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NOTES ON *TEUCRIUM* L. (LABIATAE)

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Abstract

Several forms in the *Teucrium racemosum*-complex are re-evaluated and the var. *tripartitum* is raised to species level as *T. albicaule* sp. nov. In *T. grandiusculum* the subsp. *grandiusculum* and subsp. *pilosa* are distinguished and formally described.

A few taxonomic changes have become necessary in the genus *Teucrium* in view of the material investigated for a new edition of the Flora of South Australia. In addition, good material was collected and observations made on the populations by Drs R.J. Chinnock and W.R. Barker on a recent expedition. This allowed a better understanding particularly of the complex involving *T. racemosum*.

1. *Teucrium racemosum*—complex

This species complex has not been much changed since Bentham (1870) completed his revision of the genus for 'Flora Australiensis'. In this treatment *T. integrifolium* was distinguished in spite of doubts expressed by F. Mueller in his herbarium; modern collections confirm that Bentham was fully justified in describing the species. It is distinct from *T. racemosum* in which was included a var. *tripartitum*, based on investigation of only one specimen. Several subsequent authors have commented on the distinctness of this taxon (e.g. Willis 1972; Jacobs & Pickard 1981). These views agree with the present description of new species, *T. albicaule*. It is significant that Drs Chinnock & Barker (pers. comm.) confirm that at times the two species grow sympatrically. The similarities and differences between the three species are summarised in Table 1.

Table 1: Morphological differences between *T. albicaule*, *T. integrifolium* and *T. racemosum*.

	<i>T. albicaule</i>	<i>T. racemosum</i>	<i>T. integrifolium</i>
Plant habit	10-20 (40?) cm high, rigid.	20-60 cm high, rigid with herbaceous apices.	13-30 cm high, herbaceous.
Branches	quadrangular but densely covered with recurved hairs and apparently terete.	quadrangular & densely covered with recurved adpressed hairs and glabrescent ridges.	quadrangular and glabrescent.
Leaf shape	trifoliate linear leaflets	simple lanceolate to linear-	simple lanceolate to linear-lanceolate or ovate
Leaf margin	regularly recurved	undulate or unequally recurved	regularly recurved
Leaf size	0.3-1 x 0.1-0.2 cm	1-5 x 0.3-1.2 cm	2-5 x 0.4-2 cm
Part-inflorescence	1-flowered	1 (-3)-flowered	1-3 (-5)-flowered
Lower stalk	rigid, spreading at c. 90° to axis or curved upwards below flower	rigid, spreading at c. 90° to axis or curved upwards below flower	slender, straight ascending
Corolla lip	3.5-7 mm long	(5-) 8-14 mm long	10-16 mm long

Bentham (1870) had commented on the much smaller flowers of *T. albicaule* (his var. *tripartitum*) in comparison with those of *T. racemosum*. This was found to be particularly obvious when plants from the same area were compared. Qualified use of this character is, however, advised since many plants of *T. racemosum* mainly from the Southern Lofty and southern parts of the Murray regions have very small flowers and a complete range of intermediates is recorded.

The inflorescence of all three species is usually a botryoidal thyrse (cf. Briggs & Johnson 1979) with indeterminate growth, and each pair of flowers is subtended by a pair of leaf-like bracts which become shorter acropetally. In the case of *T. integrifolium* and rarely in *T. racemosum*, the basal part-inflorescences develop 2-3, rarely up to 5 flowers. Although this more pronounced development of the axillary cymes is more common in *T. integrifolium* this does not justify its use to distinguish this species from *T. racemosum* (Bentham 1870; Haegi 1981) as there are many records of both species with only one-flowered part-inflorescences. In the case of *T. racemosum*, plants with more than one flower per part-inflorescence are known only from a few records from the vicinity of Oodnadatta. Although this is obviously a localised form it does not seem justified to give it taxonomic rank under the name *T. racemosum* var. *triflorum* J. Black, as this character cannot be linked with any other in a taxonomically reliable way.

Since a full range of specimens has been recorded from the Oodnadatta area it seems that judging by the generally more lush appearance, particularly large flowers and leaves, the plants with more than one flower per part-inflorescence are very vigorous individuals.

The inflorescence of these species of *Teucrium* is unusual in the family because the part-inflorescences are not sessile. This also applies to the one-flowered part-inflorescences which also have a deciduous pair of scale-like bracts between one-third to two-thirds the way along the stalk below young flowers. The whole stalk below the flower is thin and erect in *T. integrifolium*, while it is rigid and spreading at right angles in *T. racemosum* and *T. albicaule*, and may be curved upwards between the flower and scale-like bracts (=anthopodium according to Briggs and Johnson 1979).

