

Two new species of *Centella* (Umbelliferae) with notes on the infrageneric taxonomy

Mahalia T. R. Schubert and Ben-Erik van Wyk

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Two highly localized new species, *Centella ternata* and *C. umbellata* are described. Both species are unusual in having three bisexual flowers per umbellule. In *C. umbellata* the umbellules are arranged in two- to five-rayed umbels, and the latter are borne on a distinct leaf-opposed peduncle, while they (the rays) are single and axillary in *C. ternata*. On the basis of the three-flowered umbellules, both species could be accommodated in *Trisanthus* but this would make the subgenus paraphyletic. The known geographical distributions and diagnostic characters are described and illustrated.

M. T. R. Schubert & B.-E. van Wyk, Department of Botany, Rand Afrikaans University, P. O. Box 524, Auckland Park 2006, Johannesburg, Republic of South Africa.

Introduction

Drude (1898) reduced the genera *Solandra* L. and *Trisanthus* Lour. to subgenera within a broadened concept of *Centella* L. Since the type species of *Centella* falls within subgenus *Solandra* (L.) Drude, the latter becomes subgenus *Centella* (Burt 1991).

Adamson (1951) included all the species with only one bisexual flower in each of the umbellules in the subgenus *Solandra* while species with 1 to 5 sessile bisexual flowers per umbellule were placed in the subgenus *Trisanthus*.

The significance of the two new species described below is that they add a new combination of characters to the genus *Centella*. As a result, the infrageneric taxonomy will need to be revised.

Centella ternata Schubert & Van Wyk, sp. nov.

Type: Cape Province: Clanwilliam district, Cederberg, peak of Wolfberg, 27/12/1962, Esterhuysen 29983 (BOL, holotypus; K, PRE, isotypi).

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C. umbellatae Schubert & Van Wyk similis sed inflorescentiis axillaribus cum radiis sessilibus (in *C. umbellata* radii pedunculati, inflorescentie foliis oppositae), foliis margine serratis (in *C. umbellatae* dentata), et foliis, floribus fructibusque pubescentibus (in *C. umbellata* glabri), differt. Etiam similis est *C. asiaticae* (L.) Urb., sed ab hac specie habitu caespitoso, lignoso (in *C. asiaticae* stoloniferus), et foliis margine serratis (in *C. asiaticae* indistincte dentata), differt. A speciebus omnibus ceteris *Centellae* praeter *C. umbellatam* umbellulis trifloris, quaque cum floribus tribus bisexualibus (umbellulae cum flore unico bisexuali in speciebus omnibus ceteris praeter *C. umbellatam*) differt. – Fig. 1.

Tufted perennial herb with annual flowering branches developing from a woody base. Old leaf bases pubescent, persistent on woody stems, resulting in a scaly appearance. Leaves petiolate with a papery lamina; petiole slender, 15–70 mm long, sparsely pubescent towards the base; lamina semicircular to orbicular, (6–) 10–12 (–13) mm long, (9–) 12–14 (–16) mm wide, the base truncate, the veins not depressed above and only slightly raised below, surface glabrous on both surfaces, pale green,

