

## AMARYLLIDACEAE

### A NEW VARIETY OF *CLIVIA ROBUSTA*

Recently, the genus *Clivia* (Lindl.) Regel saw the introduction of two new species, *C. mirabilis* Rourke and *C. robusta* Murray *et al.*, as well as a new variety, *C. gardenii* var. *citrina* Swanevelder *et al.* (Rourke 2002; Murray *et al.* 2004; Swanevelder *et al.* 2005). All six currently rec-

ognized species, including four varieties, are indigenous to South Africa, with two species extending into Swaziland (Watson 1899; Phillips 1931; Duncan 1985, 1992, 1999; Rourke 2002; Snijman & Archer 2003; Murray *et al.* 2004; Swanevelder 2003; Swanevelder *et al.* 2005).

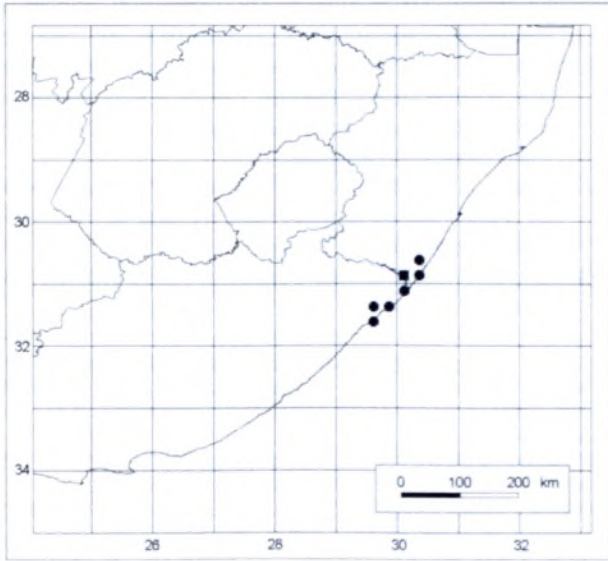


FIGURE 6.—Known distribution of *C. robusta* var. *robusta*, ●, and *C. robusta* var. *citrina* as well as the typical variety, ■.

*Clivia robusta*, the tallest member in the genus, is confined to the Pondoland Centre of Endemism, South Africa (Figure 6). Plants occur as isolated populations distributed mainly from Port St Johns (Eastern Cape), through to Port Edward (KwaZulu-Natal), with a few outliers as far north as Oribi Gorge (Van Wyk 1994; Van Wyk & Smith 2001; Swanevelder 2003; Murray *et al.* 2004). Restricted to isolated patches of forest, *C. robusta* is usually closely associated with swamps or seepage areas, though individuals have been found in well-drained, humus-rich soils, in shallow soil on rocky ledges of cliffs and even on rocks (Swanevelder 2003, Murray *et al.* 2004). The forest type with which it is associated is Swamp Forest, or in most instances a floristically enriched form of Afromontane Forest sometimes referred to as Coast Scarp Forest (MacDevette *et al.* 1989).

In the description of *Clivia robusta*, Murray *et al.* (2004) noted that yellow-flowered individuals are rarely encountered in this species, the flowers of which are usually orange or red. Such sporadic occurrences of yellow-flowered forms are preferably named at forma level (Stuessy 1990). However, Watson (1899) described the sporadic yellow-flowered form of *C. miniata* as a variety, namely *C. miniata* var. *citrina*, a name that has been widely adopted. A second yellow-flowered infraspecific taxon in the genus, *C. gardenii* var. *citrina*, was also described at variety level (Swanevelder *et al.* 2005). Following these precedents, we here formally describe the yellow-flowered form of *Clivia robusta* Murray *et al.* as a new variety.

***Clivia robusta*** B.G.Murray, Y.Ran, P.J.De Lange, K.R.W.Hammett, J.T.Truter & Z.H.Swanevelder var. ***citrina*** Z.H.Swanevelder, A.Forbes-Hardinge, J.T.Truter & A.E.van Wyk, var. nov., floribus pallide luteis vel citrinis, apicibus laete vel atro-iridibus, non aurantiacis vel rubris apicibus viridibus ut in varietate typico distinguitur.

TYPE.—KwaZulu-Natal, 3030 (Port Shepstone): Maringo Flats, (–CC), 7 June 2003, Forbes-Hardinge FH01 (PRU, holo.).

Flowers with perianth pale yellow or lemon yellow with light to dark green apices, not dark orange-red, pale orange or pink-orange with green apices as in the typical variety.

*Clivia robusta* has flowers that are usually various shades of red and orange (Murray *et al.* 2004). We regard plants with flowers in all shades of these colours (at anthesis) as belonging to *Clivia robusta* var. *robusta*, with only the rare yellow-flowering form comprising var. *citrina*.

