An overlooked miniature *Brachystelma* species *B. angustum* Peckover sp. nov. (Asclepiadaceae) from near Carolina, Eastern Transvaal

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Background to the genus *Brachystelma*

Brachystelmas belong to the large milkweed family, or Asclepiadaceae, and within this family are the well-known stapelias or aasblomme. The world population within the brachystelmas presently consists of around 110 taxa. No doubt with more field work, the list will grow, while with further taxonomic studies this number will probably shrink. The first *Brachystelma* to be discovered and noted was *B. caudatum* in the period 1772 - 1773 by Carl Thunberg, but incorrectly recorded as *Stapelia caudata.* The first species to be given the generic name *Brachystelma* was *B. tuberosum* by R. Brown, probably from the Knysna area, in 1822. All other species to be included in *Brachystelma* must therefore be compared to this type. In South Africa, which boasts ± 70 of the taxa, most brachystelmas are concentrated in the better-watered eastern regions enjoying a summer rainfall. There are only a few species which are found growing over the vast areas of the drier grasslands and the Kalahari. In the winter-rainfall region around Cape Town, only two species are endemic.

Morphologically, a *Brachystelma* is a herbaceous perennial plant having an underground disc-shaped or obconical tuber and deciduous stems which are upright, decumbent or procumbent and bear sets of leaves in an opposite arrangement. The fibrous or semi-fusiform roots which arise mostly from the sides and undersides of the tuber not only anchor the plant but help to draw the young seedling tubers deeper into the soil within the first few growing seasons. At present, the brachystelmas having only fusiform roots are excluded by the author from this genus until more detailed taxonomic studies have been completed.

Flowers are borne on the stems, number from one to many per node and have five petals (corolla lobes). The closely related ceropegias differ mainly in having flowers with more developed floral tubes compared with the more open flowers of *Brachystelma.* This might in itself prove a poor criterion to separate the two genera and more research into other distinctive aspects is necessary. The flowers of the brachystelmas are scented to attract various species of flies which then perform pollination. After fertilisation two seed follicles develop and these may be orientated upright, in a V or flat, and may be thick and short or thin and long. The seeds, which number from few to many are attached at one end to a tuft of straight, white hairs which act as a parachute to carry the seed in the slightest breeze during summer, winter and spring to a favourable niche for later germination after sufficient rains.

Under cultivation, most seedlings of *Brachystelma* species will

begin to flower within the first or second season but in nature they probably require three years or longer. Plants in nature are prone to predation by local human inhabitants, animals such as oryx, porcupine, mice, Monarch butterfly larvae, species of parasitic fly (similar to the pumpkin fly), larvae of a weevil and of a beetle similar to a ladybird. Tubers, which have a high starch content, succumb to fungi - chiefly *Fusarium* and *Curvularia* species. This wide spectrum of organisms partial to brachystelmas ensures that many species remain on the rare side, except those growing on the hilltops in high rainfall areas where plants are concentrated into small suitable niches. The parasites in these cooler areas are far less than in the warmer, lower-lying areas and up to 20 plants are often encountered per square metre (e.g. *B. dyeri*, *B. coddii*, *B. caffrum* and *B. pulchellum*). In the warmer lowveld, isolated plants in suitable habitat are often found hundreds of metres apart (e.g. *B. arnotii*, *B. brevipedicellatum*, *B. stenophyllum* and *B. circinatum*).

Distribution of *B. angustum*

The plants occur on white quartzitic ridges near Carolina and grow in a blackish humic soil, usually of limited depth. Where the soil is deeper, the few plants that do occur there are taller and more robust but these constitute a small percentage of the total population. Due to the rockiness of the terrain, a rainfall of 800 mm per annum and the presence of other grasses and forbs which are also dwarfed, an ideal niche for a small *Brachystelma* species is created. The plants are locally common, even venturing into the road reserve and it is surprising that these populations have not been noted to date. The climate is temperate and frost would be common during winter. There are a number of rocky ridges in the area and it is probable that the species is present on them as well.

Diagnosis

***Brachystelma angustum* Peckover sp. nov.**, *B. dyeri* K & M.J. Balkwill affinis, sed coronae lobis exterioribus papillis deorsum spectantibus instructis, coronae lobis exterioribus inconspicuis lobulis parvis facientibus differt.

