species

See Results for discussion of taxa, their description, diagnostic features, taxonomy, related taxa, distribution, conservation, voucher specimens and literature references.

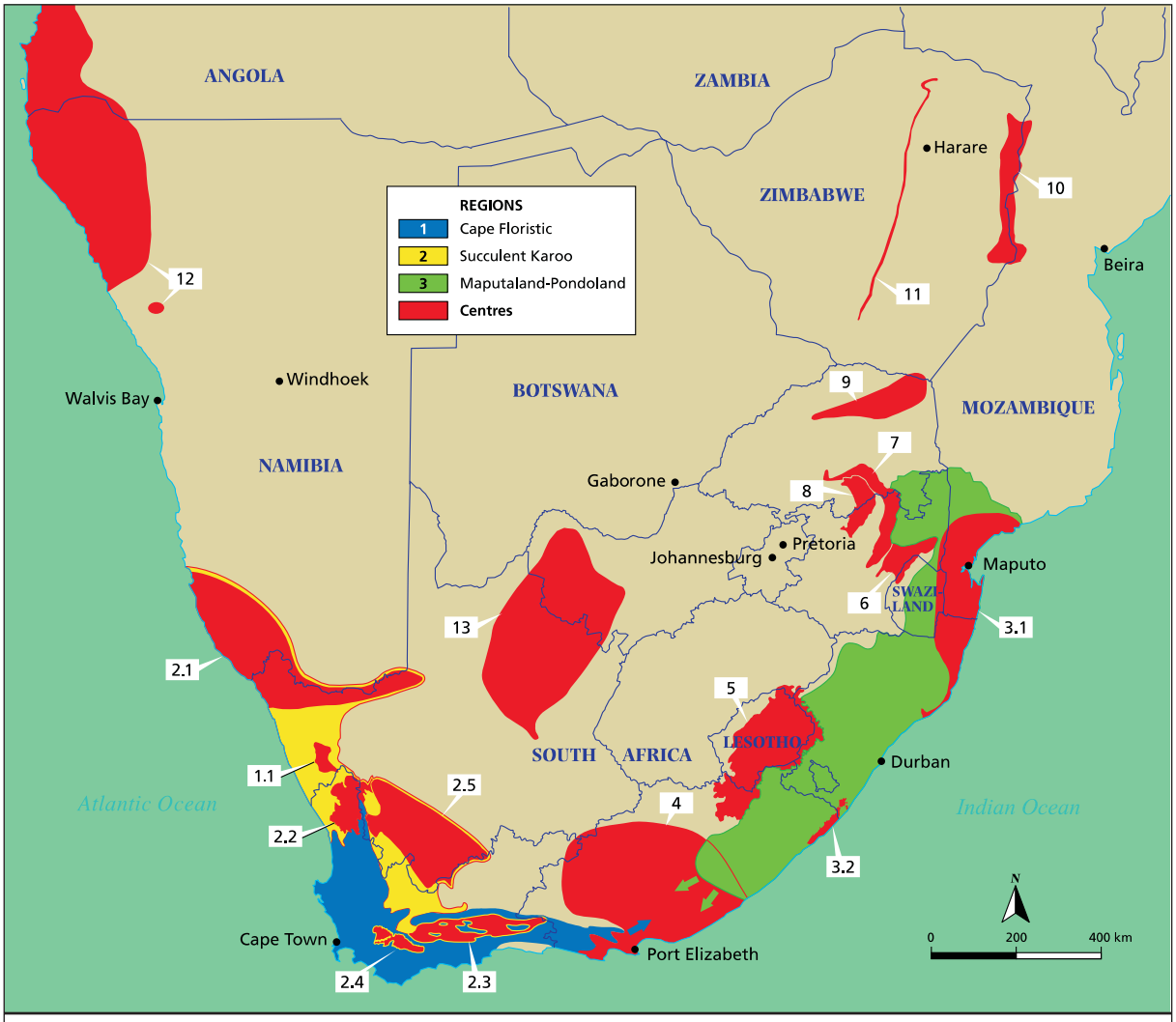


Figure 236: Principal centres of plant endemism as recognized by van Wyk & Smith (2001).

