

LAMIACEAE

PLECTRANTHUS PORCATUS, A NEW SPECIES ENDEMIC TO THE SEKHUKHUNELAND CENTRE OF PLANT ENDEMISM, LIMPOPO PROVINCE, SOUTH AFRICA

INTRODUCTION

A new *Plectranthus* species apparently related to *P. xerophilus* is described from the Sekhukhuneland Centre of Plant Endemism (Van Wyk & Smith 2001) in the Limpopo Province.

Plectranthus porcatus was collected by the first author on the northern Leolo Mountain Range, while searching

for more populations of another new species. The plants were found on lower and mid-slopes of the main ridge of this range with a southwestern aspect, either in bush clumps in light shade, or under protection of boulders in full sun. As no flowers or fruits were present when first collected, plants were cultivated at Kirstenbosch by the second author. The cultivated plant flowered in January 2004 and was used for the description and illustration.

Plectranthus porcatus Van Jaarsv. & P.J.D. Winter, sp. nov., *P. xerophilo* Codd similis sed corolla alba, caulibus manifeste costatis, perspicue rectangularibus, cum basibus foliorum prominentibus persistentibusque differt.

TYPE.—Limpopo, 2429 (Zebediela): Sekhukhuneland, northern Leolo Mountain Range, Farm De Kamp 507 KS, 1 200 m, (–BD), P.J.D. Winter 6725 (PRE, holo.).

Perennial, soboliferous, multistemmed, strongly aromatic shrub, $\pm 1.2 \times 1.5$ m; aerial stems sparsely branched. *Roots* succulent, up to 14 mm diam. *Stems* herbaceous, semisucculent, woody at base, prominently 4-angled, laterally compressed decussately below nodes (distinctly rectangular, 10×8 mm in t/s), with a pair of longitudinal ridges from each leaf base, decurrent along angles on each side, usually continuing on two opposing sides through gap between next proximal leaf pair, to upper side of second leaf base; tomentose with translucent, multicellular hairs, often glandular-capitate, and sessile, orange, glandular trichomes; older stems somewhat terete, up to 30 mm diam., becoming scabrous due to further growth of verrucose trichome bases, rusty brown, longitudinally fissured in a reticulate pattern exposing the green tissue below. *Leaves* recurved, conduplicate unless mature and turgid, broadly ovate to ovate-deltoid, $(55\text{--}90\text{--}120\text{--}210) \times (40\text{--}55\text{--}90\text{--}150)$ mm, older leaves progressively larger from growing tip; apex obtuse to acute, base shortly attenuate and decurrent on

petiole, margin serrate-dentate to serrate-crenate with 10–12 pairs of teeth 3–5 mm long, apical and marginal teeth with a cream-coloured spot visible on adaxial surface, terminating veins that end in each tooth; thick-textured, semisucculent, drying chartaceous, adaxial surface moderately glandular-pubescent, abaxial surface prominently reticulate-veined, densely glandular-tomentose, with sessile, orange-coloured, glandular trichomes, veins densely glandular-hairy and with similar sessile, glandular trichomes; petiole ascending, $(7\text{--})10\text{--}(25)$ mm long, conduplicate wings of decurrent lamina base often forming a short channel, glandular-tomentose; abscission layer about 4–6 mm from base, resulting in a distinctly raised leaf scar, adaxially obtusely v-channelled, abaxially rounded, corners shortly acuminate, with a decurrent ridge on either side. *Inflorescence* a terminal racemoid thyse, 200–400 mm long and with a pair of side branches at base carried on short peduncles up to 50 mm long; rachis square, 4×4 mm, reddish brown glandular-tomentose; bracts triangular-ovate, acuminate, 5×4 mm, persistent or caducous. *Flowers* in 7-flowered cymes forming 14-flowered verticillasters, the latter 20–30 mm apart; pedicels 8–10 mm long, densely glandular-hairy, apex inclined where attached to calyx. *Calyx* 5.4–8.3 mm long (in fruit), densely glandular-hairy and covered with sessile, orange, glandular trichomes; tube 3.0–3.5 mm long, curved, slightly gibbous at base, with pedicel attached at upper side, mid-tube somewhat dorsoventrally flattened, 2.0×1.5 mm, throat glabrous;



