

# Flowering Plants of Africa

Volume 63

June 2013



# Flowering Plants of Africa

Since its inception in 1921, this serial, modelled on the former *Curtis's Botanical Magazine*, has published well over 2 000 colour plates of African plants prepared by some 80 artists.

The object of the serial is to convey to the reader the beauty and variety of form of the African flora, to stimulate an interest in the study, conservation and cultivation of African plants and to advance the science of botany as well as botanical art.

The illustrations are mostly prepared by artists on the staff of the South African National Biodiversity Institute, but we welcome other contributions of suitable artistic and scientific merit. Please see *Guide for authors and artists* on page 145.

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## History of this series

(note Afrikaans translation and changes in title)

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*The Flowering Plants of South Africa*

### **Volume 25 (1945–1946) to Volume 26 (1947):**

*The Flowering Plants of Africa*

### **Volume 27 (1948–1949) to Volume 52 (1992–1993):**

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**Cover illustration:** *Erica verticillata* (Plate 2296)

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# Flowering Plants of Africa

A magazine containing colour plates with descriptions of  
flowering plants of Africa and neighbouring islands

Edited by

A. Grobler

with assistance of

G.S. Condy

Volume 63



Pretoria  
2013

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*Gasteria croucheri* subsp. *pondoensis*

Asphodelaceae

South Africa

*Gasteria croucheri* subsp. *pondoensis* N.R.Crouch, Gideon F.Sm. & D.G.A.Styles in *Bothalia* 41: 183–185 (2011).

Remarkably apt and implicitly predictive words were documented by Van Wyk & Smith (2001). In their chapter on the Pondoland Centre of Plant Endemism, they captioned their image of the Lukabeni stream in the Mkambati Nature Reserve ‘... spectacular waterfall at the head of a deep side-gorge of the Mtentu River ... most of the forested gorges of the Mtentu River remain botanically unexplored’. It is from the banks of this very tributary—about 4.5 km upstream of the Mtentu mouth, which opens into the Indian Ocean—that the type of a new member of *Gasteria* was subsequently gathered in 2009. Indeed, various other new species and interesting records have emerged from northern Pondoland since 2001—including the Mtentu River system itself (Edwards 2005; Crouch & Edwards 2007; Crouch & Klopper 2010).

*Gasteria croucheri* subsp. *pondoensis* is a large and splendid leaf succulent, an obligate cremnophyte that grows on cliffs both fully exposed on southern aspects, as well as within the shaded margins of riverine forest. It is a clumping subspecies that bears long, angular leaves, most of which hang pendulously, sickle-like in form (Figure 1). *Gasterias* are well known as masters of the art of camouflage, for the leaves of most species are usually highly mottled, rendering plants difficult to detect in the shady spots they seem to naturally prefer. *Gasteria croucheri* subsp. *pondoensis* is no exception, as its dark green leaves are spotted with paler green blotches, making the rosettes blend in well with their surroundings. From mid- to late-summer, sparsely branched panicles bear attractive pink-green flowers, which, at up to 50 mm, are the longest yet recorded for *Gasteria*. The enormous leaves too are extraordinarily long for the genus, for at 1.5 m they are more than twice the length of any other documented species! One might reasonably question why this, the largest of all *Gasterias*, has been overlooked until so recently.

Botanical exploration of the Pondoland coastline has certainly proven a challenge, for while its riches have been enticing to many, access has been limited largely to those with a penchant for adventure. The topography so characteristic of this region is that of rugged plateaux of between 100 and 500 m altitude, dissected deeply by narrow river gorges (Van Wyk & Smith 2001). Accordingly, to access plants of this new subspecies from the northern bank of the Mtentu River, one has to travel over rugged terrain in a suitably equipped vehicle for two hours before canoeing at least 1.5 km upstream of the mouth, ultimately to scramble about narrow, waterside cliff ledges. With Zambesi sharks frequenting the estuary, great care is duly taken when disembarking from one’s wobbly craft! Given the logistical challenges involved,

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PLATE 2284.—1, basal portion of rosette, × 0.5; 2, branches of flowering raceme, × 1. Voucher specimen: *Crouch & Styles 1149* in KwaZulu-Natal Herbarium, Durban. Artist: Gillian Condy.



