

Natural Habitats of South African Bulbs: Implications for Cultivation[©]

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INTRODUCTION

There are a number of South African bulbs held in the Living Collection at the Royal Botanic Gardens, Kew. However, the collection does not represent fully the diversity in this group. My study aimed to help me develop an understanding of how South African bulbs should be grown in cultivation by viewing them in their natural habitat. I also wanted to gather information on their propagation and investigate species likely to be suitable for outdoor cultivation in the U.K. I would also benefit by gaining field study skills. Funding was made available through the I.P.P.S. Mary Helliar Travel Scholarship and other funding sources.

Invaluable information was gained by seeing the exact growing conditions of particular species in the wild. Through my experience of viewing different species in the wild I was able to help determine the potting mix to use at Kew. The climate of the Amatola mountains near Stutterheim is very much in tune to our own climate in southern England, therefore, there is a potential to display semi-tender bulbs outdoors.

Additionally, during my study tour I also had the opportunity to visit specialist nurseries and purchase seed from material cultivated from stocks of known wild origin, collected under license, and supplied with full data. This information gathered, along with other data collected, is now being used at Kew in the cultivation and propagation of South African bulbs.

A full report of my visit is in my report titled "Study Tour of South African Bulbs" which has been distributed to sponsors of the Mary Helliar Travel Scholarship, and a copy of which is held by the I.P.P.S. The following account is a resume of my report.

Throughout my study tour I employed a botanical guide. I was also fortunate to have my photographic slides correctly named by various members at the Herbarium in Kirstenbosch Botanic Garden.

CURRENT DISTRIBUTION OF THE SOUTH AFRICAN BULB COLLECTION HELD AT ROYAL BOTANIC GARDENS, KEW (PRIOR TO SEPT. 1999)

The flora of Southern Africa is remarkable in several respects. This region is exceptionally rich in plant species, an unusually high percentage of these species are endemic an equally unusually high percentage of them are petaloid monocotyledons, i.e., mostly bulbous plants with colourful, showy flowers.

Given South Africa's importance as a centre of endemism, Kew's collection managers believed it was important that genera such as these which are so characteristic of the region should be better represented. The plants are also generally attractive species with spectacular flowers that would be highly valued by the visiting public.

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Table 1. South African plant diversity.

Genera endemic to South Africa		
Name	Species in genus (no.)	Species grown at Kew (%)
<i>Freesia</i>	11	9
<i>Tritonia</i>	28	7
<i>Haemanthus</i>	212	8
<i>Ixia</i>	50	12
<i>Lachenalia</i>	110	31
Genera mainly occurring in South Africa		
Name	Approx. no. of species in South Africa	Species grown at Kew (%)
<i>Cyrtanthus</i>	51	11
<i>Babiana</i>	62	15
<i>Moraea</i>	120	13
<i>Crinum</i>	211	9
<i>Cyanella</i>	81	2
<i>Gladiolus</i>	104	20
<i>Brunsvigia</i>	20	10

TOUR HIGHLIGHTS

Glenlyon Estate. On the fourth day of my visit I visited the Glenlyon Estate, situated approximately 300 km north of Cape Town near to the town of Nieuwoudtville. This area is known as the “bulb capital of the world” as, during spring, there is always a profusion of wild flowers and bulbs. Glenlyon is famous for its unique flora, emphasized by the fact that the area supports a rich concentration of geophytes. The families Iridaceae, Liliaceae, and Asteraceae are particularly well represented. Most notable species seen during my visit were: *Hesperantha vaginata*, *H. pauciflora*, *Sparaxis elegans*, and *Babiana framesii*.

The property is 6500 ha in size. It was particularly interesting to see and learn how the natural flora has been integrated into the farming system to be managed as an asset. In very sensitive areas, where farming practices might endanger survival, the area is fenced off until the management regime is well enough understood to allow fence removal. Management of the natural flora is achieved by simulating the role played by the vast game herds of yesteryear — with sheep substituting for African wild animals. Animals prune plants, remove dry residue, and are nature’s way of compressing seeds into the soil. It was interesting to note, those species growing undisturbed by the sheep on small fertile hillocks did not appear to thrive as much as those integrated as part of the farming regime. Perhaps sometimes we are too kind to the plants in our care!

Clanwilliam Wild Flower Festival. On route to Glenlyon we stopped overnight at a small town called Clanwilliam. The old Dutch Reform Church is where the local wildflower show is held every September. I have attended flower shows before held in the village churches in England, but nothing could have prepared me for the spectacular display that greeted me. Not only were the flowers themselves a joy to behold but the sheer feat of engineering in creating the stunning displays — using a massive amount of rock and soil, and all had to be handled in and out of the church doors — in itself deserved praise.

Gawie's Mountain at Caledon. Caledon is approximately 100 km from Cape Town and lies at the foothills of the Swartberg. There is a Caledon Wild Flower Garden and a fynbos reserve called Drayton Siding where there are many bulbs. The reserve is a disused railway siding which has been declared as a National Heritage site. It is open to the public but not advertised as such in order to protect it as far as possible with the objective to conserve plant species characteristic of the region. After this I had a wonderful treat when Gawie a local farmer, drove me to the top of his mountain to view acres upon acres of the same small habitat we had viewed at Drayton Siding. The land was originally to be farmed by the succeeding generations but over the last three decades or more Gawie has come to love his mountain and appreciate its natural beauty. I was able to view such delights as *Gladiolus debilis*, *G. alatus* var. *alatus*, and the South African bluebell *G. bullatus* all growing en masse in sheets of colour.