The epithet *tripartitum* cannot be raised to species level because *T. tripartitum* Meyen (1843) has priority; this is not inappropriate since the leaves of the Australian taxon are trifoliolate. Each leaflet is constricted towards the base and forms its own abscission layer independent of each other so that at times there are only two leaflets found at the base of older branches. The name *T. albicaule* was chosen because the branches of this species are usually covered with slightly spreading hairs appearing white as opposed to the more or less uniform greyish appearance of *T. racemosum*. The colour varies as some plants become stained by muddy water or dust.

***Teucrium albicaule* Toelken, sp. nov. similis *T. racemoso* sed foliis trifoliatis parvioribus et planta tota parvior differt.**

T. racemosum R. Br. var. *tripartitum* F. Muell. ex Benth., Fl. Aust. 5:133 (1870).

Type: Murray River, *F. Mueller* s.n. (n.v.).

Perennes surculis caespes virgati vel patentes producentes, rare altiores 20 cm, ramis vix quadrangulatis, dense tectis pilis recurvatis. *Folia* trifoliata, sessilia vel subsessilia; foliola linearia, 0.3-1 x 0.1-0.2 cm, acuta, abrupte constricta ad basim et apicem, marginibus aequaliter recurvatis, pilis simplicibus distantibus et plus minusve adpressis acropete curvatis supra et subtus. *Inflorescentia* thyrsum cymis axillaribus reductis flori singulari in stipe patenti saepe curvato sursum in dimidio supero. *Sepala* pariter connata, 2-3.5 mm longa, lobis acutis, dense tecta pilis simplicibus acropete curvatis. *Corolla* alba, tubo brevi fisso postice, unilabiata, lobis duobus posticis et duobus lateralibus subaequalibus et lobis anticis circiter duplis longioribus, tecta pilis simplicibus brevibus et rare glandibus sessilibus extus, intus pilis longioribus patentibus basibus staminum cingentibus. *Stamina* 4, in fauce tubi corollae inserta, filis pubescentibus ad basim; antherae thecis duabus, exsertis. *Ovarium* vix tetralobatum, stylo gracile ad apicem inserto,

stigma bifido. *Mericarpi* anguste oblongo-obovoidea, 2-3 mm longa, cicatrice affixa magna concava in dimidio inferno paginae interioris, pilis praecipue ad apicem et glandibus sessilibus dispersis.

Type: Chinnock & W.R. Barker 6027, 9.3 km S of South Australian/Queensland border along Strzelecki Track (AD, holo.!).

Perennial herbs, suckering virgate to spreading tufts in stands several metres across, rarely higher than 20 cm, scarcely quadrangular stems often appearing almost terete because of dense cover of recurved hairs. *Leaves* trifoliate, sessile or with a petiolar ridge; leaflets linear, 0.3-1 x 0.1-0.2 cm, acute, abruptly tapering at both ends, margins evenly recurved, scattered simple hairs more or less adpressed and forward-directed on both surfaces. *Inflorescence* a thyrse with axillary cymes reduced to one flower on a spreading stalk often curved upwards in the upper half. *Sepals* equally connate to about half their length, 2-3.5 mm long, lobes acute, densely covered with simple forward-directed hairs. *Corolla* white, tube short, slightly split at the posterior end, one-lipped, two posterior and two lateral lobes subequal and about half the length of the anterior one, short forward-directed hairs and rarely a few sessile glands on the outside, longer spreading hairs in the area around the insertion of the stamens on the inside. *Stamens* 4, inserted in the throat of the corolla tube, filaments hairy at the base; anthers 2-celled, exserted, filaments curved from posterior to anterior well above the lip. *Ovary* scarcely 4-lobed, style slender, inserted near the apex and curved like the filaments, stigma bifid. *Mericarps* narrowly oblong-obovoid, 2-3 mm long, attachment scar a large concavity covering much of the lower half of the inner surface, hairs mainly at the top and with scattered sessile glands.