PLATE 2284 *Gasteria croucheri* subsp. *pondoensis*

it is small wonder that the early explorers Johann Drège and his brother Carl missed this taxon in the course of their botanising of Pondoland—it is documented that for ease of passage, they crossed at the very mouths of both the Msikaba and Mtentu Rivers in late February 1832 (Glen & Germishuizen 2010).



FIGURE 1.—Pendulous habit of *Gasteria croucheri* subsp. *pondoensis*. Artist: Gillian Condy.



*Gasteria* is essentially South African, with a single species, *G. pillansii*, entering the Richtersveld in the extreme south of Namibia. Perhaps somewhat surprisingly, none of the *Gasteria* species that occur naturally in the northeastern, subtropical parts of South Africa have yet been reported for Mozambique (Da Silva *et al.* 2004), whereas at least *Haworthia limifolia* var. *limifolia*, a representative of a related alooid genus, does enter this neighbouring country (Smith *et al.* 1997a).

Although *Gasteria* is readily recognisable on the basis of both vegetative and floral characters, its infrageneric classification nonetheless remained elusive for nearly two centuries following its establishment by Duval (1809). By the late 1980s, over 100 taxa had been described, a figure reduced substantially with the publication of a major revision of the genus (Van Jaarsveld 1994). The consolidation by this author resulted in the enumeration of only 16 species with a total of 22 taxa. Since then, considerable further work has been undertaken that has resulted in the recognition of an additional seven species, bringing the total number of taxa to 35 (Van Jaarsveld 2007; Crouch *et al.* 2011).

On the basis of genome size, those taxa found furthest from the centre of *Gasteria*'s present-day distribution in the southeastern Cape are argued to be the evolutionarily most advanced (Zonneveld & Van Jaarsveld 2005). They include the northernmost species *G. batesiana* and the newly described *G. tukhelensis* from the lower Tukhela River near Kranskop, both of which Van Jaarsveld & Van Wyk (2005) placed in *G.* Section *Longiflorae* Series *Longifoliae* along with *G. acinacifolia*, *G. croucheri* subsp. *croucheri* and *G. croucheri* subsp. *pendulifolia* (as *G. pendulifolia*). All members of this series are characterised by narrow, elliptical flowers in which the swelling in the upper half approximates the rather unpronounced basal gasteriform portion (Van Jaarsveld *et al.* 1994). Although the artificial nature of the sections and series of Van Jaarsveld *et al.* (1994) was illumined by the total nuclear DNA work of Zonneveld & Van Jaarsveld (2005), these subgeneric groupings were nonetheless deemed clear-cut by Van Jaarsveld (2007) and so maintained for practical reasons.

*Gasteria croucheri* is one of five species confined largely to the coast of the summer-rainfall region of South Africa and is a taxon which in its broadest sense has earlier been depicted in *Flowering Plants of Africa* (Smith *et al.* 1997b). From cliff faces of the greater Durban area, forms previously referred to as cultivars 'Shongweni' and 'Umgeni' of *G. croucheri* (Van Jaarsveld 1994) have collectively been provided with specific rank, as *G. pendulifolia* (Van Jaarsveld & Van Wyk 2001; Van Jaarsveld 2007). These authors considered the distribution range of *G. pendulifolia* to extend along the subtropical coast, from Durban northwards to just south of Mkuze in Zululand. However, following measurement of the nuclear DNA content of this and other genus members, the rank of *G. pendulifolia* was subsequently lowered to that of a subspecies of *G. croucheri* (Zonneveld & Van Jaarsveld 2005). These authors distinguished *G. croucheri* subsp. *pendulifolia* from the typical subspecies on account of its smaller size, prolific clustering habit, and pendulous leaves that are narrow, glaucous and with an entire margin. The flowers are also predominantly white infused with pink basally while those of subsp. *croucheri*—and subsp. *pondoensis* for that matter—are pinker throughout, with more prominent green striations above.