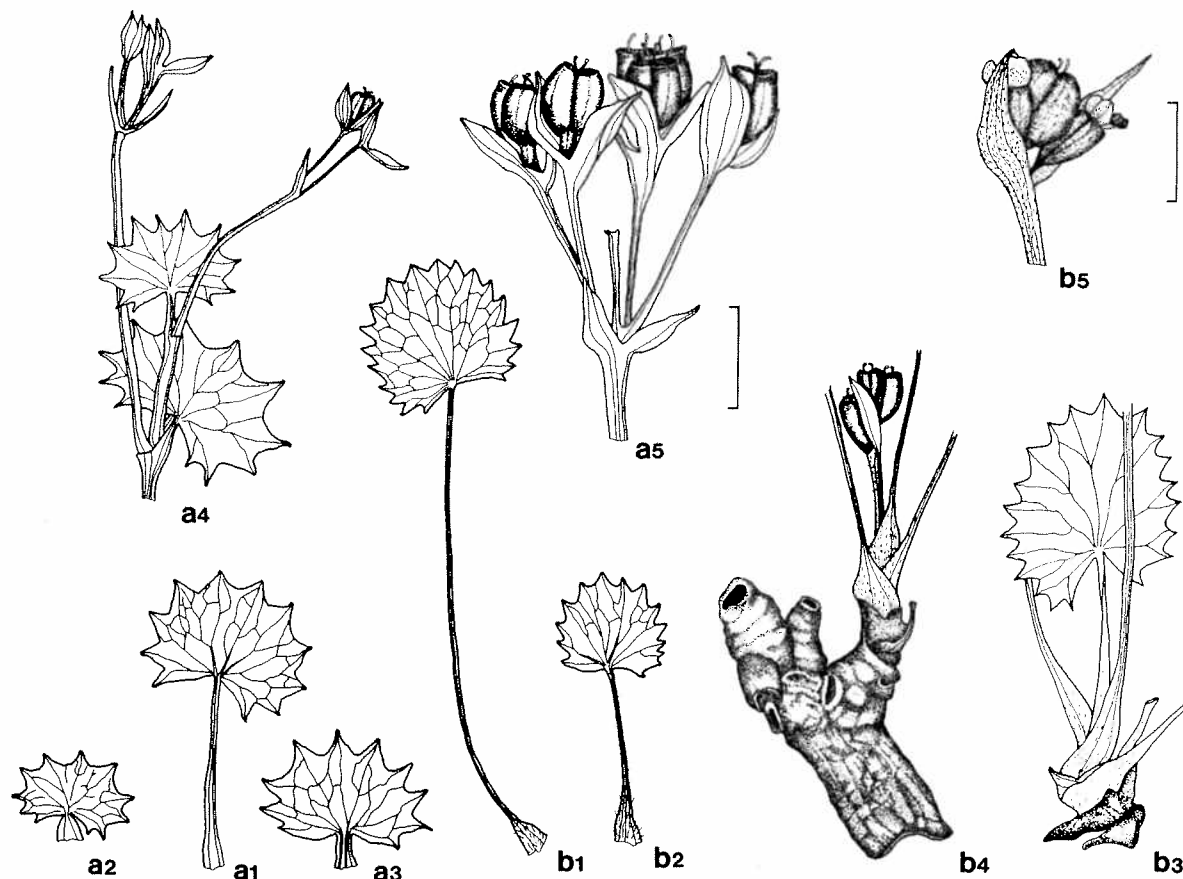


Fig. 1. Leaves and inflorescences of *Centella umbellata* (a1–a5) and *C. ternata* (b1–b5), showing diagnostic characters: a1, basal leaf, showing dentate margin; a2, a3, upper leaves (from flowering long shoots); a4, inflorescence, showing leaf-opposed peduncles; a5, inflorescence, showing umbellules, bracts, rays and peduncle; b1, b2, leaves, showing serrate margin; b3, leaf bases, showing pubescence; b4, inflorescence, showing the single, axillary ray; b5, umbellule, showing the ternate flowers and pubescent bracts. – a1–a5 from Esterhuysen 35195; b1–b5 from Esterhuysen 29983.

concolorous, the margin serrate. Inflorescence with single umbellules borne on axillary leafless short shoots; involucre bracts paired, lanceolate, 2.0–2.5 mm long, 0.5–1.0 mm wide, as long or longer than the fruit, sparsely pubescent; flowers all bisexual, three per umbellule; petals sparsely puberulous. Fruit orbicular, flattened, 2–3 mm long, \pm 2 mm wide, smooth, minutely puberulous. – Fig. 1.