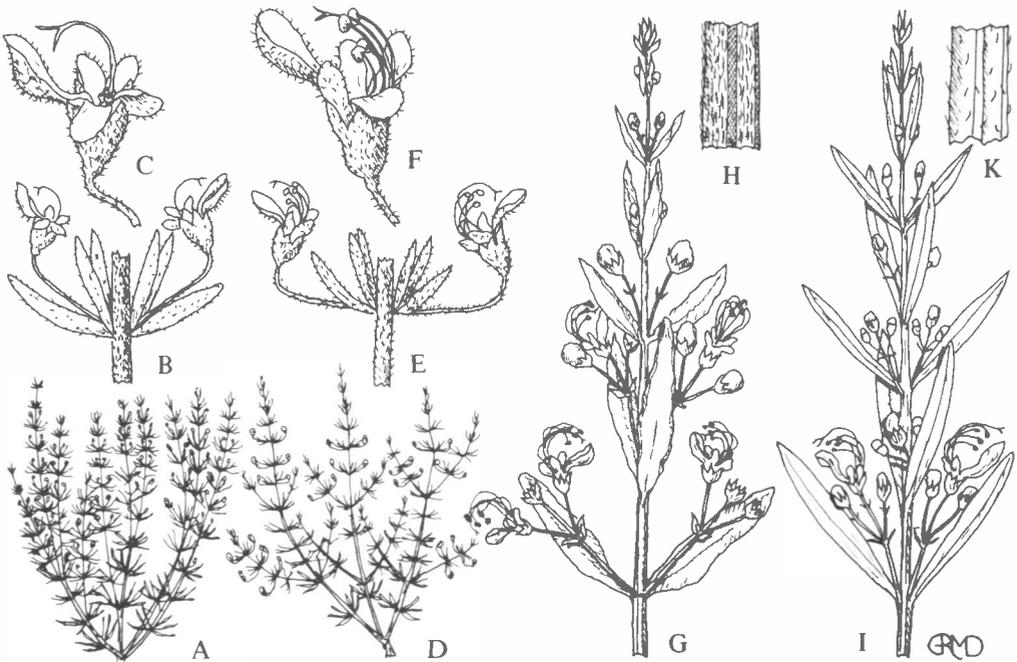


Fig. 1. A-F, *Teucrium albicaule*: A, habit, $\times\frac{1}{4}$; B, pair of 1-flowered part-inflorescences, $\times 2$; C, flower of female plant, $\times 4$ (*Chinnock & W.R. Barker* 6027A); D, habit, $\times\frac{1}{4}$; E, pair of 1-flowered part-inflorescences, $\times 2$; F, bisexual flower, $\times 4$ (*Chinnock & W.R. Barker* 6027, type). G, H, *T. racemosum*: G, flowering branch showing 1- and 3-flowered part inflorescences, $\times\frac{1}{2}$; H, pubescent branch, $\times 4$ (*Ising* AD 966140092). I, K, *T. integrifolium*: I, flowering branch showing 1- and 3-flowered part-inflorescences, $\times\frac{1}{2}$; K, puberulous branch, $\times 4$ (*W.R. Barker & Chinnock* 4715).

T. albicaule has been recorded from arid areas of north-eastern South Australia, south-eastern Northern Territory, south-western Queensland?, western New South Wales and north-western Victoria. Plants usually grow on clay soil in depressions which might at times be temporarily flooded. The species flowers mainly in autumn and/or spring but flowering specimens have also been recorded from other times of the year depending on seasonal rains.

Specimens examined

SOUTH AUSTRALIA: LAKE EYRE: *White* in AD 96907058, Tinga-Tingana HS, 23.ix.1916; *Schomburgk* in AD 96991009a, Lake Eyre, —; *Chinnock & Barker 6027 & 6027A*, 9.3 km S of South Australia/Queensland border, along Strzelecki Track, 15.ix.1984 (AD). EASTERN: *Crisp 700*, 8 km SW Oodlawirra, 28.ii.1974 (AD).

NORTHERN TERRITORY: *Latz 6764*, Andado Station, 14.iv.1977 (AD).

NEW SOUTH WALES: *Copley 4221*, c. 50 km SE Mildura, 15.i.1974 (AD); *Lander 233*, 70 km from Pooncarie to Wentworth, 18.x.1972 (AD); *Milthorpe 589*, Lake Muncha, 1.xii.1971 (AD).

Notes

Cunningham et al. (1982) described the plant as '15-40 cm high' but most species examined were smaller than 20 cm, or rarely up to 25 cm high.

T. albicaule, *T. racemosum* and *T. integrifolium* usually grow in a similar habitat in depressions which are often temporarily flooded. Their habit of producing small tufts by suckering over an area of several square metres is also similar. This habit, however, makes it difficult to assess which tuft belongs to which plant. This would have been useful to interpret *Chinnock & Barker 6027A* where each tuft had only flowers with sterile anthers included with the corolla tube, while other plants from the same population (*Chinnock & Barker 6027*) had hermaphrodite flowers. This strongly indicates that the plants are gynodioecious and a similar condition might be found in some plants of *T. racemosum* which Tovey & Morris (1922) described as *T. racemosum* var. *polymorphum*. Cunningham et al. (1982) commented that the latter variety differed mainly in 'minor details related to flower structure, the main one being that the stamens remain within the flower'. It is, however, not clear why they should also report that these flowers produce fewer mericarps. The phenomenon could not be found in any specimens of *T. racemosum* from South Australia. It is also interesting that several species of *Ajuga* from Europe (Gams 1927, p. 2538) which have a very similar floral morphology to *Teucrium* species, have been shown to be gynomonocious.