The typical subspecies has been reported as larger, with leaves ascending to spreading, and a lower propensity for cluster-forming (Van Jaarsveld & Van Wyk 2001; Van Jaarsveld 2007). Based on their somewhat broader concept of *G. croucheri* subsp. *croucheri*, Van Jaarsveld & Van Wyk (2001) reported the typical subspecies to occur from Durban southwards to the Msikaba River in the Eastern Cape. Subspecies *croucheri* is currently not known from the Msikaba and Mtentu River gorges, but has been observed beyond the range of subsp. *pondoensis* to as far south as the Mzimvubu River where plants were found on shale cliffs about 15 km inland of the coast (Van Jaarsveld & Van Wyk 2003).

Populations of *Gasteria croucheri* subsp. *pondoensis* occur towards the southern end of the range of subsp. *croucheri*, and are geographically separated from the similarly pendulous-leaved subsp. *pendulifolia* by a distance of approximately 150 km. The three subspecies of *Gasteria croucheri* are thus allopatric. As related above, the leaves of subsp. *pondoensis* are often significantly longer than those of any other subspecies, for they may attain lengths of up to 1.5 m. By comparison, those of subsp. *croucheri* reach only 0.36 m and those of subsp. *pendulifolia* little more than 0.45 m (Van Jaarsveld & Van Wyk 2001). The perianth size of the subject of this account is longer too than that of both its closest relatives, attaining a length of 50 mm compared to 40 mm.

In terms of size, gasterias can be clustered into three distinct groups: miniatures such as *Gasteria baylissiana*, small plants the likes of *G. bicolor*, and large ones that develop impressive rosettes. Our species most certainly falls into this latter group, for an able-bodied man will struggle to lift a single mature specimen! In contrast to the closely related genus *Aloe*, gasterias do not include amongst their ranks any tree-like species, and those with a distinct, even thin stem are very poorly represented. To date, a caulescent habit is known only in the most primitive species, the pendulous cliff-dwelling *G. rawlinsonii* from the Eastern Cape.

*Gasteria croucheri* subsp. *pondoensis* is associated with Scarp Forest, a vegetation unit which today exists as an archipelago of scattered patches ranging in altitude from near sea level to an altitude of 600 m (Rutherford *et al.* 2006). This *Gasteria* has, however, not yet been found at altitudes higher than 200 m or beyond the Msikaba and Mtentu River systems (Figure 2). Particularly fine specimens can be seen on cliffs at the Superbowl on the Msikaba, and along the Mtentu fringe about 3.5 km upstream of the mouth. Both these two deep gorge systems have probably provided stable forest refugia for this and other endemic taxa that have been unable to escape their enclave as a result of susceptibility to, *inter alia*, hot seasonal fires in the surrounding sourveld grasslands (Edwards 2005).

In habitat, *Gasteria croucheri* subsp. *pondoensis* grows on cliff faces and on rock ledges in dense subtropical vegetation that includes the following shrub and tree species: *Commiphora harveyi*, *Dracaena alectrifolmis*, *Encephalartos altensteinii*, *Grewia pondoensis*, *Helichrysum populifolium*, *Jubaeopsis caffra*, *Strelitzia nicolai* and *Tarchonanthus trilobus*. Associated cremnophytic succulents include *Aeollanthus parvi-*

*folius*, *Aloe arborescens*, *Bulbine* sp. nov., *Crassula multicava* subsp. *multicava*, *C. orbicularis*, *C. pellucida*, *C. streyi*, *Delosperma* sp., *Ischnolepis natalensis*, *Plectranthus saccatus* subsp. *pondoensis*, *Rhipsalis baccifera* subsp. *mauritiana*, *Senecio medley-woodii* and *S. oxydontus*.

At a species level, the Red List status of *Gasteria croucheri* has recently been evaluated as Vulnerable (A2d) (Van Jaarsveld & Raimondo 2009) based on extensive and unsustainable harvesting for the trade in traditional medicine (Crouch *et al.* 2000). For this purpose, subsp. *pondoensis* will undoubtedly be as sought after as its sister taxa. As far as cultivation is concerned, *G. croucheri* subsp. *pondoensis* offers few challenges. It grows very easily in virtually any soil type, including clay, even though it prefers a friable, rich, well-drained mixture. This is not surprising as it is a cliff-dweller that often grows in thin, but humus-rich soils in rock crevices.