Notes. *Centella ternata* is very similar to *C. umbellata* but differs in the axillary inflorescences with single, sessile rays (rays pedunculate and inflorescences leaf-opposed in *C. umbellata*), the serrate leaf margin (dentate in *C. umbellata*) and in the pubescent leaves, flowers and fruit (glabrous in *C. umbellata*). It is also similar to *C. asiatica* but differs from this species in the tufted, woody habit (stoloniferous in *C. asiatica*) and the serrate leaf margin (indistinctly dentate in *C. asiatica*). It differs from all other species of *Centella* in the three-flowered umbel-

lules, each with three bisexual flowers (umbellules with a single bisexual flower in all other species).

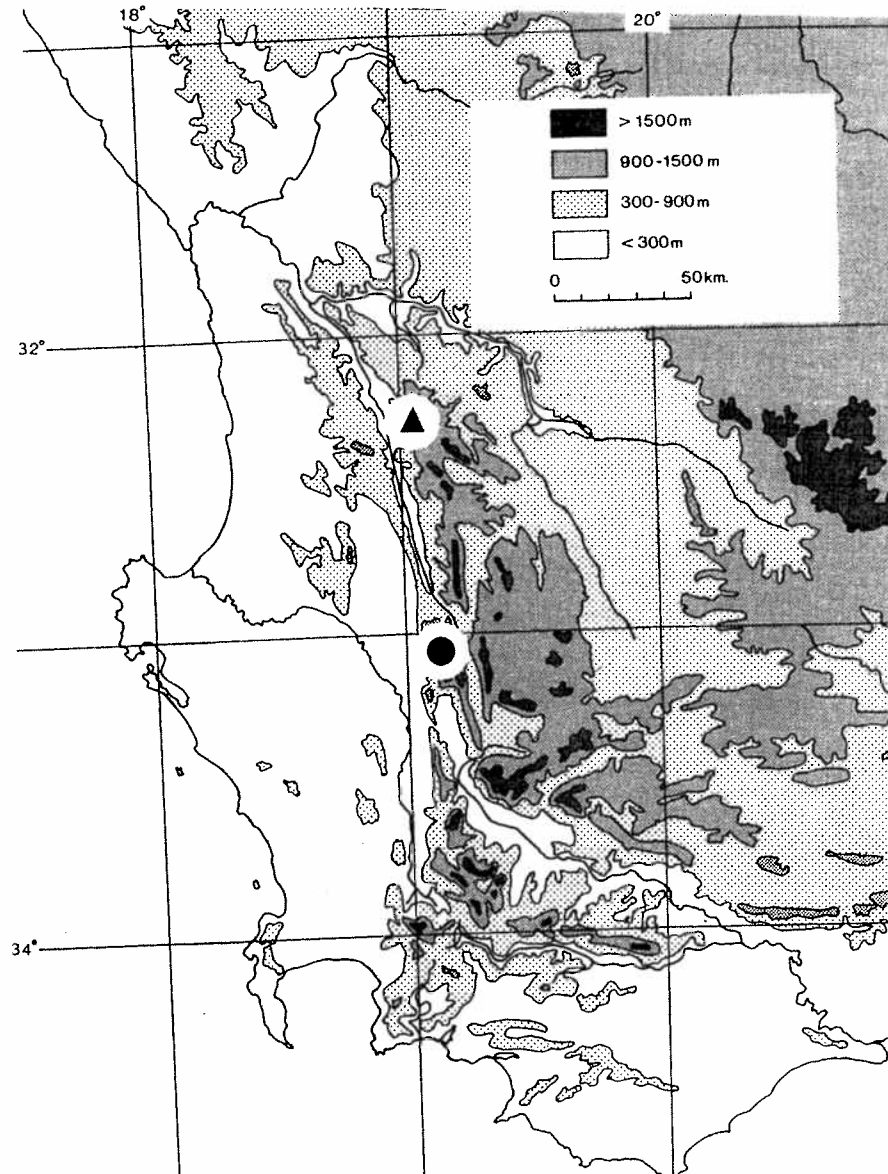
Distribution and habitat. This species is known only from a single collection and appears to be rare or at least overlooked. It was found in rock crevices on the peak of Wolfberg in the Cederberg range (Fig. 2).