2. *T. grandiusculum*

T. grandiusculum has a rather scattered distribution with many records from its northern range while its two southern occurrences are localised and well separated from the northern localities as well as from one another. In the northern part the localities are also somewhat disjunct but mainly because its occurrence is restricted to mountainous areas in north-western South Australia, south-western Northern Territory and adjoining Western Australia. These specimens are remarkably similar and characterised by their short sparse gland-tipped hairs, while specimens from the southern localities have a variety of eglandular hairs, the longest of which are three to five times as long as those from northern localities. Occasionally, a few hairs of this latter group of specimens are also gland-tipped especially on the flower stalk and calyx, but these hairs are thin in contrast to the rather stout ones which are visually constricted below the terminal gland on plants from the north. These form two distinct and geographically isolated subspecies.

Hairs on branches few, up to 0.3 mm long and gland-tipped subsp. *grandiusculum*
 Hairs on branches dense, up to 1.5 mm long and eglandular subsp. *pilosum*

a. ***T. grandiusculum*** F. Muell. & Tate, Trans. R. Soc. S. Aust. 13:108 (1890) subsp. ***grandiusculum***.

Whole plant covered with short hairs up to 0.3 mm long, each gland-tipped, usually only few on quadrangular branches. *Leaves* 0.8-3 x 0.6-2 cm, with cuneate base often broadened in the middle, with 5-17 teeth often reaching onto the lower half, with margin not or scarcely recurved. *Bracts* subtending part-inflorescences often with 1-3 apical lobes or teeth.

Known from the Tomkinson Ranges in Western Australia and north-western South Australia as well as from a few localities in south-western Northern Territory. Most records are from ravines or associated with watercourses.

Specimens examined

WESTERN AUSTRALIA: *Helms* in AD 96910090, between camps 23 and 24 in Tomkinson Ranges, 17.vii.1891.

SOUTH AUSTRALIA: NORTH WEST: *Cleland* in AD 966071293, Mt Davies in Tomkinson Ranges, 29.vi.1960; *Reid 108*, Mt Davies, 24.ix.1955 (ADW).

NORTHERN TERRITORY: *Chippendale 2662*, Palm Valley, 25.iii.1957 (AD): *Hill & Lothian 922*, c. 5 km west of Blackstone mining camp, 11.vii.1958 (AD).

Note

It is not evident why the flower of this species was illustrated in fig. 417 (Haegi 1981) with anthers included in the corolla tube when they are usually exerted well above the lip. As no specimen could be found with functionally female flowers (cf Note under *T. albicaule*) it is assumed that the figure was reconstructed from an immature flower.

b. subsp ***pilosum*** Toelken, subsp. nov.

Planta tectis tota pilis longis usque ad 1.5 mm longis eglandulosis vel rare paucis glandulosis in stipite floris, ramis quadrangularibus dense tectis pilis pilosis et ut videtur teretibus. *Folia* 0.8-1.8 x 0.4-1.2 cm, marginibus plerumque recurvatis. *Bractae* in axe principale 5-lobis vel dentibus.

Type: Whibley 729, south side of the railway line, Ooldea, 20.ix.1960 (AD, holo.!: AAU, COLO, iso.)

Plant covered with long hairs up to 1.5 mm long, eglandular or rarely with a few glandular ones on the flower stalk, with quadrangular branches densely covered with spreading hairs so that they appear terete. *Leaves* 0.8-1.8 x 0.4-1.2 cm, with straight cuneate base, subpetiolate, with 5-9 teeth confined to the upper half of the leaves, with margins usually recurved. *Bracts* subtending part-inflorescence with 5 lobes or teeth.

This subspecies is known only from two localities from near Ooldea and on the western side of Lake Everard; it has been recorded to occur in surface limestone.

Specimens examined

SOUTH AUSTRALIA: NULLABOR: *Caulfield 115*, Ooldea, 25.ix.1955 (AD); *Hilton* in ADW 18691, Ooldea, 24.iii.1955; *Whibley 729*, Ooldea, 20.ix.1960 (AD).

GAIRDNER-TORRENS: *Reid* in ADW 26182, western boundary of Lake Everard, 1.iv.1960; *S.A. Pastoral Board* in AD 97930141, western Lake Everard, 1.iv.1960.

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