Tienie Versveld Wildflower Reserve. This is one of several small reserves along the west coast from Cape Town. At this reserve the vegetation is largely transitional between West Coast Renosterveld and Sand Plain Fynbos. The seasonally waterlogged soils support a diverse array of geophytes and annuals. At the time of my visit hundreds of species were flowering all together in their thousands. This lasts only briefly, passing within a few weeks, but while it lasts it is breathtaking. Thousands upon thousands of flowers: *Babiana*, *Onixotis*, *Wachendorfia*, *Romulea*, *Spiloxene*, *Lachenalia*, *Watsonia*, *Hesperantha*, *Geissorhiza*, *Galaxia*, *Moraea*, *Gladiolus*, all flowering at once covering the ground in an uninterrupted carpet of colour far beyond the skill of any human gardener.

Tour of the Amatola Mountains. Towards the end of my visit I flew east from Cape Town, approximately 600 km to Port Elizabeth. Here I was very fortunate to stay with Cameron and Rhoda McMaster who own an indigenous bulb nursery at Stutterheim. On the second day of my visit with the McMasters we went trekking in the Amatola Mountains near Stutterheim. These are clad with lush indigenous forest and capped with flower-rich mountain grassland. The vegetation in the eastern Cape is quite different to that which I had seen previously in the trip. Here, the landscape is very much a grassland with controlled "burns" being regularly undertaken to promote new growth used for grazing sheep. There is a wealth of flora on the mountain due to the fertile soils with plenty of bulbs in abundance. However, spring in this region is generally a little later than the western Cape and therefore many of the bulbs were not flowering during my visit. The climate is very much more in tune to our climate in southern England, particularly in the mountains. After much searching however, we were rewarded with the sight of a single specimen of *Cyrtanthus sauveolens* flowering in a sheltered spot. This was a joy to see, since it is endemic to the region. It is unusual in that the peduncle is solid. I was told that

it has a wonderful scent, rather like some sweet spice or cinnamon. Unfortunately the wind was blowing too much for me to smell it easily on the day.

FINDINGS REGARDING THE CULTIVATION AND PROPAGATION OF SOUTH AFRICAN BULBS

In order to study the cultivation of South African bulbs I was able to visit Kirstenbosch National Botanical Garden and speak with Graham Duncan, a well-known authority on the subject. I also visited Capeflora Nursery and the Croft Nursery in the Eastern Cape, being specialist bulb nurseries who have developed the expertise necessary for successful cultivation of their native bulbs. Visiting these nurseries and seeing the techniques and protocols employed in propagation and cultivation provided valuable knowledge, enabling me to build upon my existing propagation skills. The main problems encountered at Kew were related to growing medium and watering regime. This therefore formed the basis of my investigations.

I was fortunate to have the opportunity to study a wide range of habitats. Through my experience of viewing different species in the wild I was able to help determine the potting mix to use at Kew. I observed different species regularly growing in soil of a specific texture and noted how this could influence the potting mix, albeit that the primary factor must be suitability for pot culture. Within the period of a week I had two soil samples to examine. From high in the mountains of the Piketberg the sample was a soft grey sand with practically no loose vegetable matter in it. My second sample from high in the Amatola Mountains, the soil was scratched out of a crack in the rock. By volume it was 5% soft black dust and 95% pieces of dead, dry black vegetable matter. By weight the proportions were exactly reversed. The pH readings were respectively 3.9 and 4.0. Therefore, I was able to determine that soils of essentially different texture had virtually the same acidity and so plants found in these areas could be potted in to the same mixture with a high softish sand proportion. This and other invaluable information will hopefully contribute to a better cultivation regime for the South African bulb collection at Kew.

CONCLUSION

My trip enabled me to study the South African bulbs in their natural habitat. Invaluable information was gained by seeing the exact growing conditions in the wild of a particular species. For instance, to be able to determine whether a dryer or wetter compost might be needed, a more acid or alkaline soil, or just simply more winter sunshine, I am sure will help in producing a full pot of flowering bulbs for the future display in the Alpine House at Kew.

Since the cultivation of bulbs was my specialist area of work at Kew, I found this trip to be immensely absorbing and of great benefit to aid my understanding of South African bulbs in cultivation. This trip was enormously profitable in as much as my own personal knowledge of South African bulbs was augmented. In addition I have been able to share my knowledge gained and experiences obtained from the trip with my colleagues at Kew, with the production of a management plan which is held within the bulb unit at Kew for future reference.

Although I am no longer at Kew, the knowledge that I gained from this trip is currently being practised at Kew. On a more personal note, this trip emphasized to me how much more there is to learn, due to the amazing diversity of the world's plants one can never learn enough. Finally I wish to express my gratitude to the I.P.P.S. for their support shown towards my study tour.