6.4 Soutpansberg endemic flora in the context of southern African centres of endemism

The following is a summary of the endemic flora of the Soutpansberg in relation to the other southern African centres of endemism (van Wyk and Smith 2001).

6.4.1 Cape Floristic Region (no 1 Figure 236)

None of the endemic species show an affinity to this region.

6.4.2 Succulent Karoo Region (no 2 Figure 236)

Quite a few Soutpansberg and Soutpansberg-Limpopo species are near endemic to this region. Of the three centres defined within this region only Gariep Centre displays an association with the endemic flora of the Soutpansberg

6.4.2.1 Gariep Centre (no 2.1 Figure 236)

Stapelia clavicorona's floral structure most closely resembles *Tridentea herrei* endemic to this centre.

Tylophora coddii's closest ally *T. fleckii* could possibly be assigned to this centre even though it falls just outside its borders.

6.4.3 Maputaland-Pondoland Region (no 3 Figure 236)

The Soutpansberg shares many near endemic species with the Maputaland centre of endemism but none of the endemic species of the Soutpansberg have close allies in the Maputaland-Pondoland region

6.4.4 Albany Centre (no 4 Figure 236)

Aloe angelica morphologically most closely resembles *A. thraskii*, near-endemic to the Albany-Pondoland centre of endemism.

Blepharis spinipes is closely allied to *B. ilicina* which occurs in the Eastern Cape, which can possibly be ascribed to this centre.

Justicia montis-salinarum belongs to a section of five related species of which *J. orchioides* subsp. *orchioides* is endemic to this centre

6.4.5 Drakensberg Alpine Centre (no 5 Figure 236)

None of the endemic species of the Soutpansberg show an affinity to this centre.

6.4.6 Barberton Centre (no 6 Figure 236)

None of the endemic species of the Soutpansberg show an affinity to this centre.

6.4.7 Wolkberg Centre (no 7 Figure 236 & 237)

Figure 237: Typical Wolkberg scenery

Aloe petrophila is related to three species namely *A. swynnertonii*, *A. branddraaiensis* and *A. vogtsii*, *A. branddraaiensis* being endemic to this centre.

Aloe soutpansbergensis is most closely related to *Aloe thompsoniae* endemic to this centre.

Aloe vossii is most closely related to *A. verecunda* which displays a disjunct distribution between the Witwatersrand and Wolkberg.

Combretum vendae is most closely related to *C. nelsonii* a near endemic to the Waterberg and Wolkberg Centres.

Encephalartos hirsutus is related to the complex of species mainly associated with this centre: *E. eugene-maraisii*, *E. dolomiticus*, *E. dyerianus*, *E. lehmannii*, *E. princeps* and *E. middelburgensis*.

Huernia nouhuysii in most closely related to *Huernia quinta* var. *quinta* near endemic to the Wolkberg-Waterberg Centre and *H. quinta* var. *blyderiverensis* endemic to this centre

Khadia borealis is most closely related to *K. media* endemic to the Haenertsburg area. The Haenertsburg area is presently not included in this centre but should be included as a sub-centre.

Orbeanthus conjunctus is most closely related to *O. hardyi* endemic to this region.

Steptocarpus parviflorus subsp. *soutpansbergensis* is most closely related to *S. p.* subsp. *parviflorus* near endemic to the Soutpansberg and Wolkberg Centres.

6.4.8 Sekhukhuneland Centre (no 8 Figure 236)

The Soutpansberg shares many near endemic species with this region, especially succulents.

Euphorbia zoutpansbergensis is most closely related to *E. sekukuniensis* endemic to this centre.

