

In 1993 a rubber canoe expedition was undertaken to investigate the vegetation and flora along the Tukhela River between Ngubevu and Jamieson's Drift. *Gasterias* growing on the south-facing cliffs near the confluence with the Mzimnyati River (Buffalo River) were collected and proved to be difficult to relate to any of the species known at the time. The following year another expedition was arranged and the population studied in more detail. This led to the confirmation of a new cremnophilous species of *Gasteria* Duval endemic to the lower Tukhela River in central KwaZulu-Natal, here described as *Gasteria tukhelensis*.

Gasteria tukhelensis Van Jaarsv., sp. nov., *G. batesianae* affinis sed rosulis maioribus foliorum arcuatorum deltoideo-lanceolatorum vel loratorum 120–250 × 30–50 mm, superficie laevi nitenti sed juventute subtuberculata differt; etiam perianthio longiore, minus arcuato, 40–43 mm longo, pedicellis 17 mm longis, capsula gracili, 23–32 mm longa differt.

TYPE.—KwaZulu-Natal, 2830 (Dundee): Ngubevu, sheer southwest rock face, (–DA), *Van Jaarsveld, Voigt, Xaba & Harrower 17996* (NBG, holo.).

Plants acaulescent, decumbent, 250 mm tall, up to 700 mm diam., proliferating from base and cluster-forming (3–8 heads). *Roots* succulent, up to 5 mm diam. *Leaves* rosulate, deltoid-lanceolate, 120–250 mm long, 30–50 mm broad at base, falcate and curving upwards,

sometimes becoming recurved; adaxial surface deeply canaliculate, plane towards apex, faintly white-spotted; abaxial surface somewhat convex with a distinct, eccentric keel, faintly spotted, spots arranged in obscure transverse bands; both surfaces shiny, dark green with smooth epidermis; margin minutely denticulate to almost entire, apex acute or subacute, sometimes acuminate, mucronate. *Juvenile leaves* distichous, lorate, patent to ascending; epidermis tuberculate, densely white-spotted, spots arranged in transverse bands; apex obtuse, mucronate. *Inflorescence* racemose with up to 11 pendent flowers, secundly arranged and open at the same time, up to 560 mm long, bearing two horizontally spreading side branches up to 300 mm long. *Scape* 4–5 mm broad at base, flattened; portion of floral bracts 7 × 2 mm, piliferous; peduncular bracts present, slightly larger; pedicels slender, 10–17 mm long, pink. *Perianth* 40–43 mm long, stipitate for 3–4 mm; segments fused for their greater length (except the perianth apices and margins of the inner 3 segments), subcylindrical, curved in the middle (and with a slight constriction), lower portion of perianth slightly decurved from narrowed central part; lower and upper half inflated to ± 6 mm diam., pink, upper half white with green striations; apices erect, becoming erectly spreading, obtuse; margins of inner segments free and channelled at base for 10–12 mm, diverging gradually towards apex. *Stamens* 34–37 mm long; anthers 3 × 1.5 mm long, included or shortly exerted. *Ovary* 8 × 3 mm, green; style 31 mm long, stigma included or shortly



FIGURE 6.—*Gasteria tukhelensis*, from the type locality. A, portion of plant, $\times 0.6$; B, juvenile plant, side view, $\times 0.6$; C, inflorescence, $\times 0.6$. D, E, capsule, $\times 0.6$: D, longitudinal view; E, viewed from top. F, seed, $\times 0.6$. Artist: Lisa Strachan.

exserted, curved upwards, minute. *Capsule* 23–32 mm long, narrowly obovate, triangular in cross section, obtuse at apex, 6–8 mm diam. *Seeds* 5–7 \times 2–3 mm, black. Figure 6.

In KwaZulu-Natal, the genus *Gasteria* has a \pm continuous to disjunct distribution in the low-altitude parts of dry river valleys and associated dry mountain slopes. However, members of the genus *Gasteria* have never been recorded from the Tukhela River Valley, the largest river system in KwaZulu-Natal (Figure 7). This wide river valley consists of dry savanna, often overgrown with succulent thicket, and is flanked by the numerous cliff faces so typical of *Gasteria* territory. To the north, *G. batesiana* G.D.Rowley occurs along the Pongola River and the Mzimnyati River and to the south, *G. pendulifolia* Van Jaarsv. occurs in the Durban region.