The genus name *Gasteria* derives from the Greek for belly, *gaster*, in allusion to the swollen base of the perianth tube. The specific epithet *croucheri* commemorates Mr Croucher, Curator of the succulent plant collection at Kew around 1870, 'to whose zeal and especial love for this class of plants the [Kew] collection owes much of its value and interest' (Hooker 1869). The subspecific epithet *pondoensis* is a geographic indicator of the presently known distribution of this Pondoland endemic.

The plant figured here was gathered from the Mtentu River system (Lukabeni Stream) in northern Pondoland, and grown on to flowering in Kloof, Durban.

**Description.**—Plants acaulescent, decumbent to rarely erect, 250–400 mm tall, up to 600 mm in diameter, solitary, dividing or proliferating from base to form dense groups. *Roots* succulent, up to 6 mm in diameter. *Leaves* rosulate, triangular, linear-lanceolate to falcate, rarely lorate, 0.2–1.5 m long, 30–100 mm broad at base, erectly spreading, rarely patent or recurved; apex obtuse or acute, mucronate; adaxial surface broadly canaliculate, plane towards apex, abaxial surface somewhat convex with a distinctly tuberculate-serrulate excentric keel, both surfaces dark green, often glaucous, with dense white to concolourous spots arranged haphazardly or in transverse bands; surface smooth, rarely slightly asperulous; margin tuberculate-serrulate, rarely denticulate. *Juvenile leaves* distichous, lorate, patent to erectly spreading, smooth; apex acute, rarely obtuse, mucronate. *Inflorescence* racemose, up to 900 mm tall, ascending, at first drooping, with or without a pair of side branches; scape 10–14 mm broad at base, flattened; floral bracts 6–11 mm long, piliferous; pedicels 10–11 mm long, pink. *Perianth* 42–50 mm long, stipitate for up to 9 mm, gasteriform

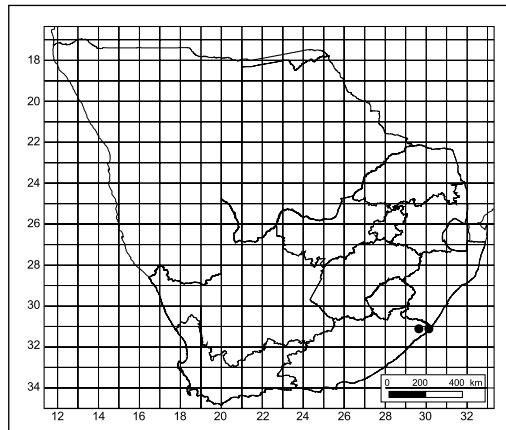


FIGURE 2.—Known distribution of *Gasteria croucheri* subsp. *pondoensis*.

proximally (narrow-elliptic) for half its length; proximal gasteriform portion pink, 7 mm wide (often triangular in cross section), distally light pink with green striations, inflated to nearly the same diameter as proximal portion (with slight constriction in middle); apex erect becoming erectly spreading, obtuse; margins of inner segments free and channelled at base for 8–12 mm, diverging gradually towards apex. *Stamens* 33 mm long; anthers 2.5–4.0 mm long, shortly exerted at anthesis. *Ovary* 9–10 mm long, 3 mm in diameter; style 17–19 mm long, lengthening considerably during female phase of flower; stigma capitate, included or slightly exerted, curved upwards, minute. *Capsule* 20–22 mm long, obtuse at apex. *Seed* 3–4 × 2–3 mm. *Flowering time*: December to February. Plate 2284.