6.4.9 Soutpansberg Centre (no 9 Figure 236)

The following endemic plants are shared between the Soutpansberg *sensu stricto* and the Blouberg:

- *Aloe angelica*
- *Combretum vendae sensu lato*
- *Dicoma montana*
- *Euphorbia aeruginosa*
- *Euphorbia zoutpansbergensis*
- *Huernia whitesloaneana*
- *Orbeanthus conjunctus*
- *Rhus magalismontana* subsp. *coddii*
- *Streptocarpus caeruleus*
- *Tylophora coddii*
- *Zoutpansbergia caerulea*

6.4.10 Chimanimani-Nyanga Centre (no 10 Figure 236)

The delimitation of this centre is too broad. The Chimanimani and Nyanga should be classified as sub-centres.

6.4.11 Great Dyke Centre (no 11 Figure 236)

None of the endemic species show an affinity to this region.

6.4.12 Kaokoveld Centre (no 12 Figure 236)

None of the endemic species show an affinity to this region.

6.4.13 Griqualand West Centre (no 13 Figure 236)

None of the endemic species show an affinity to this region

6.4.14 Waterberg centre (not defined by van Wyk and Smith 2001)

Euphorbia rowlandii said to be affiliated to *E. waterbergensis* endemic to the Waterberg centre.

Encephalartos hirsutus is related to the complex of species of which *E. eugene-maraisii* is endemic to this centre.

This is a centre of divergence of the *Rhus magalismontana* complex of which subsp. *coddii* is endemic to the Soutpansberg.

6.5 Management Implications

'One of the problems with people today is that most of them deal only with lifeless, artificial objects in their daily work, with objects that are not particularly beautiful and that are by no means appropriate to inspire awe and respect. That's why most people have forgotten how to live with living creatures, with living systems, and that in turn, is the reason why man, whenever he comes into contact with nature threatens to kill the natural system in which and from which he lives.'
– Konrad Lorenz

6.5.1 Biosphere Reserve (UNESCO 1994)

In many respects this should be seen as the most viable conservation strategy pertaining to the Soutpansberg. The biosphere concept consists of basically three main geographical sub-delimitations, namely:

- core area, entailing an area of high conservation priority

- buffer zone, referring to an area lying between the core area and transition zone
- transition zone

This study can assist with the identification of core areas based on the distribution of Endemic taxa.

6.5.2 World Heritage

As pointed out within this thesis, the Soutpansberg supports a unique cultural and natural heritage. It adheres to all criteria set forth by UNESCO (2002) for World Heritage proclamation. The inclusion of this thesis would therefore greatly support such a nomination when it comes up.

6.5.3 Soutpansberg Conservancy

Efforts are underway to have an area of 90 000 ha managed as a conservancy.

6.5.4 Natural Heritage

To date the Soutpansberg has the largest concentration of Natural Heritage sites in South Africa, with 14 sites proclaimed.

6.6 Scope for future studies

- Numerical comparison of the Soutpansberg biodiversity with other centres of endemism. This study would need international collaboration and funding to facilitate data acquisition.
- Endemic Fauna of the Soutpansberg. The Soutpansberg is not only a centre of floral endemism but also one of faunal endemism (Heading 5.3.1). A synopsis of this nature would be of immense value to a better understanding of the Soutpansberg and would also complement this thesis.
- Paleoclimactic model of the Soutpansberg; the influences of both short and long term cycles. As can be seen from heading 5.2, the Soutpansberg has undergone quite dramatic habitat changes over time. These changes are driven by both long term cycles as postulated by the Milankovitch theory of orbital variation and short term cycles such as the El Niño — La Niña (Heading 3.2).

- Veld types of the Soutpansberg (Heading 3.3.3). Van Rooyen & Bredenkamp (1996) described the Soutpansberg Arid Mountain Bushveld type as unique to the Soutpansberg and Blouberg, lumping Acocks veldtypes North-eastern Mountain Sourveld, Sourish Mixed Bushveld, and Sour Bushveld under it. The Soutpansberg could provide interesting synecological studies with the aim of resolving these questions
- Floristic diversity and the interaction with other relevant areas (Heading 3.3.2).
- Conservation and Management plan for the Soutpansberg. Such a plan should be all encompassing to conserve its unique biodiversity, cultural diversity and scenic diversity.

