

## Growing Indigenous Bulbs in the Eastern Cape®

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**The richness of the Eastern Cape as a repository of biodiversity, the experiences in discovering the wealth of flora, the threats to the preservation of this flora, and role of plant propagators in preserving threatened species are dealt with as well as a brief description of the methods employed to grow wild bulbs under nursery conditions.**

### **THE EASTERN CAPE AS A REPOSITORY OF BIO-DIVERSITY**

The Border Region of the Eastern Cape is so named because it was historically the border between the Cape Colony and the traditional homelands of the Xhosa tribes. It lies between the Great Fish and Great Kei Rivers comprising the former Ciskei homeland and the area south of the Great Winterberg range from East London to Queenstown. It is a region of exceptional natural beauty but because it is off the popular tourist routes, its botanical richness and diversity are not as well known as regions such as the Western Cape and Namaqualand. The purpose of this paper is to highlight the floral wealth of this region, the threats to the survival of rare species, and the role of propagation for preservation.

Being situated at the convergence of major African Plant Kingdoms, namely the Afro-montane, subtropical Maputoland-Pondoland, African-Namib, and the Cape Fynbos, the flora is influenced by elements of each region giving rise to very high biodiversity with a large number of endemic species. The province contains a vast variety of landscapes, from the stark Karoo (the semi-desert region of the central interior) to mountain ranges with lush grassland and forest, and gentle green hills rolling down to the sea. The climate and topography give rise to the great diversity of vegetation types and habitats in the region.

Except along the coast and along the southern slopes of the mountain ranges that form a series of escarpments, the annual rainfall seldom exceeds 500 mm and occurs mostly in summer. The topography is hilly and in places rugged, with a series of mountain ranges extending from east to west, rising to altitudes of up to 2000 m. Considerably drier areas of rain shadow occur to the north of the escarpments as well as in a number of deep river valleys, such as the Great Fish and Kei Rivers. Fire is an integral part of the grassland ecology, occurring mainly in early spring when the moribund grass is burnt to make way for spring growth, stimulating a blaze of spring flowers, bulbs, and orchids.

These diverse climatic and topographical features give rise to a very wide range of vegetation types embracing coastal dune forest, acacia savannah, various types of grassveld ranging from lowland mixed grassveld to highland sourveld, and valley thicket to lush afro-montane forest. Within each vegetation type special circumstances such as aspect, slope, soil type, wetlands, stream banks, cliffs, ravines, and gorges an infinite variety of microclimates and habitats to which particular species are adapted.

Species of all the major plant families are well represented. The East Cape is particularly rich in amaryllids, being the headquarters of the *Cyrtanthus* and *Nerine* genera. While some spectacular displays of *Dierama* and *Watsonia* are to be seen in summer, some extremely rare and beautiful endemics are hidden in specialised forest and mountain micro-habitats. The search for these specialities represents a fascinating challenge for the intrepid lover of our indigenous flora.

### A PASSION FOR WILD FLOWERS

An early interest in wild flowers engendered by my grandmother and a career which took me to many outlying farms, enabled me to develop not only a passionate interest, but also a broad knowledge of the indigenous flora of the region. The information gained over a lifetime of exploration has resulted in a considerable widening of the knowledge of the flora of the Eastern Cape, the extension of the known ranges of some species, and even the discovery of hitherto undescribed species.

For instance, as early as 1975 the true habitat of *Nerine filamentosa* was established (McMaster, 1976). The type locality in the original description (Barker, 1935) was obscure and it is now clear that this very distinct nerine has a very limited distribution in the Cathcart district. Similarly the secrets of the elusive giant poker, *Kniphofia bruceae*, were unravelled (McMaster, 1999) and this extremely rare species is now in cultivation. In the winter of 1996 on a hike through very isolated hills above the Kei River valley in the Stutterheim district, a large and vigorous population of the cycad *Encephalartos caffer* a surprising find considerably extending the range of the species (McMaster, 1996). Fortunately the isolation and inaccessibility of this population renders it relatively safe from poaching. What is even more remarkable about this habitat is that it is one of the very rare places, if not the only one, where three cycad species occur together — *E. caffer*, *E. princeps*, and *E. friderici-guilielmi*. In 2000 during the course of a survey after a devastating fire in the Amatola Mountains, we turned up a number of specimens of *Gladiolus pubigerus*, a species not recorded in the Eastern Cape since it was first discovered in “Kaffraria” by Thomas Cooper in 1860 (Goldblatt and Manning, 1998). During the same survey we also came across a small apparently undescribed *Watsonia* that requires further investigation.

The thrill of discovering a new species is certainly a reward for years of effort. We believe that we have two new species of *Cyrtanthus* in the pipeline and certainly one new *Hesperantha* is currently being described by Peter Goldblatt in his current revision of the genus. The process of getting a new species acknowledged and ultimately described is formidable. After the initial collection, pressing, and despatch of the specimen to the specialist botanist involved, there is the follow-up work of finding the fruit and ultimately the seed, the photographing of all stages, and the search for further populations. The process is repeated if other populations are discovered. The fieldwork can take many days over a number of seasons and entails much travelling to distant destinations and hiking over steep and rough terrain.

