

# *Brachystelma molaventi* (Asclepiadaceae), a new species from the southern midlands of KwaZulu-Natal, South Africa

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## Introduction

Hitherto the described mist belt members of *Brachystelma* in KwaZulu-Natal (from north to south) consisted of *B. ngomense*, *B. coddii*, *B. remotum*, *B. pulchellum*, *B. petraeum* and *B. australe* (Dyer 1983). All these species have tubers with trailing stems and small, opposite, lanceolate leaves which usually decrease in size towards the stem apices. Flowers are borne singly at the leaf nodes and are usually small, star-shaped, and with or without a corolla tube.

In 1994, one of us (AEvW) collected material of a *Brachystelma* species with flattened, vertically orientated flowers and purplish follicles on Mount Ngele in southern KwaZulu-Natal. Subsequently, more material of the taxon was collected from the same general area by Tony Abbott and staff of the Natal Herbarium, Durban. Though closely related to *B. petraeum*, this plant from Mt. Ngele shows a number of diagnostic characters and is here described as a new species. The specific epithet, from the Latin *mola* = mill and *ventus* = wind, alludes to the vertical flower which resembles a windmill.

## Description

*Brachystelma molaventi* Peckover & Van Wyk sp. nov., *B. petraeo* Dyer affinis, sed praecipue tubere solitarii et floribus sine tubo corollae manifesto differt.

Typus: South Africa, Weza State Forest, Ngele Nature Reserve, rocky outcrops near Kwa-Shwili Hut on the Ngele Hiking Trail, 1360 m above sea level, 21 Nov. 1994, Van Wyk 12483 (PRU, holotypus; NH, isotypus).

**Plant** a perennial herb. **Tuber** up to 40 mm wide and up to 20 mm thick. **Stem** dividing at soil surface to produce few to many spreading, procumbent stems up to 150 mm long and 2 mm broad at the base, covered with short pilose hairs, internodes up to 35 mm, reddish brown. **Leaves**

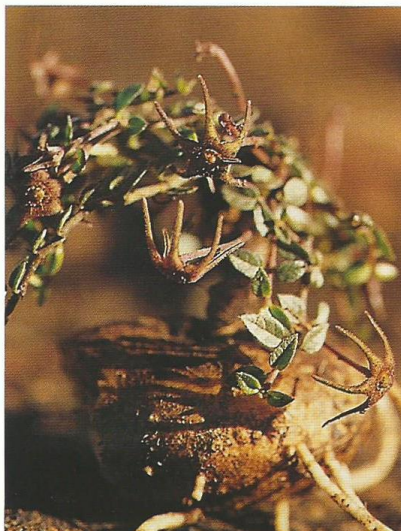


Figure 1. *B. molaventi*: close-up of the flowering plant. The yellow distinctive staminal column, lack of corolla tube and pilose purple hairs on corolla lobes are characteristic of this species.

opposite, arranged on opposite sides of the stem, lanceolate to cordate, 3–8 x 2–5 mm, sparingly pilose on both surfaces. **Petiole** 1–2 x 0.3 mm, reddish brown, sparingly pilose. **Flowers** lateral at the nodes, single, held in a vertical plane to the soil, with no distinctive scent. **Pedicels** up to 35 x 0.5 mm, sparingly pilose, reddish brown, each with a small basal bract. **Bracts** at base of each pedicel 0.5 mm long, acute, reddish brown. **Calyx** lobes 1–2 mm long at base, sparingly pilose, acute, reddish brown. **Corolla** before anthesis forming a truncate orb with terete tip; lobes up to 12 mm long and 1 mm wide, linear, recurved longitudinally, brownish green on inner surface and covered with very short (0.1 mm) purplish hairs; tube 4 mm in diameter, brownish green on outside and inside, not discernible as flat, covered with very short (0.1 mm) purplish hairs. **Staminal column** yellowish to purplish brown, 3 x 1 mm. **Outer corona** appendages forming

the outer walls of the five nectar pouches, each with a 2-lipped 0.5 mm long lobule emanating from the side of the nectar pouch, surface glabrous. **Inner corona** appendages thin and glabrous, not reaching the top of the staminal column. **Follicles** paired, upright, 20–30 x 3 mm, dark reddish brown, each containing 10–20 seeds; follicular walls thin. Seed dark brown 5 x 3 mm; tuft of hairs 10–12 mm long.

## Material examined

South Africa: 3029 FAA samples 3276 & 3276 Mount Ngele (-DA) Van Wyk 12483, 12553 (PRU); Abbott 6695 (PRU) also FAA sample 3509 from Mount Ngele.

## Distribution and habitat

At present *B. molaventi* is known with certainty only from Mt. Ngele, a mountain massif east of Kokstad (Weza District) in the midlands of KwaZulu-Natal (KZN), near the border with the Eastern Cape Province (Figure 2). Geologically Mt. Ngele is an intrusion of gabbro, the only mountain in KwaZulu-Natal composed of this rock type, interspersed with layers of shale. The mountain forms part of a geological intrusion of ultramafic rocks which straddles the border between the Eastern Cape and KwaZulu-Natal. Known as the Nsizwa Complex, other mountains in this geological feature include Insizwa, Tonti and Thabankulu, areas which may well harbour more populations of the species. High concentrations of different heavy metals usually occur in soils derived from ultramafic rocks and these areas tend to be rich in endemic species of plants. Other species known to be endemic or near-endemic to Mt. Ngele include *Dioscorea brownii*, *Macowania conferta*, *Phyllica tysonii* and *Struthiola anomala*.



