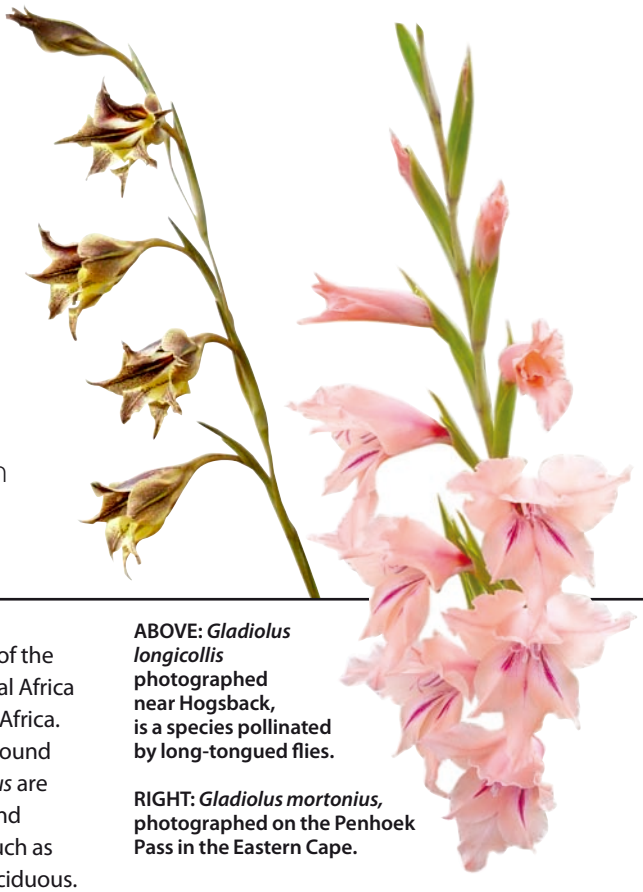
Gorgeous *Gladiolus*

The genera *Gladiolus* is part of the *Iridaceae* family that occurs in most regions and climatic conditions. Hybrids have long been developed by horticulturists as botanists as garden subjects.



ABOVE: *Gladiolus longicollis* photographed near Hogsback, is a species pollinated by long-tongued flies.

RIGHT: *Gladiolus mortonius*, photographed on the Penhoek Pass in the Eastern Cape.

PROGRESSING THROUGH THE alphabet we've now reached the letter G and we start with one of the most glamorous groups of South African wildflowers, the *Gladiolus*.

Most gardeners are familiar with the showy hybrid garden subjects that were developed by European plant breeders from South African species. Although *Gladiolus* is an important horticultural crop cultivated as ornamental or cut flowers, most of us are generally unaware of the enormous wealth, diversity and beauty of the many wild species that occur throughout South Africa. These will be the subject of this and the next two articles.

An established history

Because they also occur around the Mediterranean basin and the Middle East, *Gladiolus* flowers have been known for thousands of years. They were named in Roman times – the Latin word *gladiolus*, means a small sword, alluding to the sword-shaped leaves characteristic of the genus and in fact of the entire family *Iridaceae*, to which *Gladiolus* belong.

From the time of Simon van der Stel, as plant collectors travelled, the exciting Cape flora began to be discovered and introduced into Europe. The long and often confusing task of recording and classifying the many new species of *Gladiolus* and related genera was undertaken initially by European botanists and later by South Africans, culminating in a seminal revision titled *Gladiolus in Southern Africa* by Peter Goldblatt and John Manning. *Gladiolus* is the largest genus within the *Iridaceae* family, containing over 250 species distributed throughout Africa, Eurasia and Madagascar. Only about 10 species occur north of the Sahara. A further 84 occur in tropical Africa and the large majority in Southern Africa. The largest number of species are found in the south western Cape. *Gladiolus* are geophytes (plants with underground storage and regenerative organs such as bulbs and corms) and generally deciduous. Growth begins at the onset of the rainy season. Flowering occurs after most of the vegetative growth has taken place and a new corm has begun to develop at the base of the stem. After flowering the seeds develop in capsules, which split open when ripe releasing small, brown seeds with papery wings for wind dispersal.

