

Vanishing grasslands of eastern South Africa

by Charles Craib

The decline of bulbous, caudiciform and succulent flora from grasslands on the peripheries of towns.

Grasslands near towns in eastern South Africa have been sanctuaries for rare bulbous, caudiciform (plants with a swollen stem base) and succulent flora for many decades and have until now largely escaped the habitat degradation and destruction in many areas in the surrounding countryside.

Free State

The grasslands around Odendaalsrus and Welkom in the Free State have been extensively converted to produce maize. In places where the veld is still intact it is used for cattle ranching. Some significant grassland still remains close to these towns. This is not grazed by domestic stock but is subject to the regular winter grass fires that occur from May to October. These fires play a critical role in the health of grasslands and the flowering and regeneration of many species.

Near Odendaalsrus one finds several rare grassland plants which have largely been eliminated from the surrounding grassland. Amongst these are two apparently undescribed *Drimia* species. One of them has tall erect spirally twisted leaves and the other tufts of prostrate corkscrew-like foliage. These two species quickly disappear in areas where the veld is heavily grazed.

A very interesting form of *Chortolirion angolense* occurs near Odendaalsrus and Welkom. It has broad spirally twisted leaves and, unlike any other recorded populations of *Chortolirion*, is clump forming. The plants may occur in clumps of as many as thirty bulbs. These interesting *Chortolirion* have been eliminated from the maize producing and stock farming areas and are now confined to grasslands bordering Odendaalsrus and Welkom. At one locality near Welkom the habitat is being progressively degraded by illicit dumping of building rubble. The other two are still well preserved. One of these sites could however easily be destroyed by extensions to large existing maize fields.

These grasslands are also home to several bulbs and caudiciforms that are more widespread in South Africa's grasslands. These include *Ammocharis coranica* and various *Ledebouria* species amongst the bulbs and *Brachystelma foetidum* and *Brachystelma stenophyllum* amongst the caudiciforms.

None of these places around Odendaalsrus and Welkom are particularly significant for urban or suburban development and mining, most of which has already taken place. Some of these sites that harbour more than most species could



ABOVE: Under threat. The grasslands west of Hammanskraal contain several *Ledebouria* species. Photo: Carol Knoll.

be considered for grassland reserves. In the absence of some kind of formal preservation these significant patches of grassland are likely to soon become extensively degraded.

North West Province

The area around Wolmaransstad in the North West Province used to have large populations of rare plants. Many of these were preserved in grasslands surrounding the town, having escaped surface mining or development. Over the last decade, however, virtually all of these have been destroyed by the expansion of informal settlement and surface diamond prospecting which is highly destructive to grassland ecological systems.

Brachystelma incanum used to be common around the informal settlement sharing its habitat with huge numbers of *Euphorbia gueinzii*. These have virtually all disappeared. They are now encountered sparingly on surrounding farmland used mostly for cattle ranching. The plants are rarely able to survive in significant numbers in ranch land because of heavy trampling by domestic stock when they are in flower or fruit.

Caudiciforms with shallow tubers fare badly in heavily grazed areas. This applies particularly to *Brachystelma*, the tubers of which are exposed by erosion and once exposed, they are trampled and invariably rot. Plants with deep-seated elongated tubers such as *Euphorbia gueinzii* or species of *Raphionacme* stand a much better chance of survival.

In previous decades the grassland around the informal settlement was burnt every winter leading to a marked increase in the number of bulbs and caudiciforms. The open conditions created after a fire provide optimum flowering conditions for them. One area had huge numbers of *Pterodiscus speciosus* and numerous tubers of the scarce *Brachystelma incanum*. These have all disappeared now under informal housing.

Massonia jasminiflora was also once common in depressions with short grass immediately south-west of Wolmaransstad. This shallow rooted species has also disappeared with the expansion of the informal settlements.

Gauteng, the North West and Limpopo Provinces

The area around Hammanskraal and Soutpan north of Pretoria has a rich



ABOVE LEFT: A scarce form of *Chortolirion angolense* found in grassland near Odendaalsrus and Welkom in the Free State. It is characterized by broad spirally twisted leaves and a clump forming habit. Painting: Gillian Condy. This painting appears in the book *Grass aloes in the South African veld* by Charles Craib. See p. 130.

ABOVE RIGHT: One of the grassland's curiosities, *Chortolirion angolense*.

LEFT: The grassland habitat of *Chortolirion angolense* near Odendaalsrus in the Free State, with a gold mine dump in the background. Photos: Carol Knoll.

bulbous, caudiciform and succulent flora. This region lies within the borders of Gauteng, the North West and Limpopo Provinces. *Brachystelma barberae*, *Brachystelma circinatum* and *Brachystelma brevipedicellatum* used to be common in the savanna grassland around Hammanskraal. One of the most significant and largest mixed populations of these three species has been destroyed by a new housing development. There are still however some significant populations of bulbs and caudiciforms west of Hammanskraal. These are usually found in patches of grassland between formal and informal housing developments such as those around Temba and Winterveld.