### THREATS TO THE SURVIVAL OF OUR FLORA

Alas, the future of the floral riches of the Eastern Cape is bleak. Many factors have led to the rapid degradation of the pristine ecosystems described by early travelers and botanist who visited this region a century and more ago. Commercial farming, overgrazing by cattle, sheep, and goats, particularly on communal land, commercial

forestation, and the introduction and spread of alien vegetation have all contributed to a rapid decline. For example one typical hardy perennial, *Protea simplex*, is still abundant in the state forest reserves on Mt. Thomas and Mt. Kubusie in the Stutterheim district, but has entirely disappeared across the fence only a few meters away on private land. Under conditions of continuous grazing it is now totally extinct here. If such a persistent and hardy species can be destroyed, the chances of survival for less hardy and more palatable species are nil. Ground orchids are particularly sensitive to habitat degradation and are a useful indicator of the health of the ecosystem. The fact that they have virtually disappeared from most areas and are becoming increasingly rare even in "reserves", highlights the need for drastic conservation measures.

The ever increasing harvesting of wild medicinal bulbs by traditional healers and other plant gatherers has now become gross over-exploitation for commercial purposes and is contributing to the rapid depletion of bulbous flora (Dold and Cocks, 2001). This is a further good reason to cultivate many of the species used in the herbal medicine trade.

However, small areas have remained protected. For instance, the road and railway verges throughout the province are areas where some species still survive. Small areas of natural vegetation within fences erected around arable croplands still preserve certain species and limited areas inaccessible to both man and domestic animals do still exist, but even in these preserved areas, recent developments of a socio-political nature have led to dramatic declines in plant populations, and many rare species may become extinct. It is therefore important that the threatened species be identified, grown, and multiplied in cultivation to preserve biodiversity before they are lost forever. It is in this context that the role of the nurseryman and plant propagator is vital.

## **GROWING WILD BULBS**

Our nursery developed out of the collection of wild bulbs that we had accumulated as a hobby. We have now expanded into a small commercial venture that remains primarily a means to finance our interest. A spin-off has been making contact with other keen bulb growers in all parts of the world. We are not involved in hybridisation in any way. We prefer to grow wild species and in so doing to make a contribution to the preservation of rare and threatened species.

It is important for plant propagators and nurserymen to familiarise themselves with the natural habitats and special conditions in which the plants grow in the wild. It is often impossible to emulate natural conditions, especially for specialised species. There is a need to compromise and develop a system that will be suitable for most species. We find it best to grow bulbs in concentrated conditions in open raised beds under 40% shade cloth with free air movement. Bulbs are lifted during the dormant season for sale and despatch. We rely primarily on the summer rainfall (average 900 mm p.a.) and only irrigate occasionally when conditions are dry. Our winter rainfall species are mostly in containers for winter watering and to be able move them to keep them dry during the summer.

The main soil requirement for our bulbs is excellent drainage. We use a mixture of loam soil, well-rotted compost, coarse sand, and composted milled pine bark (1 : 1 : 1 : 1, by volume). To this we add general fertilizer (2N : 3P : 2K) and bone meal. For winter-growing bulbs, we add an extra portion of really coarse sand, leaving out

the fertilizer but still adding the bone meal. We do grow some species in bags and pots if there is likely to be a demand from retailers or landscapers out of season. We make sure the drainage holes at the base of the containers are large, and we place some large pieces of bark or stones (or broken styrofoam chips to reduce weight) in the bottom of the containers, and then fill with the mix before planting. We pour boiling water into the pots to kill off most of the weed seeds.

Every grower has a different recipe! A lot depends on whatever is available to put in the mix, and on costs, but a loose coarse mix is always preferable. For deciduous bulbs, we water the container once after planting, and then not again until a leaf has appeared. Evergreen species need to be kept just slightly moist until established.

We sow seeds in a similar mix with a cupful of palm peat mixed into the top 4 cm in boxes approximately 25 × 35 × 12 cm deep. This is a useful size that does not dry out as fast as the smaller containers. Small stones about 3 mm in diameter are sprinkled on the surface help prevent the seeds being moved around when watering. Where large quantities of seed are available we sow in open ground in raised beds — which avoids the need to transplant before marketing. We propagate hardy species such as *Watsonia*, *Eucomis*, and *Crinum* in full sun in open fields in the natural heavy loam soil that occurs on our property. They get very little attention apart from weeding.

We find it necessary to control pests and diseases on a routine basis, especially the amaryllis worm. We spray a cocktail of appropriate chemicals mixed with a sticker at approximately fortnightly intervals.

We are amateurs still discovering how to be more efficient and successful. For us the pleasure of growing wild flowers and exchanging ideas with other fanatics are the most satisfying aspects of our enterprise.

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