The plant then goes dormant, awaiting the first rains of the new season. Some species are also adapted to vegetative reproduction, producing cormels at the base of the main corm, which eventually separate and develop into new plants.

'Many flower shapes have evolved in response to the variation in habitat.'

Huge variety

Gladiolus vary from large, showy species that can grow up to a 1m high – generally in moister environments – to many very small yet exquisitely beautiful species adapted to more arid habitats.

Although most of the flowers are tubular many different flower shapes and sizes have developed in response to the variation in habitat such as rainfall, soil type and topography. A further important factor that influences the evolution and speciation of plants within particular genera, particularly the flower shape and colour, is competition for pollinators.

Pollinators include a variety of insects and birds such as various species of bee, long-tongued flies, moths, butterflies and sunbirds. To conserve pollen, which in some cases is in short supply and takes energy to produce, flowers of particular species are designed to be visited by very specific pollinators. This averts the wastage of pollen on general pollinators such as honey bees and pollen is distributed only to flowers of the same species. Some species, like *Gladiolus longicollis*, have developed particularly long tubes to accommodate only flies and moths that have a long proboscis. The reward for the pollinator is the nectar.

The fragrance of many *Gladiolus* species is another adaptation to attract insects. The well known a*andblom* in the Western Cape (*Gladiolus tristis*), which is white and especially fragrant in the evenings, attracts night-flying moths.

Threats and enemies

The survival of a species depends not only on the preservation of habitat, but also on the presence and survival of the pollinators. Many of them are equally threatened by habitat destruction and

ABOVE: The *kalkoentjie* or *Gladiolus alatus* is widespread in the West Cape.

especially agricultural practices such as crop spraying with insecticides. However, *Gladiolus* are not only threatened by humans. There are a host of natural enemies and predators, chief of which are probably porcupines, baboons and mole rats, which dig up and eat the very palatable corms.

In areas where natural food is limited, such as where large areas have been ploughed for crops, there is enormous predation of the few plants that may have survived in relict bits of unploughed land. Parasitism of the seed capsules by beetle larvae is another very significant threat which can drastically reduce seed production.

Other adaptations

In common with most plants in Southern Africa, *Gladiolus* are well adapted to sporadic fire. Fire stimulates some species to flower prolifically, especially in fynbos, giving rise to copious seed production which then, due to less competition for sunlight and moisture from surrounding woody plants, has a better chance to germinate and develop. A few species are dependent on fire, only flowering after a burn.

Two distinct climate zones

In South Africa we have two distinct climatic zones – primarily summer rainfall over the eastern parts of the subcontinent and winter rainfall in the southwestern region, consisting of the Western and Southern Cape and Namaqualand.

In the southern coastal region from George to Port Elizabeth there is a region where rain falls virtually all year round. Plants that have developed in the two zones have distinctly different growing seasons – a fact especially evident in the *Gladiolus*. In the winter rainfall region plants start their growing cycle in early winter and generally flower in spring, after which they go dormant to survive the long, dry summer.

- The corms are highly palatable to porcupines, baboons and mole rats.
- Gladioliare generally deciduous with growth commencing at the onset of the rainy season.
- The flowers are adapted to certain pollinators.

The exact opposite occurs in summer rainfall regions. There the growth cycle commenced in early spring followed by dormancy in late autumn to survive the cold, dry winters. However, within each group there are exceptions to this general rule.

Some species flower out of season to exploit a particular advantage. Both regions have many extremely beautiful species that should be showcased – it would be impossible to do justice to the species in both regions in one article.

Read more about it

For more information on the genus *Gladiolus*, the following books are recommended: "*Gladiolus in Southern Africa*" by Peter Goldblatt and John Manning and illustrated by Fay Anderson and Auriol Batten, published in 1998 by Fernwood Press and "*Gladiolus in Tropical Africa*" by Peter Goldblatt, published in 1996 by Timber Press – *Cameron McMaster (cameron@haznet.co.za)* **|fw**

FROM TOP TO BOTTOM:
- *Gladiolus teretifolius*, a common species in the Overberg.
- *Gladiolus watsonius*, a spectacular red species from the Boland.
- *Gladiolus abbreviatus* photographed near Napier in the Western Cape. These flowers are adapted for sunbird pollination.