

The exquisite *Zantedeschia jucunda* is endemic to the summit of the Leolo Mountains in Sekhukhuneland. Photo: Carol Knoll.

# Stone walls and stock farmers



*Zantedeschia jucunda* benefits from human activity

by Charles Craib

The yellow-flowered arum *Zantedeschia jucunda* is endemic to the summit of the Leolo Mountains in Sekhukhuneland. It has not been found on neighbouring mountain ranges at all, yet is well represented on the Leolo summit and has expanded into new niches as a result of the small-scale stock farming (sheep, goats and cattle) and seasonal crop production practiced by the local people.

A comprehensive article on *Zantedeschia jucunda* appeared in the September 2003 issue of *Veld & Flora* in which I speculated that this arum and human settlement patterns are closely allied. Since then, a survey was done during November and early December 2003 to ascertain which habitats were preferred by these yellow arums, and to assess the relationship between the plants and human activities.

The timing of the survey was ideal, as good rains had fallen a few weeks before and the higher-than-average moisture in the soil for this time of the year had resulted in a mass flowering of the arums. We could see clearly which habitat

niches contained the largest number of flowering bulbs.

In most years the flowering performance of plants in sunny, rocky, rather arid north- and west-facing hillside habitats is limited. Should these areas experience good rain in late November, just before the main flowering period, most mature bulbs will flower.

These hillside populations are very attractive to pollinators when in full flower, and the result is an abundant seed set. Good flowering in this habitat is not an annual event, although this is a widely occupied habitat on the mountains.

The arums take advantage of rocky outcrops in the vicinity of cultivated lands, as well as in the piles of stones removed during the preparation of fields; which are usually in gently sloping areas on deep loamy soil. The arums flower particularly well here during years of good early summer rainfall. They also flower in drier years when there are only a few light showers.

Stone walls built by the local people around agricultural land, to enclose livestock and around graveyards, are also



widely used by the arums. Although they can't form large groups here, these walls do allow the plants to expand into areas they would not otherwise be able to occupy. It also increases the seed bank on the mountains, and seeds produced by plants growing in rocky walls are washed by rainfall into surrounding areas. This gradually leads to an expansion of the arums in the vicinity of the walls.

*Z. jucunda* requires an open habitat in which to flower well and attract pollinators. In this respect grazing by livestock, which keeps the cover short, and regular winter fires play a significant role in the health of the arum populations. Nearly all the fires are started by the local people either accidentally or at certain times of the year to improve grazing conditions for livestock. The survey indicated that the arums are most common on rocky hillsides that are regularly burnt and grazed. Habitats altered by the local people significantly increase the overall numbers

of plants. They also serve to attract large numbers of pollinators. Massed clumps of arums in flower near cultivated lands or in rock piles are always full of beetle pollinators. These plants serve not only to increase the number of pollinators in the habitat as a whole but also to ensure some seed is produced during drought years. During dry times few plants in the typical rocky hillside habitat come into flower, but there are always some flowers amongst the rocky outcrops in the fields.

*Zantedeschia jucunda* seed germinates very erratically. Experiments were conducted over two growing seasons to compare the germination patterns of *Z. jucunda* and the closely related *Zantedeschia pentlandii*. It was found that about half the *Z. pentlandii* seeds germinate if sown in the autumn when they ripen. Only a few *Z. jucunda* seeds germinate when sown under the same conditions. The remainder of *Z. pentlandii* seeds germinate in the fol-

lowing spring whereas only a small number of *Z. jucunda* germinate erratically, usually after rainfall, under the same conditions. Generally, *Z. jucunda* germinates after rainfall, with best results obtained after a few successive days of cloudy, rainy weather – a habit of staggered seed germination that it shares with many other plants from areas with low or irregular rainfall.

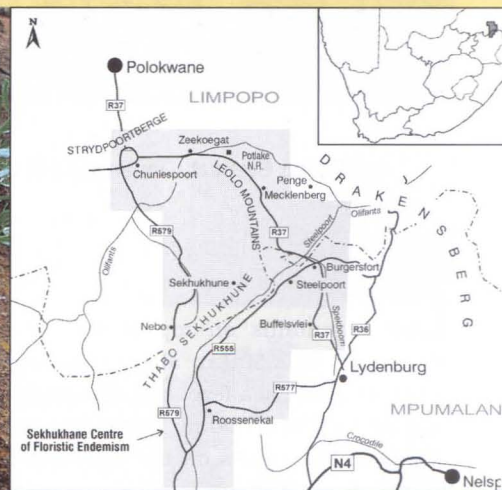
*Z. jucunda* and *Z. pentlandii* seedlings look identical after they germinate, but then the distinctive spear-shaped, spotted leaves of *Z. jucunda* characterize the plants from the third set of mature leaves. *Z. jucunda* seedlings develop more quickly than those of *Z. pentlandii* and this may be another adaptation to a drier environment with less predictable rainfall.

It is clear that *Z. jucunda* has benefited from settlement of the Leolo Mountains and that the populations of these plants in their present form are commensal with small-scale agriculture and stock farming.

**Further reading**

Craib, Charles. 2003. *Zantedeschia jucunda* and *Zantedeschia pentlandii*, the beautiful arums from the Sekhukhuneland Centre of Floristic Endemism. *Veld & Flora* 89(3), 106-109.

Siebert, S and Van Wyk, B.2001. Sekhukhuneland: Floristic wealth versus platinum and chromium riches. *Veld & Flora* 87(4), 168-173.



ABOVE: The Sekhukhuneland Centre of Floristic Endemism. Map by Sally Adam, Technodraft. LEFT: Packed into a rock fissure, *Zantedeschia jucunda* flourishes on the Leolo Mountains in the Sekhukhuneland Centre of Floristic Endemism. Photo: Carol Knoll.