7 Conclusion

7.1 Vegetative distribution

- The Soutpansberg lies at the confluence of at least 7 floristic influences.
- The endemic flora shows its greatest affinity with the southern afromontane grassland floristic element.

7.2 Changing environment

- The Soutpansberg has experienced periodic changes in floristic composition mainly as a result of climatic variations.
- Man, since the time of his emergence, has dramatically altered his environment.
- The last 150 years have seen a dramatic change in vegetation from open grasslands to secondary bush encroachments.

7.3 Soutpansberg biodiversity

- The Soutpansberg is a centre of biological diversity.
- The high biotic diversity of the Soutpansberg can possibly be attributed to the fact that the mountain range acts as a refugium in times of environmental flux.
- The evolutionary processes that brought forth its biological uniqueness are still poorly understood.

7.3.1 Soutpansberg centre of endemism

- The Soutpansberg is a centre of biological endemism
- The endemic flora has not sprung up as a result of a single group diversifying into a multitude of forms.
- Succulents are the most dominant component of the endemic flora.
- No endemic annuals have been recorded.
- No endemic bulbs have been recorded.
- Only 30% of the endemic taxa could be considered habitat specific.

8 Contributors to the Endemic Flora of the Soutpansberg

Anderson, John Graham 1926–1970

Born: Douglas, Cape Province, 17 October 1926; died: Pretoria, 10 March 1970; botanist.

1967 Described *Panicum dewinteri* naming it after de Winter.

Balkwill, Kevin

Born: 1958; botanist

1999 June collected the type material of *Blepharis spinipes* to be described by Vollesen in 2000

Bird, Dr., Allan, V.

M. D. of Johannesburg

1957 He and his son Peter accompanied Meeuse to the Soutpansberg where they collected the type of *Ipomoea bisavium*.

1958 Meeuse honoured both father and son in the naming of *Ipomoea bisavium*.

Bird, Peter.

1957 He and his father Alan accompanied Meeuse to the Soutpansberg where they collected the type of *Ipomoea bisavium*.

1958 Meeuse honoured both father and son in the naming of *Ipomoea bisavium*.

Bolus, Mrs Harriet Margaret Louisa (née Kensit) (1877–1970)

Born: Burgersdorp, 31 July 1877; died: Cape Town, 5 April 1970; botanist.

1936 Described *Khadia borealis* from the collection of Crundall and Vogts.

1959 Described *Delosperma soutpansbergensis* from the collections of Mogg.

Braybon, Mrs. H.

1948 November collected the type material of *Mystacidum braybonae*

1949 Summerhayes named *Mystacidium braybonae* after her.

Bruce, Eileen Adelaide (1905–1955)

Born: Petersham, England, 15 February; died: London, 6 October 1955.

1951 Described *Ceratotheca saxicola* from the collections of Codd.

Bullock 1906-1980

1964 Described *Tylophora coddii* naming it after Codd who collected the type specimens

Burtt, Brian Laurence (“Bill”) (1913–)

Born: Claygate, England, 27 August 1913; botanist.

1971 In conjunction with Hilliard described *Streptocarpus caeruleus* from the collections of Story.

Codd, Leslie Edward Wostall (1908–)

Born: Vants Drift, Dundee District, Natal, 16 September 1908; Botanist, mainly concerned with taxonomy.

First to collect specimens of *Duvalia procumbens*.

1949 First to record specimens of *Euphorbia rowlandii* whilst visiting Lt. Col. Rowland Jones.

1952 February collected the type of *Rhus coddii* in Venda, near Sambondou.

1954 January, collected the type specimens of *Tylophora coddii*.

1964 Honoured by Bullock in the naming of *Tylophora coddii*.

1965 Honoured in the naming of *Rhus coddii* by R. & A. Fernandes.

Collected the type material of *Ceratotheca saxicola* described by Bruce 1951.

Crundall, Albert Henry (1889–1975)

Born: Dover, England, 24 September 1889; Died: Durban, Natal, 22 May 1975; bank official.

