

■ wildflower conservation



These vivid blooms take advantage of the cleared veld after a fire to exploit early rains and attract pollinators. Regrettably, however, their reproductive potential is low.

Phoenix-like lilies from ashes

THE FIRE LILIES ARE SO NAMED because they are always the first plants to flower after a burn, often within days. Their orange-to-scarlet, tubular-to-trumpet-shaped flowers hanging in pretty umbels at the tip of stiff fleshy stalks are highly visible, contrasting strongly with the burnt, blackened ground they grow in. Fire lilies belong to the genus *Cyrtanthus* ("curved flower", from the Greek *kyrtos* meaning curved and *anthos* meaning flower), one of the genera within the large Amaryllidaceae family.

A lifelong passion for wildflowers

Cyrtanthus were among the very first flowering plants I became aware of when my grandmother taught me to observe the flowers, birds and animals in the veld on our family farm in the Cathcart district. I distinctly recall numerous red fire lilies in the spring, especially after a veld fire, and was amused by my black playmates who picked them to make whistles from their hollow stems, which they called *nompinya* ("whistle" in Xhosa). Much later I identified them as *Cyrtanthus contractus* and regretted we had destroyed so many when we were young, possibly contributing to the steady decline in numbers in later years. This early introduction

to the wonders of the veld engendered an interest that later led to a passion for wildflowers and particularly bulbs which I started to record, photograph and grow.

Over the years I have encountered most of the *Cyrtanthus* species of the Eastern and Western Cape. Whenever uncertain of the identity of a species I would send a pressing to various herbaria, and eventually got to know many botanists and others with

'The plants had survived under the trees and the mat of pine needles for [35 years], waiting for a fire.'

similar interests. It has been very rewarding and fulfilling to share experiences and discoveries with an ever-widening circle of like-minded people throughout the world.

Describing and naming the genus

The name *Cyrtanthus* was established as early as 1789, and numerous discoveries by pioneer botanists have added to the list of species over the centuries. In the last comprehensive review in 1984, Reid and Dyer of the Botanical Research Institute list 53 species. Since then a number of

LEFT FROM TOP TO BOTTOM:

- *Cyrtanthus suaveolens* which is endemic to the Amatola Mountains near Stutterheim.
- Close-up of *Cyrtanthus breviflorus*.
- *Cyrtanthus ventricosus*, the archetypical fire lily which only flowers after the occasional fires in fynbos in the Western Cape. This specimen was photographed on the mountain above Napier within days of the fire in 2005.

Why fire helps *Cyrtanthus* survive

Fire is a natural element in most ecosystems in South Africa, particularly in grassland where it occurs frequently, and most plants have developed strategies to survive and even exploit fire in their drive to reproduce. *Cyrtanthus ventricosus*, a fynbos species from the Western Cape, is probably the archetypical fire lily. Even though fires are far less frequent in fynbos, this species will only flower and set seed after a fire, even though there may be intervals of many years between fires. Pat Brown and Dave Le Maitre, writing in *Veld and Flora* 76(1), March 1990, established that flowers appeared as early as 12 days after the fire, each plant bearing an average of five flowers. Pollination by insects or birds was inefficient, producing an average of only two seed capsules per plant which ultimately yielded an average of 27 seeds per capsule.

All *Cyrtanthus* produce shiny, black-winged seeds which are released when the seed capsules mature and ripen. In this case seed was released between 12 and 15 weeks after flowering and a germination test revealed that viability was quite low under natural conditions. All this indicates that the reproduction potential of this population, flowering as infrequently as every 10 to 15 years, is low, given that only a few of the seedlings that do become established will survive to maturity.

Fire offers them the best chance to survive for the following reasons:

- The bright red flowers are highly visible in the blackened veld, increasing the chances of visits by pollinators, an essential element for seed production.
- With no dense moribund vegetation, seeds have a better chance of coming to rest in a suitable place to germinate and to grow.
- With less competition from surrounding plants after a burn, seedlings have a better chance to develop and grow to maturity.

additional species have been described and the present count is 59, making it the largest genus in the Amaryllidaceae family. It is almost exclusively a Southern African genus, and only two examples occur to



- There are 59 species of *Cyrtanthus*, not all of them dependent on fire for reproduction.
- Grazing by livestock destroys many seedlings.
- Bulbs can survive for many years between fires.

the north in East Africa. Most species are concentrated in the moister summer-rainfall regions, with only six extending into the winter-rainfall region of the Western Cape.

Not all *Cyrtanthus* species can be described as "fire lilies". Many are not fire-dependent or stimulated by fire to flower. In this article I will concentrate on those that are most commonly seen shortly after fire, and will introduce other fascinating species of this large and diverse group of bulbous plants in later articles.

The two most widespread fire lilies in the eastern grassland regions are *Cyrtanthus contractus* mentioned above and *Cyrtanthus tuckii*, an inhabitant of the higher altitude mountain regions. Because these two species occur in grassland which is normally heavily grazed by sheep and cattle after fires, their survival is even more precarious since seedling plants are cropped and many are destroyed in this way. *Cyrtanthus breviflorus*, a yellow-flowered species confined to seeps and wetlands at high altitudes, makes a spectacular show after fire. It grows naturally in marshy areas where the dense vegetation inhibits flowering in years when there are no fires.

Tenacious survivors

The ability to survive for many years until a fire finally affords an opportunity to flower and seed was dramatically illustrated in 2000, when devastating fires were experienced in the pine plantations of the Amatola Mountains near Stutterheim, home to the endemic *Cyrtanthus suaveolens*. After a large area of plantation where these plants had previously occurred was destroyed by these fires, a spectacular flowering



Cyrtanthus tuckii blooming in October on the Bosberg above Somerset East, a month after a burn. The species was discovered here in 1876 by Peter Macowan (1830 – 1909), later appointed first Professor of Botany at the South African College.

occurred between the burned stumps. Research revealed that this particular plantation had been established 35 years previously. The *Cyrtanthus* plants had survived under the trees and the mat of pine needles for this length of time, waiting for a fire to enable them to exploit the sunlight and early spring rains and make a last-ditch effort at flowering and seeding to ensure the survival of the species!

So when you next pass a stretch of recently burned veld, look for fire lilies and give a thought to their precarious existence and desperate attempts to survive. If you own veld where fire lilies still survive, give them a chance to set and disperse seed before putting livestock in to graze. Not only will your descendants enjoy the plants, but the grass will have a chance to recover, ensuring a more vigorous and productive sward and minimising erosion after summer thunderstorms. – Cameron McMaster (cameron@haznet.co.za). |fw