Centella umbellata Schubert and Van Wyk, sp. nov.

Type: Cape Province: Porterville district, "Beverlac". Twenty Four Rivers Mountain above Porterville, slopes above the junction of Olifants River with its tributary, 31/3/1979, Esterhuysen 35195 (BOL, holotypus, K, isotypus).

C. ternatae Schubert & Van Wyk similis sed inflorescentiis foliis oppositis, foliis margine dentatis, et foliis, floribus fructibusque glabris differt. Etiam *C. asiaticae* (L.)

Fig. 2. The known geographical distribution of *Centella ternata* (▲) and *C. umbellata* (●).



Urb. similis est, sed ab hac specie habitu lignoso (in *C. asiaticae* stoloniferus), foliis margine grosse dentatis (in *C. asiaticae* indistincte dentata), et radiis pedunculatis (in *C. asiaticae* sessili) differt. A speciebus omnibus ceteris *Centellae* praeter *C. ternatam* umbellulis trifloris, quaque cum floribus tribus bisexualibus (umbellulae cum flore unico bisexuali in speciebus omnibus ceteris praeter *C. ternatam*) differt. – Fig. 1.

Perennial herb, with flowering branches spreading from a woody base. Old leaf bases glabrous, persistent on woody stems, resulting in a scaly appearance. Leaves petiolate, with a papery lamina, glabrous throughout, dimorphic; basal leaves with the petiole slender, 25–55 mm long,

lamina semicircular to orbicular, (6–) 8–11 (–15,5) mm long, (7–) 16–20 (–28) mm wide, the base truncate, the veins not depressed above and only slightly raised below, surface glabrous, pale green, concolorous, the margin dentate; upper leaves (on flowering shoots) subsessile, petiole short, sheath-like, 1–5 mm long. Inflorescence with 1–5 umbellules borne on leafy long shoots; rays \pm 8 mm long; peduncle leaf-opposed, \pm 15 mm long; involucre bracts paired, lanceolate, 2,5–4,0 mm long, 1,0–1,5 mm wide, as long or longer than the fruit, glabrous; flowers all bisexual, three per umbellule, the lateral ones often abortive; petals glabrous (?). Fruit orbicular, flattened, \pm 2 mm long, \pm 1,5 mm wide, smooth, glabrous (Fig. 1).