FIGURE 10.—*Plectranthus porcatus*: A, flowering branch, $\times 0.7$; B, flower, side view, scale bar, 12.5 mm. Illustrated by Vicki Thomas from type collection.

upper lip ascending, broadly ovate or broadly elliptic, $3.2\text{--}4.0 \times 2.7\text{--}3.0$ mm, obtuse to acute; lower lip 4-toothed, teeth deltoid, $3 \times 0.8\text{--}1.0$ mm wide, acuminate; lower pair of teeth slightly narrower and longer. *Corolla* 2-lipped, somewhat sigmoid, 16 mm long, white to slightly mauve tinged, glandular-hairy and sparsely dotted with sessile, orange, glandular trichomes; tube 1.8 mm wide for 1 mm from base, then sharply inclined (diverging $45^\circ\text{--}60^\circ$ from raceme axis) for 4 mm, mid-tube \pm abruptly bent downwards (vertically) for 5.5–6.0 mm, expanding towards mouth; upper lip spreading, unequally 4-lobed, two median lobes larger and 2 mm high (each with a group of sessile, orange-glandular trichomes on their adaxial side), lateral lobes obscure (0.5 mm long) and decurrent on mouth; lower lip boat-shaped, tilted down $\pm 20^\circ$, 10–12 mm long. *Stamens* 4, didynamous; filaments adnate to anterior side of tube beyond bend, projecting from throat as a connate staminal furrow for ± 3 mm, free for ± 5 mm, mauve, curved out- and upward, exerted \pm a third of length of lower lip; anthers versatile, 0.8 mm long, purple, becoming black; pollen yellow. *Style* enveloped by staminal furrow, free for ± 5 mm; stigma bifid. *Nutlets* 1 mm long, smooth, dark brown. *Flowering time*: late summer (January–March). *Conservation status*: Data deficient (DD). Figure 10.

Diagnostic characters: *Plectranthus porcatus* is distinguished from all other southern African *Plectranthus* species by its peculiarly ribbed stems. The origin of these

ridges is not clear, but they appear to be associated with the petiole base. A possible explanation is that they are protruding bundle sheaths associated with deeper-lying leaf traces. Its raised leaf scars are quite distinctive.

Etymology: the epithet *porcatus* alludes to the ridged nature of most stem internodes. These ridges are absent on some internodes during stages of active growth.

Distribution and habitat: this species is known only from the type locality on the Leolo Mountain Range in Limpopo Province, South Africa (Figure 11), and we expect it to be found elsewhere only on the same part of this range, and doubtfully on dolomite of the Transvaal Supergroup on mountains to the north and east. The vegetation of the northern Leolo Mountain Range consists of dry *Lydenburgia cassinoides*–*Kirkia wilmsii* savanna. Rainfall is 400–600 mm per annum and occurs mainly from summer to autumn. The climate is subtropical, with hot summers and dry, sunny winters with light frost and cool evenings. The populations of *P. porcatus* were encountered in very dark brown loam derived from gabbro-norite rocks of the main zone of the Rustenburg layered suite in the Bushveld Igneous Complex (Viljoen & Reimold 1999). *P. venteri* Van Jaarsv. & Hankey, another species endemic to the Limpopo River catchment in southern Africa (Edwards *et al.* 2000), occurs in the same area.