The holotype of *C. robusta* var. *citrina* was collected in an area known as Maringo Flats, located  $\pm 20$  km inland from Port Edward on the KwaZulu-Natal south coast (Figure 6). A single yellow-flowered specimen was collected at the time, but more than one yellow individual was observed. The frequency of the yellow form in this particular stand is intermediate to the large stands of *Clivia gardenii* var. *citrina* in nature (Ngome Forest, Ngotshe District, KwaZulu-Natal) and the single yellow-flowering specimen on which Watson based *C. miniata* var. *citrina* (Watson 1899; Swanevelder 2005). Hitherto, *C. robusta* var. *citrina* has only been recorded in this one population.

The habitat at the type locality is typical for *Clivia robusta*, in this case, a swamp-like area with forest covering  $\pm 2$  ha. Most of the *C. robusta* population grows as dense stands in very heavy mud on a stream bank. The type specimen was growing in a silt deposit on the side of the stream that runs through the forest on its way to the Umtamvuna River. Associated forest species include *Strelitzia nicolai*, *Protorhus longifolia*, *Erythrina caffra*, *Macaranga capensis*, *Voacanga thouarsii*, *Syzygium cordatum*, *Phoenix reclinata*, *Zantedeschia aethiopica* and *Cyathea dregei*.

Even though *Clivia robusta* is present in a number of conservation areas throughout its range, the distribution of individual populations is very localized due to the species' specialized habitat requirements (Swanevelder 2003). In this particular case, even the inhospitable marshy habitat does not prevent the removal of plants by traditional healers and illegal plant collectors; it does, however, restrain the complete removal of whole populations. All known plants of *C. robusta* var. *citrina* occur on private land and enjoy the protection of the current landowner.

#### ACKNOWLEDGEMENTS

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#### REFERENCES

- DUNCAN, G. 1985. Notes on the genus *Clivia* Lindley with particular reference to *C. miniata* Regel var. *citrina* Watson. *Veld & Flora* 71: 84, 85.
- DUNCAN, G. 1992. Notes on the genus *Clivia* Lindley with particular reference to *C. miniata* Regel var. *citrina* Watson. *Herbertia* 48: 26–29.
- DUNCAN, G. 1999. *Grow clivias*. Kirstenbosch Gardening Series. National Botanical Institute, Cape Town.



- MACDEVETTE, D.R., MACDEVETTE, D.K., GORDON, I.G. & BARTHOLOMEW, R.L.C. 1989. Floristics of the Natal indigenous forests. In C.J. Geldenhuys, *Biogeography of the mixed evergreen forests of southern Africa*: 124–145. Ecosystem Programmes Occasional Report No. 45. Foundation for Research Development, Pretoria.
- MURRAY, B.G., RAN, Y., DE LANGE, P.J., HAMMETT, K.R.W., TRUTER, J.T. & SWANEVELDER, Z.H. 2004. A new species of *Clivia* (Amaryllidaceae) endemic to the Pondoland Centre of Endemism, South Africa. *Botanical Journal of the Linnean Society* 146: 369–374.
- PHILLIPS, E.P. 1931. *Clivia miniata* var. *flava*. *The Flowering Plants of South Africa* 11: t. 411.
- ROURKE, J.P. 2002. *Clivia mirabilis* (Amaryllidaceae: Haemantheae) a new species from Northern Cape, South Africa. *Bothalia* 32: 1–7.
- SNIJMAN, D.A. & ARCHER, R.H. 2003. *Clivia*. In G. Germishuizen & N.L. Meyer, *Plants of southern Africa: an annotated checklist. Strelitzia* 14: 958, 959. National Botanical Institute, Pretoria.
- STUESSY, T.F. 1990. *Plant taxonomy. The systematic evaluation of comparative data*. Columbia University Press, New York.
- SWANEVELDER, Z.H. 2003. *Diversity and population structure of Clivia miniata Lindl. (Amaryllidaceae): evidence from molecular genetics and ecology*. M.Sc. thesis, University of Pretoria, Pretoria.
- SWANEVELDER, Z.H., VAN WYK, A.E. & TRUTER, J.T. 2005. A new variety in the genus *Clivia*. *Bothalia* 35: 67, 68.
- VAN WYK, A.E. 1994. Maputaland-Pondoland region. In S.D. Davis, V.H. Heywood & A.C. Hamilton, *Centres of plant diversity. A guide and strategy for their conservation 1*: 227–235. IUCN Publications Unit, Cambridge.
- VAN WYK, A.E. & SMITH, G.F. 2001. *Regions of floristic endemism in southern Africa. A review with emphasis on succulents*. Umdaus Press, Hatfield, Pretoria.
- WATSON, W. 1899. *Clivia miniata* var. *citrina*. *The Garden* 56: 388, t. 1246.
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