1933 Collected *Khadia borealis* L. Bol. on the farm Ventersdorp, to be described by L. Bolus in 1936.

1937 Collected the type specimens of *Stultitia conjuncta* a piece of which was given to his friend Vogts who in return distributed pieces of it amongst his friends. A piece made it to Herre who forwarded the material to A. White and Sloane who described it in 1938 as *Stultitia conjuncta*. In 1978 Leach transferred the species to the genus *Orbeanthus*.

1938 Collected the original material of *Kalanchoe crundallii* Verdoorn at Lejuma and cultivated it in Pretoria where it flowered in March 1943.

1942 July collected the types of *Aloe soutpansbergensis* Verdoorn

1946 Verdoorn described *Kalanchoe crundallii* naming it after him.

De Winter, Bernard (1924–)

Born: Pretoria, 31 July 1924: botanist.

1958 February collected the type material of *Panicum dewinteri*

1967 Anderson described *Panicum dewinteri* naming it after him.

Dyer, Robert Allen (1900–1987)

Born: Pietermaritzburg, 21 September 1900; Died: Johannesburg, 26 October 1987; botanist, mainly taxonomy.

1937 Was informed by Mr. van der Merwe about an unknown *Euphorbia* species in Wylie's Poort. In September that year accompanied by Van der Merwe, Mr. and Mrs. van der Vyver collected the type of *Euphorbia zoutpansbergensis*.

1938 Described *Euphorbia zoutpansbergensis*.

1956 Described *Duvalia procumbens* from the collections of van der Schijff where after Leach in 1969 transferred the taxon to the genus *Huernia*.

1958 Described *Euphorbia rowlandii,* naming it after Rowland-Jones.

Edwards, Trevor John (1960)

Born: Durban, 4 September 1960; Botanist

1994 Described *Streptocarpus parviflorus* Hook. f. subsp. *soutpansbergensis* Weigend & T. J. Edwards in conjunction with Weigend from the collection of Stirton.

Fernandes, Abilio (1906–)

Born: 1906.

1965 Described *Rhus coddii* and *Rhus schliebenii* in conjunction with wife Rosetta.

Fernandes, Rosette Mercedes Saraiva Batarda

Born: 1916

1965 Described *Rhus coddii* and *Rhus schliebenii* in conjunction with husband Abilio.

Frames, Percival Ross (1863–1947)

Born: Port Elizabeth, 18 December 1863; Died: Cape Town, November 1947; solicitor, collector and cultivator of succulent plants.

1933 Collected the type material of *Aloe petrophila* which was described by Pillans.

Galpin, Ernest Edward (1858–1941)

Born: Grahmstown, 6 December 1858; Died: Mosdene, near Naboomspruit, Transvaal, 16 October 1941; banker and amateur botanist.

1935 July accompanied Vogts on a collecting trip to the Soutpansberg where they collected the type of *Aloe vogtsii* described by G. W. Reynolds 1936 and one of the syntypes of *Khadia borealis* described by L. Bolus 1936.

Gillett, Jan Bevington (1911–)

Born: Oxford, England, 28 May 1911; Botanist.

1930 Accompanied Hutchinson on a collecting trip to the Soutpansberg, where they collected the type material of *Zoutpansbergia caerulea*.

Hahn, Norbert (1966–)

Born: Pretoria, 28 April 1966; Naturalist and Botanist.

1995 Collected the type material of *Vangueria soutpansbergensis*.

1997 Described *Vangueria soutpansbergensis*.

1997 Collected the type material of *Pavetta tshikondeni*

1999 Described *Pavetta tshikondeni*

Herre, Adolar Gottlieb Julius ("Hans") (1895–1979)

Born: Dessau, Germany, 7 April 1895; Died: Pretoria, 16 January 1979; horticulturist and succulent plant specialist.

1937 Received a piece of a plant later to be described as *Orbeanthus conjunctus* originally collected by Crundall and distributed amongst succulent enthusiasts by Vogts.