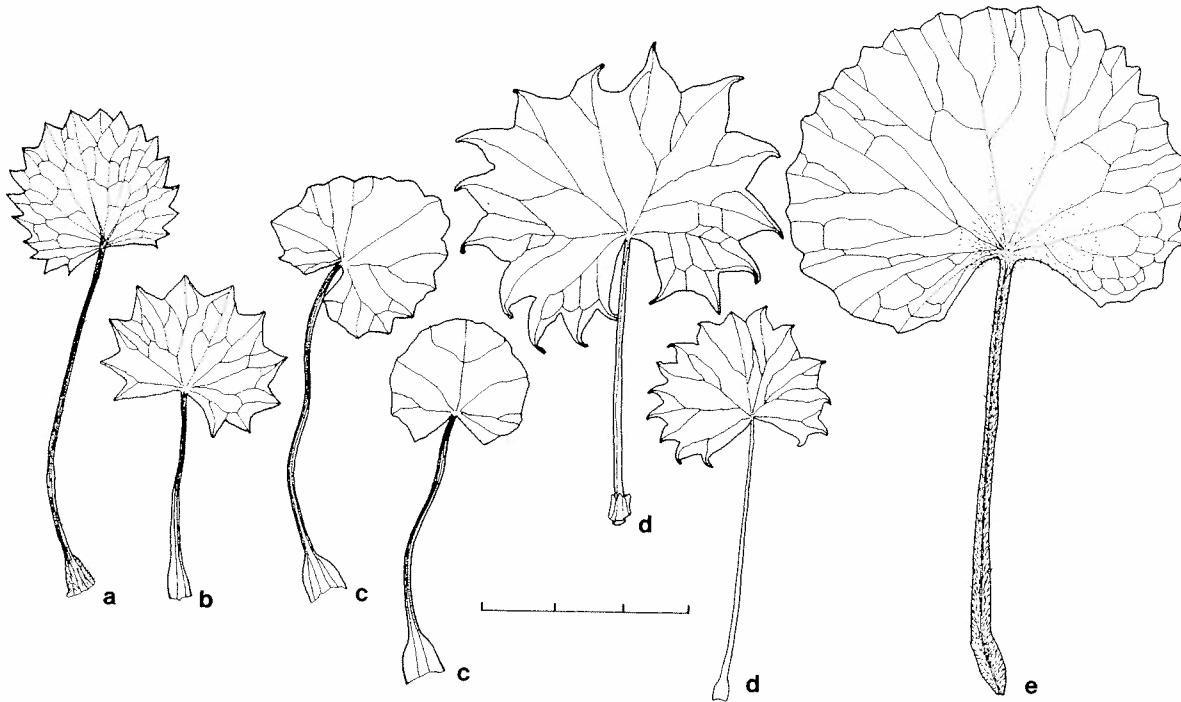


Fig. 3. Leaves of some species of *Centella*, showing the overall similarity with *C. ternata* and *C. umbellata*: a, *C. ternata*; b, *C. umbellata*; c, *C. asiatica*; d, *C. calliodus*; e, *C. lanata*. – a from Esterhuysen 29983 (BOL); b from Esterhuysen 35195 (BOL); c1 & c2 from Salter 2088 (BOL); d1 from Taylor 4483 (STE), d2 from Compton 13540 (PRE); e from Muir 109 (PRE).

Notes. *Centella umbellata* is similar to *C. ternata* but differs markedly in the structure of the inflorescences as described above and also in the dentate leaf margin and glabrous leaves and fruit. It differs from *C. asiatica* and all other species of *Centella* in the same characters as given under *C. ternata*. It is closely related to *C. ternata* but can easily be recognized by the glabrous leaves and the distinctly pedunculate, leaf-opposed inflorescences, each with several (two to five) rays.

Distribution and habitat. This new species is known only from one specimen collected on the mountain slopes above Porterville in the western Cape (Fig. 2).

Discussion

Centella ternata fits the description of subgenus *Trisanthus* according to the diagnosis given by Adamson (1951). However *C. umbellata* is the only species thus far known to bear its umbellules on a distinct peduncle and it is also the only species where the inflorescences are in a leaf-opposed position. In a detailed analysis of the inflorescence structure of the Hydrocotyloideae, Froebe (1979) has shown that *Centella* inflorescences are cymoid rather than racemose; each umbellule represents a single terminal flower with two highly reduced single-

flowered lateral umbellules. The inflorescence structure of *C. umbellata* differs from all the types described by Froebe (1979) in three characters – it is pedunculate, leaf-opposed and borne on leafy long shoots. The homology of various states is unknown at this stage and given the complexity in *Centella*, a detailed analysis of all the species will be needed to interpret these new character states. As a result, subgeneric delimitations may have to be altered or broadened for *C. umbellata* to be included in *Trisanthus*. Furthermore, both species are tufted, woody shrublets from dry habitats. They lack the typical stoloniferous habit of *C. asiatica* and its segregates, which are generally found in wet or seasonally wet areas. The leaf morphology of both species nevertheless suggest that they belong somewhere near Nannfeldt's (1924) sections *Asiaticae* or *Erianthae*. Fig. 3 shows that the leaf shape of the new species are closely similar to those of *C. asiatica* and also very similar to *C. calliodus* (Cham. & Schlecht.) Drude and *C. lanata* Compton.

In view of the unusual combination of characters found in the two new species, further investigations are necessary to give more clarity on their natural position within the genus.

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lected the only known material of the two unusual new species described in this paper.

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