

*Nerine pancratioides* with a plantation of pines encroaching ominously in the background. Extensive afforestation of exotics alters the hydrology of the marshy grassland where *Nerine pancratioides* occurs, causing the habitat to gradually dry out. Photo: Carol Knoll.



# *Nerine pancratioides*

**Degradation of grassland habitats by exotic plantations are threatening the beautiful white nerine with extinction**

by Charles Craib

Commonly known as the white nerine, *Nerine pancratioides* was once widely recorded from several localities in the Midlands and south-western KwaZulu-Natal as well as in north-eastern Lesotho, growing in moist acid soil in rocky areas. The populations of bulbs have dwindled in recent decades and the species is now extinct in several areas where it was once frequent. The main reason for its decline has been habitat degradation and destruction.

The present day stronghold of *Nerine pancratioides* ('pancratioides' refers to the white-flowered inflorescence which resembles that of the amaryllid *Pancratium tenuifolium*) appears to be the foothills of the southern Drakensberg. The reasons for the decline of the plants are to be found in this region but at present they are not as serious as in other parts of KwaZulu-Natal.

The plants grow in temporarily inundated areas on the banks of streams, in grassy depressions that are permanently moist during the late summer and early autumn and in seepage areas on steep hillsides. All three of these habitats are found in the foothills of the southern Drakensberg. The plants growing on stream banks and in marshy depressions come into flower usually in early to mid-February. Colonies on moist hillsides flower later usually in the last week of February and the first three weeks of March.

Grazing animals and fire play a significant role in keeping the grass cover short, where the bulbs grow. The plants flower at their best in areas where the grassland was burned the previous winter. They also flower in grassland that was not burned the previous winter but the flowering performance of the bulbs is not as good. Only the large bulbs tend to flower and the flowering stems of some of these plants may reach well over a metre in height.

Grazing, nowadays mostly by domestic stock, plays a significant role in keeping the habitat clear of moribund grass. Grazing in the early summer months is beneficial since it clears that habitat for flowering in the early autumn months.



*Nerine pancratioides* in flower. This painting by Gillian Condy was painted in habitat at the peak of the flowering season in early March 2004. It forms part of the private botanical art collection of the author.

Grazing at flowering time, however, results in the destruction of a good number of flowers and bulbs. The hooves of grazing animals, particularly cattle, may destroy numbers of young bulbs but the larger plants are simply pressed deeper into the soil.

Problems have arisen in some areas that are heavily afforested with exotics, since the grazing for domestic stock is reduced in extent. Moist grassland becomes over-grazed as the surrounding hillsides are taken over by the monocultures of eucalyptus and pine plantations.

The most serious threat to the plants at present is the steady transformation of the greater proportion of the habitat.

Marshes and stream banks are now seriously invaded by the American bramble *Rubus cuneifolius* and Kikuyu grass *Pennisetum clandestinum*. These two plants interfere not only with the growth of the nerines but also with their reproduction. Seedlings fail to develop in areas thickly colonized by these two plants and within a short space of time the species disappears from heavily degraded areas.

The bulbs occur in reasonable numbers in habitat densely settled by local communities. The grassland is transformed in these areas by heavy grazing but at present is not eroded or seriously invaded by exotics. The plants occur mainly on hillsides in these areas and

beside rocky streams. As the local people do not plant exotics the habitat is not transformed by invasive plants. The normal burning and grazing cycle occurs in these areas. In areas where the habitat is transformed by plantations, the exotics do not form part of a normal grassland fire ecology, which is detrimental to the nerines as periodic fire is essential for their growth cycle, as well as the growth cycle of many other amaryllids from the summer rainfall grasslands.

#### Flowering and seeding

*Nerine pancratioides* comes into flower at the peak of the rainy season in KwaZulu-Natal, usually from February to April. *N. pancratioides* produces a sturdy peduncle (400-950 mm) with a fairly dense inflorescence of up to twenty very distinctive, pure white, funnel-shaped flowers. The first opened flowers in an umbel start to produce seeds when the last flowers have only recently opened. Seeds fall from the adult plants onto the marshy ground below. They either germinate here or else in situations to which they get moved by water movement. (Seeds are produced at a time when there is the most fluctuation in water levels in streams and marshes.) The populations along some stream banks may become large as a result of a succession of good seeding years.

The seeds do not usually germinate in silt or amongst driftwood and for this reason the bulbs are confined to grassy marshy areas beside the streams. Silt and driftwood tends to accumulate along streams with rocks and sharp bends, and only a small percentage of streamside habitat is suitable for colonization by the nerines.

During dry periods in late summer many of the bulbs do not break dormancy, so flowering is restricted to years of average and above average rainfall. It would seem that the flowers are pollinated by a wide range of insects including various beetles and honeybees. The seed-set is usually good in years when the plants flower well.

*Nerine pancratioides* has, in common with most nerines from the summer rainfall area, a habit of producing an enormous amount of seed. All of this is capable of germinating if the seeds land in a suitable spot. The factors which control the large amount of seed are floods and the amaryllis caterpillar. Severe flooding washes the seed or newly developing seedlings away.



Colonies in marshy areas are often the largest as these are the protected to some extent from disturbance by floodwaters. The amaryllis caterpillar is attracted mainly to the large conspicuous seeds of *N. pancratioides*. The moth lays its eggs on the stems and leaves of the plants but not directly onto the seeds. Some colonies of the nerine are very heavily infested by the caterpillars. The fact that plants in a given colony have a seeding period of four to six weeks means that some seeds will be available for germination, even in years of heavy infestations.

Seedlings grow vigorously for about the first five to six weeks after germination. The adult bulbs enter dormancy in the second half of April or early May if there have been late rains and mild temperatures. The growth cycle stops when the habitat becomes very dry and with the occurrence of the first severe winter frosts in the second half of May or early June.

#### **What does the future hold?**

*Nerine pancratioides* could slip into extinction if the causal factors which lead to its decline continue unchecked. This concerns particularly the degradation of habitats by invasive exotics. Yet the plants can be preserved with a minimum of effort simply by encouraging landowners to keep their marshy grassland and stream banks clear of invasive exotics. In the long term, preservation of some of the least disturbed and largest habitats would be desirable.

ABOVE: *Nerine pancratioides* competing with American bramble *Rubus cuneifolius*. *Nerine pancratioides* gradually declines to the point of extinction in grassland heavily invaded by this exotic. Photo: Carol Knoll.

BELOW: A typical colony of *Nerine pancratioides* in one of the least disturbed moist grassland habitats. Photo: Carol Knoll.