1938 Forwarded the type material of *Orbeanthus conjunctus* to A. White and Sloane who described it as *Stultitia cunjunta* to be transferred to the genus *Orbeanthus* by Leach in 1978.

Hilliard, Olive Mary (*née* Hillary) (1925–)

Born: Durban, 4 July 1925; Botanist, particularly in taxonomy of *Streptocarpus*.

1971 Described *Streptocarpus caeruleus* in conjunction with Burtt from the colletions of Story.

Hurter, P. J. H.

1994 Collected the type material of *Encephalartos hirsutus.*

1996 Described *Encephalartos hirsutus*.

Hutchinson, John (1884–1972)

Born: Blindburn, Wark-on-Tyne, Northumberland, England, 7 April 1884; died: London, 2 September 1972; botanist, traveller and author.

1930 On his second visit to South Africa accompanied by Gillet on 23 August they collected the type material of *Zoutpansbergia caerulea* on the Grew Farm.

1946 Describing *Zoutpansbergia caerulea*.

Leach, Leslie Charles (1909–)

Born: Southern, Essex, England, 18 November 1909; business man and amateur botanist mainly concerned with the taxonomy of **Stapeliedae**, **Euphorbiaceae** and *Aloe* taxonomy.

1969 Transferred *Duvalia procumbens* R. A. Dyer to the genus *Huernia*.

1978 Created the genus *Orbeanthus* thereby changing *Stultitia conjuncta* White & Sloane to *Orbeanthus conjunctus* (White & Sloane) Leach.

Leemann, Albert Conrad (1892–1975)

Born: Johannesburg, 31 March 1892; died: Saltzburg, Austria, 15 May 1975; botanist.

1933 Collected the type material of *Dicoma montana* to be described by Schweickerdt in 1935.

Meeuse, Adrianus Dirk Jacob (1914–)

Born: Sukabumi, Java 18 October; Botanist.

1957 April collected the type of *Ipomoea bisavium* in flower and in May in fruit, being accompanied by Dr. A. Bird and his son Peter.

1958 Described *Ipomoea bisavium* naming it in honour of the two Birds.

Collected the type material of *Justicia montis-salinarum*.

1960 Described *Justicia montis-salinarum*.

Moffett, Rodney Oliver (1937–)

Born: Gumtree, O.F.S., 26 December 1937; Botanist

1993 Conducted the revision of genus *Rhus* for the flora of South Africa wherein he changed the combination of *Rhus coddii* described by R. & A. Fernandes to *Rhus magalismontana* Sond. subsp. *coddii* (R. & A. Fernandes) Moffett.

Mogg, Albert Oliver Dean (1886–1980)

Born: Newcastle, Kwazulu Natal, 27 April 1886; Botanist.

1958 December collected the type of *Delospermun zoutpansbergensis* to be described by Bolus in 1959.

Nel, Gert Cornelius (1885–1950)

Born: Greytown, Natal, 6 April 1885; died: Stellenbosch, March 1950; botanist.

1935 June first to collected *Huernia whitesloaneana*.

1936 Described *Huernia whitesloaneana* naming it in honour of A. White and Sloane.

Obermeyer, A. A.

1932 In conjunction with Schweickerdt and Verdoorn collected the type material of *Euphorbia aeruginosa* whilst on a collecting trip to the Zoutpan.

Pillans, Neville Stuart (1884–1964)

Born: Rosebank, Cape Town, 2 May 1884; Died: Plumsted Cape Town, 23 March 1964; botanist.

1933 Described *Aloe petrophila* from the collections of R. Frames.

Pole Evans, Illtyd Buller (1879–1968)

Born: Llanmaes, near Cardiff, Wales, 3 September 1879; Died: Umtali, Zimbabwe, 16 October 1968; botanist, specialized in mycology and plant pathology.

1933 Collected the type material of *Aloe angelica*.

1934 Described *Aloe angelica*, commemorating the plant after Angelique Wallace wife of Coll. Wallace who informed Pole Evans of the plant's existence.