Description

Perennial herb. *Tuber* 20 - 30 mm in diameter and up to 15 mm thick. *Stem* mostly single except in robust plants where above-ground branching leads to 3 - 5 stems, upright, 20 - 40 mm long, up to 1,5 mm in diameter at the base, glabrous, green to reddish, internodes 3 - 10 mm apart. *Leaves* arranged on opposite sides of the stem, linear to ovate on different plants, 10 - 25 mm x 5 - 7 mm, dark green above, lighter below, glabrous. Petiole 3 - 5 mm long and 1 mm broad, glabrous. *Flowers* borne in pairs at the nodes, axillary, pointing downwards. Bracts 1,1 mm long, linear. Pedicels 7 - 10 mm long and 0,5 mm in diameter, glabrous. Calyx lobes 3 mm long, greenish-red, linear. *Corolla* 6 - 7 mm long, lobes 6 - 7 mm long and 2 mm at the base, tapering to 0,5 mm, joined to

Brachystelma angustum in habitat, with flower (above) and corona (below) - inset

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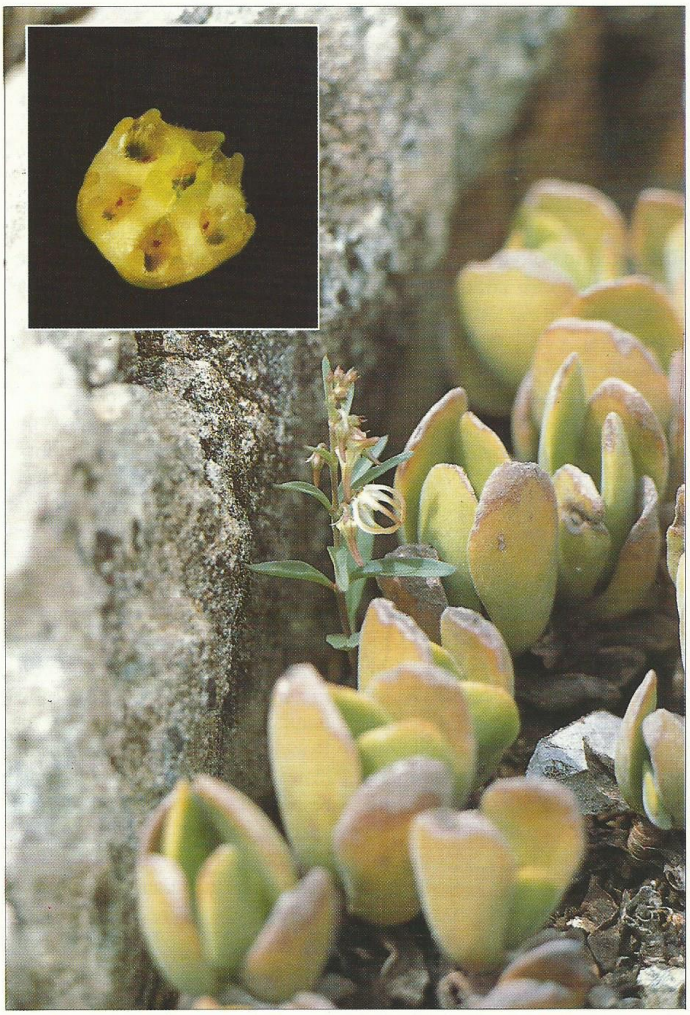

Brachystelma dyeri
in habitat with corona - inset

form a 'cage', white to cream at the base and reddish-brown at the tips, margins reflexed, glabrous on both surfaces; bulb 4-5 mm diameter, flat, margin reflexed, whitish. *Corona* 2 mm in diameter and 2 mm high, whitish with red spots, top of staminal column yellow; outer corona appendages white, forming the outer walls of the five nectar pouches and sets of erect lobes tipped with green, inside a few fine straight papillae face downwards; inner corona appendages lying on top of the staminal column and enclosing the backs of the anthers, extended to form small free lobules, also tipped green. *Seed follicles* 2, arranged in a sharp V, reddish-green 30-50 mm x 3 mm, surface smooth. Seed greyish 7 x 3 mm tufted with 15-20 mm long hairs, 10-20 seeds per follicle.

Name

The name refers to the small habit of the plant.

Type

Eastern Transvaal Province: Carolina, 2630AB. *R.G. Peckover 189* (holotypus, PRE)

Discussion

The nearest relative to *B. angustum* is *B. dyeri* which grows near Barberton, a distance of ± 70 km to the north-east. The major difference between *B. angustum* and *B. dyeri* is in the floral structure where the corona including the outer and inner appendages differ markedly. Both species occur on rocky ridges where competition with grass is restricted, *B. dyeri* being found on the serpentinites near the Agnes gold mine at Barberton as well as a quartzitic ridge to the south-west of the serpentinites whereas *B. angustum* frequents similar quartzitic ridges to the south-west of this area.

The corona in *B. dyeri* has outer corona appendages which consist of outer walls of the nectar pouches and on each of these are two small erect lobes. On the inside of the rim of the nectar pouch upward facing hairs are encountered whereas in *B. angustum* a few downward-facing papillae are present. The far larger, erect lobes of the outer corona appendages of *B. angustum* are significant and are higher than the staminal column. The inner lobes of *B. dyeri* are entire at the tip and are very conspicuous, being up to 2 mm above the staminal column. In *B. angustum* the inner lobes are inconspicuous and are reduced to small lobes on top of the staminal column. There are differences in the growth form between the two species: *B. dyeri* has progressively smaller leaves and larger internodes right up to the apex where the leaves are reduced to small bracts, whereas *B. angustum* has a decrease in internode lengths towards the tip and leaf reduction is far less marked.

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