## REFERENCES

- CROUCH, N.R. & EDWARDS, T.J. 2007. Crassulaceae. *Crassula streyi* recorded from the Eastern Cape. *Bothalia* 37: 208, 209.
- CROUCH, N.R. & KLOPPER, R.R. 2010. Pteridophyta. Notes on some naturalized ferns of the Eastern Cape and KwaZulu-Natal. *Bothalia* 40: 71–75.
- CROUCH, N.R., SMITH, G.F. & STYLES, D.G.A. 2011. Asphodelaceae. *Gasteria croucheri* subsp. *pondoensis*, a new cremonophyte from Pondoland, South Africa. *Bothalia* 41: 183–185.
- CROUCH, N., SMITH, G., SYMMONDS, R. & TOMALIN, M. 2000. *Gasteria croucheri*—the magical *impundu* of the Zulu. *British Cactus and Succulent Journal* 18: 70–78.
- DA SILVA, M.C., IZIDINE, S. & AMUDE, A.B. 2004. *A preliminary checklist of the vascular plants of Mozambique*. Southern African Botanical Diversity Network Report No. 30. SABONET, Pretoria.
- DUVAL, H.A. 1809. *Plantae Succulentae, in Horto Alenconio*. Apud Gabon et Socios, Paris.
- EDWARDS, T.J. 2005. Two new *Plectranthus* species (Lamiaceae) and new distribution records from the Pondoland Centre of Plant Endemism, South Africa. *Bothalia* 35: 149–152.
- GLEN, H.F. & GERMISHUIZEN, G. 2010. Botanical exploration of southern Africa, edn 2. *Strelitzia* 26. South African National Biodiversity Institute, Pretoria.
- HOOKE, J.D. 1869. *Aloe (Gasteria) croucheri*. *Curtis's Botanical Magazine* 25, ser. 3: t. 5812.
- RUTHERFORD, M.C., POWRIE, L.W., LÖTTER, M.C., VON MALTITZ, G.P., EUSTON-BROWN, D.I.W., MATTHEWS, W.S., DOBSON, L. & MCKENZIE, B. 2006. Afrotropical, Subtropical and Azonal Forests. In L. Mucina & M.C. Rutherford (eds), *The vegetation of South Africa, Lesotho and Swaziland*. *Strelitzia* 19: 584–614. South African National Biodiversity Institute, Pretoria.
- SMITH, G.F., CROUCH, N.R. & CONDY, G. 1997a. *Haworthia limifolia* var. *limifolia*. *Flowering Plants of Africa* 55: 24–29.
- SMITH, G.F., CROUCH, N.R. & CONDY, G. 1997b. *Gasteria croucheri*. *Flowering Plants of Africa* 55: 20–23.
- VAN JAARVELD, E.J. 1994. *Gasterias of South Africa. A new revision of a major succulent group*. Fernwood Press, Cape Town.
- VAN JAARVELD, E.J. 2007. The genus *Gasteria*; a synoptic review (new taxa and combinations). *Aloe* 44: 84–103.
- VAN JAARVELD, E.J. & RAIMONDO, D. 2009. *Gasteria croucheri*. In D. Raimondo, L. von Staden, W. Foden, J.E. Victor, N.A. Helme, R.C. Turner, D.A. Kamundi & P.A. Manyama (eds), *Red List of South African plants 2009*. *Strelitzia* 25. South African National Biodiversity Institute, Pretoria.
- VAN JAARVELD, E.J., SMITH, G.F. & VAN WYK, B-E. 1994. A cladistic analysis of *Gasteria* (Aloaceae). *South African Journal of Science* 90: 467–470.
- VAN JAARVELD, E.J. & VAN WYK, A.E. 2001. *Gasteria pendulifolia*, a new species from KwaZulu-Natal. *Cactus and Succulent Journal (U.S.)* 73: 68–70.
- VAN JAARVELD, E.J. & VAN WYK, A.E. 2003. New cliff-dwelling Crassulaceae from the Eastern Cape: a new *Cotyledon* and two new *Adromischus* taxa from the Mbashe and Mzimvubu Rivers, South Africa. *Aloe* 40: 36–40.
- VAN JAARVELD, E.J. & VAN WYK, A.E. 2005. *Gasteria tukhelensis*, a new species from KwaZulu-Natal, South Africa. *Bothalia* 35: 164–166.
- VAN WYK, A.E. & SMITH, G.F. 2001. *Regions of floristic endemism in southern Africa. A review with emphasis on succulents*. Umdaus Press, Pretoria.

ZONNEVELD, B.J.M. & VAN JAARSVELD, E.J. 2005. Taxonomic implications of genome size for all species of the genus *Gasteria* Duval (Aloaceae). *Plant Systematics and Evolution* 251: 217–227.

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