One patch of grassland supports a

wealth of ledebourias amongst which are some relatively uncommon species. These include several undescribed species, one of which is characterized by a mass of fine spirally twisted leaves that resemble those of *Gethyllis grandiflora*, a species from the Richtersveld and south-western Namibia.

This section of grassland also used to support large numbers of *Brachystelma barberae*. These have been progressively eliminated as the veld has become degraded through over grazing and felling of all the large *Burkea africana* trees for firewood. Several caudiciforms with hard or deep-seated tubers are still common in this grassland, including *Euphorbia trichadenia* which is commonly found in open grassy areas

If the grassland ecology can be maintained in the reserves at Cosmo City, a model could be derived for further grassland reserves in suburban developments.

amongst *Acacia* and *Combretum* trees.

Part of the farm Zandspruit, near Randburg north of Johannesburg, has been in the van Tonder family for many years. Until recently, the property consisted of undulating highveld grassland with patches of indigenous trees, mostly on the rocky ridges. The grassland on this farm was well preserved, a mere stone's throw from the densely settled Northgate area with its surrounding suburban developments.

The property has now been expropriated and is in the process of being developed into Cosmo City. This is a large carefully planned suburban development that features several nature reserves where the grassland will be left intact. The reserves in effect conserve transects of the veld and contain most of the numer-

ous grassland species that occurred on the farm prior to the development.

During the development, numerous grassland plants were relocated to the Suikerbosrand Nature Reserve and the Abe Bailey Reserve near Carletonville. Here various genera such as *Hypoxis* will be used in the medicinal plant nursery. Prior to the development the property had large concentrations of *Boophone disticha*. Over 900 of these were removed from the areas destined for housing development.

There were also huge concentrations of *Neorautanenia ficifolius* and *Pelargonium luridum*. The *Boophone disticha* populations on the property showed evidence of healthy regeneration over a long time period with young plants and adults of varying sizes. Most

CLOCKWISE FROM BELOW LEFT: The unusual flattish dark maroonish black flowers of *Brachystelma incanum*, photographed in habitat south of Wolmaransstad. The bulk of its habitat has disappeared under surface mining and informal settlements, and this species has declined to very low levels during the last decade.

BRACHYSTEMMA NANUM colonies are depleted by erosion caused by intense grazing of the veld around Wolmaransstad.

LEDEBOURIA ASPERIFOLIA growing in grassland west of Hammanskraal.
Photos: Carol Knoll.





CLOCKWISE FROM TOP LEFT: 1. An undescribed *Ledebouria* in the grasslands of Hammanskraal. Photo: Carol Knoll. 2. *BRACHYSTEMMA FOETIDUM* is another caudiciform (plant with a swollen stem base) species that is trampled by grazing livestock after the soil has been eroded by grazing. Photo: Carol Knoll. 3. THE LEAVES of the rare grass aloe *Aloe integra* dry off completely during the winter and burn readily during veld fires. The aloes then flower at the end of winter and in early spring, after they have been burnt in winter grass fires. Painting: Gillian Condy. Reproduced from the book *Grass aloes in the SA veld* by Charles Craib. 4. *EUPHORBIA GUEINZII* is a dwarf species once common around Wolmaransstad. Most of the colonies of this species have disappeared under informal settlements or surface mining for diamonds. Photo: Carol Knoll.

of the bulbs occurred in what could be called 'age grades' each 'grade' having germinated after veld fires followed by good summer rains. Veld fires have always been a regular feature on the property. These increased in numbers after the establishment of the informal settlement on the northern perimeter of the property and burnt any time from April to October. The fires were erratic in the extent to which they burnt.

The property was criss-crossed by several small roads which acted as

firebreaks unless the grass had become very long, allowing the flames to jump across the roads. Veld with long grass like this needs to be burned as all the plants on the property have evolved in relation to fire cycles. In places where the grass was too short, and not yet ready for burning the roads prevented the too frequent incidence of burns in areas not yet ready for fires.

One of the greatest problems that face the managers of grassland reserves in suburban developments is the fact

that these reserves must be periodically burnt. The exclusion of fire usually ushers in a phase of very limited, if any, regeneration of plants dependent on it. Fires are a great nuisance for residents living around grassland that is regularly burnt as they pose a danger to property and the burnt debris is carried in gardens and into houses in the wind. If the grassland ecology can be maintained in the reserves at Cosmo City, a model could be derived for further grassland reserves in suburban developments. 🌿