Repron, John Edmund 1907–

Born: Pretoria, 23 October 1907; Horticulturist

1938 The first person to have managed to obtain flowers of *Orbianthus conjunctus* in cultivation, these were photographed by Dyer and sent to Herre for identification.

Reynolds, Gilbert Westacot (1895–1967)

Born: Bendigo, Victoria, Australia, 10 October; died: Mbabane, Swaziland, 7 April 1967; optometrist and authority on the genus *Aloe*.

1936 Described *Aloe vogtsii* from the collections of Vogts and *Aloe vossii* naming it in honour of Voss.

Rowland-Jones, Lt. Col. Maurice (1899–1959)

Born: Misterton, Nottinghamshire, England, 8 March 1899; died: Pafuri, Kruger National Park, 15 August 1959. British solider. In charge of the northern sector of the Kruger National Park.

1949 Collected the type specimens of *Euphorbia rowlandii*.

1958 Honoured in the naming of *Euphorbia rowlandii* by Dyer.

Schlieben, Hans-Joachim Eberhard (1902–1975)

Born: Waldheim, Saxony, Germany, 26 May 1902; Died: Essen, Germany, 14 July 1975; horticulturist and eminent collector; in 1955 he returned from Germany to join his brother who had settled on a farm in the Soutpansberg,

1955 3 November collected the type of *Rhus schliebenii* (= *R. coddii*) 67 km west of Louis Trichardt

1964 R. & A. Fernandres described *Rhus schliebenii* naming the plant after him.

Schweickerdt, Herold Georg Wilhelm Johannes (1903–1977)

Born Schmie, Germany. 29 February 1903; Died: Pretoria, 21 February 1977; botanist.

1931 January in conjunction with Bremekamp collected the type *Pavetta zoutpansbergensis*.

1932 In conjunction with Obermeyer and Verdoorn collected the type material of *Euphorbia aeruginosa* whilst on a collecting trip to the Zoutpan.

1933 Described *Euphorbia aeruginosa*.

1935 Described *Dicoma montana* from the collections of A. C. Leemann.

Sloane, Boyd Lincoln (1888–?)

Born : 1888

1936 Nel commemorated Sloane and A. White in the naming of *Huernia whitesloaneana*.

1938 In conjunction with A. White described *Stultitia conjuncta* White & Sloane from material obtained from Herre originating from the collections of Crundall, in 1978 Leach transferred the species to the genus *Orbeanthus*.

Stirton, Charles Howard (1946–)

Born: Pietermaritzburg, 25 November 1946; botanist.

1982 Described *Rhynchosia vendae* from the collections of van der Schyjff.

Collected the type material of *Streptocarpus parviflorus* subsp. *soutpansbergensis* to be described by Weigend and T. J. Edwards in 1994.

Story, Robert (1913–)

Born: Fort Beaufort, Cape Province, 19 August 1913; ecologist.

1960 Collected the type specimens of *Streptocarpus caeruleus* which was described by Hilliard and Burtt in 1971.

Summerhayes, Victor Samuel (1897–1974)

Borne : 1897; Died: 1974

1949 Described *Mystacidium brayboniae* naming it after Mrs. H. Braybon.

Van Dam, G. (*fl.* 1918)

Technical Assistant in Department of Lower Vertebrates and Invertebrates, Transvaal Museum, Pretoria.

1922 Collected the second syntype of *Pavetta trichardtensis* to be described in 1929 by Bremekamp.

Van der Merwe, Frederig Ziervogel (1894–1968)

Born: Stellembosch, 10 December 1894; died: Clairmont, Cape Town, 2

January 1968; medical inspector of schools;

1937 Initially discovered *Euphorbia zoutpansbergensis* in Wylie's Poort.

1937 September accompanied by Dyer, Mr. and Mrs. van der Vyver they collected the type of *Euphorbia zoutpansbergensis*.

Van der Schijff, Hermanus Philippus (1921–)

Born: Ventersdorp District, Transvaal, 18 August 1921; Teacher, Ecologist for the Kruger National Park, later Professor of Botany;

1955 Collected the type specimens of *Duvalia procumbens* which was described by Dyer 1956. In 1969 Leach transferred it to the genus *Huernia*.