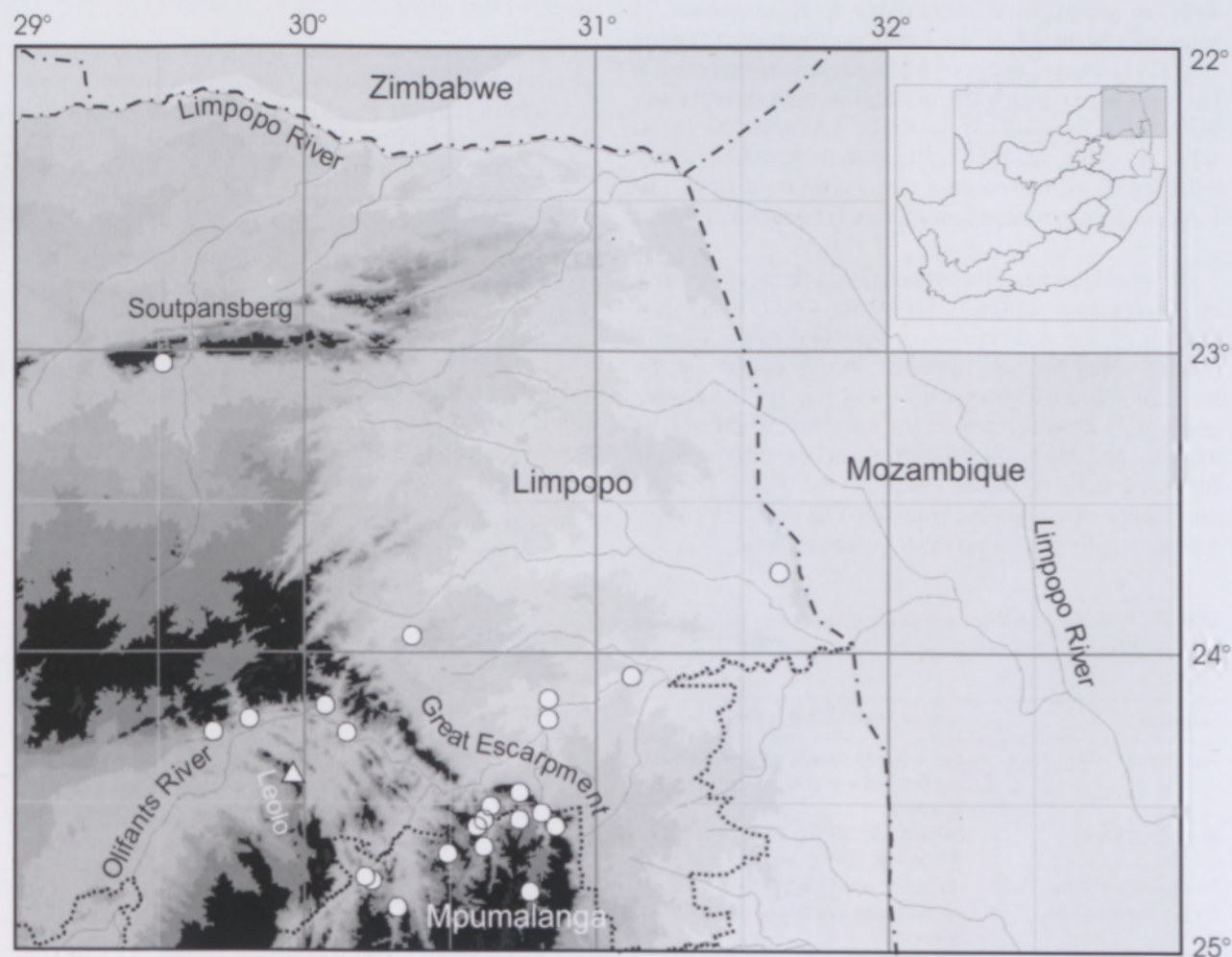


FIGURE 11.—Geographical distribution of provenances of specimens consulted in this study. *Plectranthus porcatus*, Δ ; and *P. xerophilus*, \circ .

TABLE 1.—Main floral differences between *Plectranthus xerophilus* and *P. porcatus*

	<i>P. xerophilus</i>	<i>P. porcatus</i>
Calyx lobes (relative size and shape)	subequal	unequal
Corolla		
colour	mauve/violet	white
length (mm)	± 10	± 16
mid-tube curvature (angle of divergence from mid to distal part of tube, measured along midline of tube)	± 60°	± 105°
orientation of throat and mouth	outward	± downward
lower lip length (mm)	(4–)7	10–12
Stamen exertion (proportional to length of lower lip)	> 0.5	< 0.5

AFFINITIES AND POSTULATES FOR FUTURE RESEARCH

The upper calyx lobe significantly larger than the lower four is analogous to that of *Plectranthus* section *Coleoides* (subgenus *Plectranthus*), as are the large hairy leaves. The resemblance is superficial however, as the corolla tube is straighter in that section, and filaments are free.