*B. molaventii* was observed growing in grassland on shallow, dark brown loamy soil along outcrops of volcanic rock and in association with *B. pygmaeum*. The grasses growing together with the brachystelmas were typically short, which allows sufficient light and soil nutrients for these low-growing plants to remain established as they cannot compete for existence in lush grassy areas.

The rainfall on Mt. Ngele is around 1200 mm per annum and usually falls from October until April (summer), often in the form of heavy downpours from thunderstorms. Mist is common in summer. During winter, the occasional rain shower, which accompanies a cold front, is experienced. The climate prevailing in this part of KZN could be termed temperate with warm summers and cold winters with occasional frost.

The high rainfall in the mist-belt areas is ideal for planting soft-wood plantations and, as in other parts of KZN, commercial afforestation has already caused large-scale destruction of species-rich grassland on Mt. Ngele. Afforestation poses the greatest threat to other possible populations of this rare species.

## Discussion

*Brachystelma petraeum*, from near Richmond and from the foothills of the Drakensberg, is the nearest relative of *B. molaventii*. The manner of floral orientation, being held vertical to the soil, is a

character common to both species. The most obvious difference between these two taxa lies in the floral structure, with *B. molaventii* having no visible corolla tube, more prominent lobules on the outer

edges of the nectary pouches as well as short pilose purple hairs on the corolla lobes. *B. petraeum* has a very well developed cup-shaped corolla tube, less prominent lobules and glabrous corolla lobes.

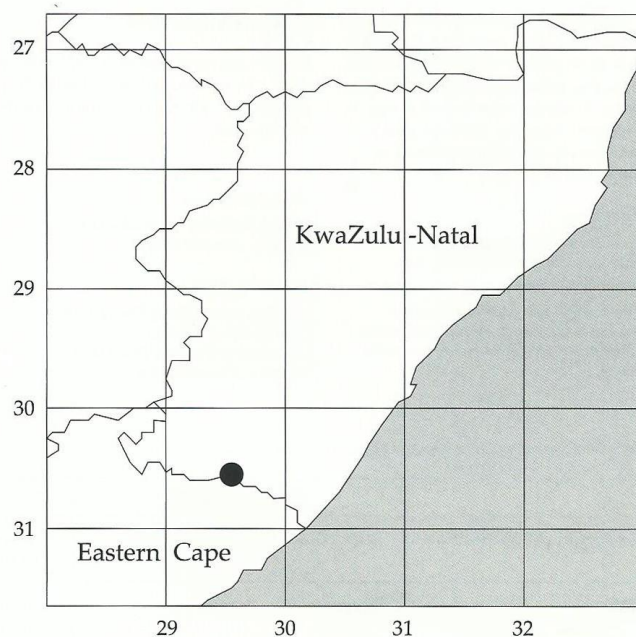


Figure 2. Distribution map of *Brachystelma molaventii*.



Figure 3. Plant with flowers of *B. petraeum* in habitat at Burns Valley.



An additional morphological difference between the two species is the tuber which in *B. petraeum* can have underground rhizomes originating from it, thus forming clumps of inter-linked plants. In *B. molaventii*, however, the tubers are solitary. Other distinguishing differences are summarised in Table 1.

#### References

Dyer, R.A. 1983. *Ceropegia*, *Brachystelma* and *Riocreuxia* in Southern Africa. A.A. Balkema, Rotterdam.

Maske, S. 1966. The petrography of the Ingele Mountain Range. *Annale Universiteit van Stellenbosch* 41 (Series A, no. 1) : 1-111 (+ maps).

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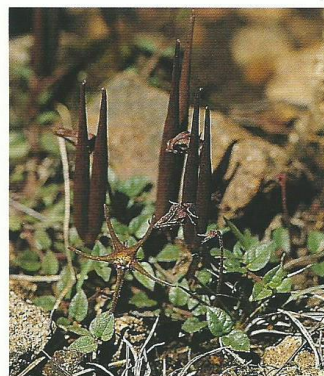


Figure 4. The upright reddish brown seed follicles on a plant of *B. molaventii*.

Table 1: Summary of salient differences between *B. molaventii* and *B. petraeum*.

	<i>B. molaventii</i>	<i>B. petraeum</i>
<b>Geographical distribution</b>	Weza District in southern KZN.	Around Richmond and to foothills of the Drakensberg – central KZN.
<b>Tubers</b>	Solitary.	Multiple thickened rhizomes form a mat of inter-linked plants.
<b>Corolla lobes</b>	Recurved longitudinally and divided almost to the base; covered with pilose purple hairs.	Recurved longitudinally, half divided to base; glabrous.
<b>Corolla tube</b>	Reduced and flat; staminal column exserted, covered with pilose hairs.	Distinct cup-shaped and mottled corolla tube present; staminal column sunk therein, with white ciliate hairs on rim.
<b>Staminal column</b>	Yellow to brownish, with distinct lobules on edges of nectar pouch.	Yellowish with transparent nectar pouches and less distinct lobules.
<b>Seed follicles</b>	Upright, dark reddish brown, 15-30 x 3 mm.	Upright, greyish with fine red mottles, 30-40 x 3 mm.
<b>Seed</b>	10-20 per follicle, 5 x 3 mm, dark brown; tuft of hairs 10-12 mm long.	10-20 per follicle, 5 x 3 mm, black with brown margin mottled finely with black; tuft of hairs 10-15 mm long.



Figure 5. Close-up of a flower of *B. petraeum* from Burns Valley (type locality) depicting a mottled cup-shaped corolla tube with ciliate white hairs on its edge.



Figure 6. Staminal column of *B. petraeum* showing transparent nectar pouches.