Collected the type Specimens of *Rhynchosia vendae* which was described by Stirton in 1982.

Van der Vyver, Mr. & Mrs.

1937 September delivered the first flowering specimens of *Euphorbia zoutpansbergensis* to the PRE. Three weeks later they accompanied Dr. Dyer and Dr. van der Merwe to Wylie's Poort, to collect the type material of *E. zoutpansbergensis*.

Van Nouhuys, Jan Jozua (1903–1940)

Born: Island of Terate in Moluccas, East Indies, 27 April 1903; died: in an aircraft crash near Nairobi, Kenya, 10 November 1940; artist, horticulturist and geologist.

Collected the type material of *Huernia nouhuysii* and *Stapelia clavicorona* in Wylie's Poort.

1931 Verdoorn named *Heurnia nouhuysii* after him.

Van Wyk, Abraham Erasmus (1952–)

Born: Wolmaransstadt, Transvaal, 19 February 1952; botanist, taxonomy.

1980 Collected the type material of *Combretum vendae* in Venda, north-east of Tengwe.

1984 Described *Combretum vendae*.

Verdoorn, Inez Clare (1896–)

Born: Pretoria, Transvaal, 15 June 1896; botanist.

1931 Described *Huernia nouhuysii* and *Stapelia clavicorona* from the collations of van Nouhuys.

1932 In conjunction with Obermeyer and Schweickerdt collected the type material of *Euphorbia aeruginosa* whilst on a collecting trip to the Zoutpan.

1946 Described *Kalanchoe crundallii* from the collections of Crundall.

1961 Described *Aloe soutpansbergensis* from the collections of Crundall.

Vogts, Louis R.

Pretoria; Provincial Administrator's Office in Pretoria.

1935 July collected the type material of *Aloe vogtsii* and one of the syntypes of *Khadia borealis* L. Bol. on the farm Franzhoek, being accompanied by Galpin.

1936 Reynolds honoured Vogts in naming of *Aloe vogtsii*.

Voss, Harold

1927 First to collected specimens of *Aloe vossii* on the farm Schyffontein.

1936 Honoured in the naming of *Aloe vossii* by Reynolds.

Wallace, Angelique (née Dale)

Born: ?; Died: ?; wife of Col. R. C. Wallace, formally Possibly of Portuguese origin.

Colonel Wallace was Chief Engineer of the South African Railways, ac-

quaintance of Pole Evans. Col. Wallace was commissioned to survey the railway line between Louis Trichardt and Messina being assisted by Mr. Greaves. Col. Wallace received the farm Wallacedale (17 km north of Louis Trichardt) from British for his contribution in the Anglo Boer War.

1934 Commemorated in *Aloe angelica* by Pole Evans.

White, Alain Campbell (1880–?)

1936 In conjunction with Sloane commemorated in *Huernia whitesloaneana* by Nel.

1938 in conjunction with Sloan described *Stultitia conjuncta* White & Sloane from material obtained Herre originating from the collections of Groendal, in 1978 Leach transferred the species to the genus *Orbeanthus*.

Wiegend, Max

1994 Described *Streptocarpus parviflorus* Hook. *f.* subsp. *soutpansbergensis* Weigend & T. J. Edwards in conjunction with Edwards from the collection of Stirton.

Wylie, Lieutenant

Not a botanist or a Naturalist but an engineer of the British Military Forces. Lieutenant Wylie was seconded to South Africa in the second Anglo-Boer War (1899–1902). In 1904 Lord Milner instructed Bolton, the Provost at Pietersburg to construct a road to the north. The demobilized British troops were recruited to do the construction with Wylie in charge. In 1907 the first ox wagon negotiated the pass which was named after him. This pass opened up the central Soutpansberg to many a botanist and naturalist.

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'Knowledge is of two kinds. We know a subject ourselves, or we know where we can find information on it.'
– Samuel Johnson (1775)

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It is good to have an end to journey toward;
but it is the journey that matters in the end