Gasteria tukhelensis appears to be confined to the lower Tukhela Valley near Kranskop, and as yet it is known only from the type collection, which appears to

be confined to the sheer cliff faces (altitude 440 m). The rosettes grow in crevices and on humus-rich ledges of shale rocks in dry savanna in the shade of succulent thicket consisting of *Euphorbia evansii*, *E. tirucalli*, *Portulacaria afra*, *Aloe rupestris*, *A. arborescens*, *Ficus ingens*, *Commiphora harveyi*, *Bulbine natalensis*, *Cotyledon orbiculata*, *Crassula nudicaulis*, *C. orbicularis*, *C. perfoliata* var. *perfoliata*, *Delosperma tradescantioides*, *Gerrardanthus macrorrhizus*, *Plectranthus hadiensis* var. *tomentosus* and *Petopentia natalensis*. Although the vegetation of the KwaZulu-Natal region is well documented, the flora of the sheer cliff faces in the Tukhela region is still poorly known and therefore likely to yield more new species. A number of vascular plant species are endemic to the Tukhela Valley and the region comprises a local centre of plant endemism within the larger Maputaland-Pondoland Region (Van Wyk & Smith 2001). The Tukhela Valley has a dry, subtropical climate and is situated in a rain shadow. It rains mainly in the summer months, ranging from 500–700 mm per annum. Summers are very hot, with temperatures fre-

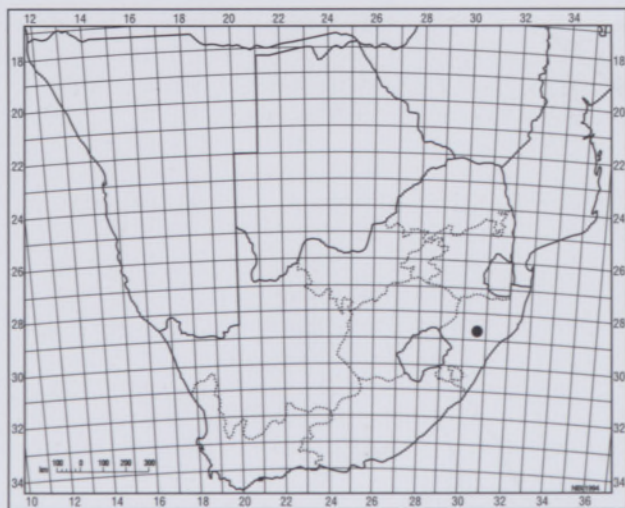


FIGURE 7.—Known distribution of *Gasteria tukhelensis*.

quently above 30°C. Winters are mild and frost is absent or very light.

Gasteria tukhelensis belongs to section *Longiflorae* Haw., series *Longifoliae* Haw., which includes five species, *G. acinacifolia* (J.Jacq.) Haw., *G. batesiana*, *G. croucheri* (Hook.f.) Baker, *G. pendulifolia* (Van Jaarsveld 1994) and the new species. All these species have large flowers (33–45 mm long) that are gasteriform over half of the perianth length. *G. batesiana*, a smaller species occurring to the north, has shorter, distinctly tuberculate, recurved leaves, smaller, curved flowers and smaller fruiting capsules. However, *G. batesiana* has been collected on cliffs at Sifula (tributary of the Mzimnyati River) and ± 15 km from the *G. tukhelensis* habitat near Ngubevu and has flowers 33 mm long. *G. pendulifolia* occurring to the south, has pendent, linear-lanceolate, entire leaves with a dull to slightly glaucous surface. *G. croucheri* is often solitary, a larger species with ascending, spreading leaves, 200–360 mm long. Although the leaves are smooth, the surface is dull, not shiny, and the leaf margin tuberculate-serrulate. In *G. croucheri* the inflorescence is a flat-topped panicle flowering from November to February, whereas in *G. tukhelensis* it is racemose. *G. croucheri* is found from Durban southwards to the Msikaba River in Eastern Cape (Transkei region).

Gasteria tukhelensis grows prolifically from the base, forming clusters on the sheer southwest-facing cliffs above the northern bank of the Tukhela River, east of Ngubevu near Kranskop, and is distinguished from *G.*

batesiana by its much larger rosettes of falcate, dark green leaves, often becoming recurved, with a shiny, faintly spotted surface and by its leaf margin which is minutely denticulate to almost entire. Furthermore, the perianth of *G. tukhelensis* is 40–43 mm long in contrast to the shorter, 35–40 mm long perianth found in *G. batesiana*. The slender pedicels are 10–17 mm long, compared to 6–12 mm in *G. batesiana*. The fruiting capsules also differ from those of *G. batesiana*, being more slender and 23–32 mm long compared to 16–20 mm in *G. batesiana*. The inflorescence may be a simple raceme with up to 11 flowers opening at the same time, but with a pair of side branches in adult plants. *G. tukhelensis* is distinguished from *G. pendulifolia* by its shiny leaf surface, slightly tuberculate when young. Its long, slender perianth comes closest to *G. acinacifolia* from the coastal Eastern Cape and the eastern extreme of Western Cape.

Specimen examined

KWAZULU-NATAL.—2830 (Dundee): Ngubevu, sheer southwest rock face, (–DA), Van Jaarsveld & Voigt 18354 (NBG).

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