Plectranthus porcatus shows a close, yet apparently isolated, geographical relationship to *P. xerophilus*, in semi-arid bushland of the Limpopo catchment (Figure 11). This situation suggests a close relationship between the two species, which are, in addition, both strongly aromatic. *P. xerophilus* can easily be distinguished by its subequal calyx, mauve corolla, and its unribbed, somewhat terete, grey-tomentose stems. The main floral differences between these two species are listed in Table 1.

P. xerophilus has till now been the sole representative of *Plectranthus* subgenus *Xerophilus* Codd, which was defined by the combination of subequal calyx lobes, a hooded upper lip, and filaments shortly connate at the base. Any formal allocation of the new species to this group will, however, render the subgenus undefined, as the only remaining shared trait, namely shortly connate filaments, is by no means unique in the genus. The sigmoid shape of the corolla, similar to that of *P. xerophilus*, is occasionally present in other groups as well.

TABLE 2.—Points of difference between *Plectranthus porcatus* and Codd's (1975) subgenera

Subgenus	Salient character state in <i>P. porcatus</i>
<i>Nodiflorus</i> Codd	calyx not subequally toothed; flowers not single nor in pairs in short pseudo-racemes
<i>Xerophilus</i> Codd	calyx not subequally toothed; corolla not galeate
<i>Burnatastrum</i> (Briq.) Codd	calyx not subequally toothed
<i>Coleus</i> (Lour.) Codd	no difference in terms of diagnostic features
<i>Calceolanthus</i> Codd	calyx throat not villous
<i>Plectranthus</i>	stamens not free at the base

Plectranthus xerophilus is not known from the Leolo Mountains (geologically part of the Bushveld Igneous Complex), but occurs on neighbouring substrates peripheral to the Igneous Complex, as close as within 20 km from where *P. porcatus* was collected. As there seems to be no topographical reason why the two species should not occupy the same area, we suspect this may be due to edaphic specialization, as indicated by Siebert *et al.* (2001) for other species in the Sekhukhuneland area.

From the differences listed in Table 2, it seems that *Plectranthus porcatus* could well belong in subgenus *Coleus*, currently comprising *P. amboinicus* (Lour.) Spreng. and *P. unguentarius* Codd. Codd (1975) noted the existence of exceptions referable to subgenus *Calceolanthus* in tropical Africa, and thus unfortunately appears to have applied his subgeneric concepts only to southern African species, rendering his classification of very limited use in other areas. It is not clear why he did not refer these tropical species to subgenus *Coleus*. If these atypical species are included, there is no reason why *P. porcatus* could not belong here as well. It further bears some resemblance to *P. barbatus* Andrews (subgenus *Calceolanthus*) in, among other characters, the soboliferous habit and sigmoid corolla, and warrants further comparative study with some members of that group. The relationships among subgenera *Coleus*, *Calceolanthus* and *Xerophilus* therefore need to be revised before *P. porcatus* can be confidently assigned to any one of them. According to a recent plastid DNA phylogenetic study (Paton *et al.* 2004), *P. xerophilus* is grouped in a much larger 'Coleus' clade.

The conservation value of this species is considered relatively high, as it appears to represent a unique lineage in southern African *Plectranthus*, whether or not it is closest to *P. xerophilus*. It is currently threatened by climate change, and while nothing is known about its uses or current exploitation, it may be predicted that its rarity, remoteness and strong smell are traits that could make it prized as a medicinal plant in future. Currently there does not appear to be any threat of harvesting in the part of the Leolo Mountains where it is known from, as it is too remote from the nearest settlement.

Further research into the infrageneric relationships within *Plectranthus* could verify its conservation value, and inform the authorities about appropriate conservation management measures.

The key in Codd's (1985) treatment can be modified by inserting the following couplet to accommodate the new species, and renumbering subsequent couplets 13 to 55:

- 12a Leaf scar distinctly raised (4–6 mm); stem internodes often with a pair of additional longitudinal ridges *P. porcatus*
- 12b Leaf scar not distinctly raised; stem internodes never with a pair of additional longitudinal ridges:

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P.J.D. WINTER* and E.J. VAN JAARSVELD**

* South African National Biodiversity Institute, Pretoria, Private Bag X101, 0001 Pretoria.

** South African National Biodiversity Institute, Kirstenbosch, Private Bag X7, 7735 Claremont, Cape Town.
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