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A TAXONOMIC REVISION OF THE GENUS *SPARTOTHAMNELLA* (CHLOANTHACEAE)

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Abstract

A taxonomic revision of *Spartothamnella* Briq. is provided. The features shared by the genus with Myoporaceae are discussed. Three species are recognized of which each one is typified for the first time. The affinities and distribution are considered for the genus and each species. A new key to the species is provided and a detailed revised description of each taxon is supplemented by a habit sketch of a flowering branch and analytical drawings of the flowers.

Taxonomic History of the Genus

The genus *Spartothamnus* was proposed by Cunningham (1830), with a single species, *S. junceus*, which he had collected himself in "the interior of the Colony" (i.e. what is now New South Wales and Queensland). It was referred to the family Myoporineae but, lacking a description, remained a nomen nudum (see comments on p. 5). The name was validated by Walpers (1847), when he published a detailed description, again placing it in the Myoporineae. However, the homonym *Spartotamnus* had previously been validly published by Presl (1844) for another genus, in the Leguminosae, and Walpers' name was, therefore, illegitimate. Later, in the same year, De Candolle (1847) republished Walpers' description, also placing the genus in the Myoporineae. The name had been taken up by several authors, none of whom gave any of its characters, all placing it in the same family, i.e. Endlicher (1836), Spach (1840), Meisner (1840), Walpers (1845) and Lindley (1846, 1847).

In 1868, F. Mueller transferred it to the Verbenaceae with the remark that the genus seemed to be transitional between Myoporaceae and Verbenaceae. The majority of botanists have retained the genus in this family, except Carruthers (1870) who kept it in the Myoporaceae. In 1870, Bentham referred this genus to the predominantly Australian subtribe Chloanthinae ("Chloanthae") of the tribe Viticeae in the Verbenaceae. Subsequently, Bentham & Hooker (1876) upgraded the subtribe Chloanthinae ("Chloanthae") to the tribe Chloanthae, without altering the circumscription of its genera. This tribe was accepted for the genus by Durand (1888), Bailey (1883, 1890, 1901, 1913), Post & Kuntze (1904) and Lemée (1943). The genus consisted of a single species until F. Mueller added *S. teucriflora* (1882) and *S. puberula* (1882, 1889).

In 1895, Briquet replaced the illegitimate name *Spartothamnus* A. Cunn. ex Walp. by *Spartothamnella*. Briquet's name was adopted by Maiden & Betche (1916), Black (1957), Moldenke (1959, 1971), Beadle et al (1963, 1972), Burbidge (1963), Blackall & Grieve (1965), Airy Shaw (1966, 1973), Beard (1970), Chippendale (1971) and Clifford & Ludlow (1972). Briquet also upgraded the tribe Chloanthae to a subfamily Chloanthoideae. The latter consisted of three tribes: Achariteae, Chloanthae and Physopsidae, with *Spartothamnella* in the tribe Achariteae. This classification was adopted by Dalla Torre & Harms (1904) and Junell (1934).

In 1904, Diels & Pritzel revised the Western Australian Verbenaceae comprising only Bentham & Hooker's tribe Chloanthae. They subdivided the tribe into two subtribes viz. Lachnostachyidinae and Chloanthinae, placing *Spartothamnella* ("Spartothamnus") in the latter. Gardner (1931) retained *Spartothamnella* ("Spartothamnus") in Briquet's subfamily Chloanthoideae, but within the subfamily he referred it to Diels & Pritzel's subtribe Chloanthinae without naming any tribe.

Hutchinson (1959) raised the status of Bentham & Hooker's tribe Chloanthae to the family Chloanthaceae to which this genus was referred, which differed from Verbenaceae (s.str.) chiefly in the albuminous seeds. The new family was accepted by Takhtajan (1959, 1969), Eichler (1965), Symon (1969), Gardner (1972) and Munir (1975, 1976). Also in 1959, Moldenke published a résumé of the world Verbenaceae and referred *Spartothamnella* and its allied genera to the family Stilbaceae. Within this family, the genus was retained in Briquet's subfamily Chloanthoideae, tribe Achariteae of the Verbenaceae.

In 1965, Airy Shaw referred all genera of Australian Verbenaceae (s.lat.) with albuminous seeds to the family "Dicrastylidaceae Drumm. ex Harv.", which although mentioned by Harvey (1855) was not validated and was, therefore, a nomen nudum. Dicastylidaceae has been adopted for "Australian Verbenaceae" with albuminous seeds by Airy Shaw (1966, 1973), Beard (1970), Moldenke (1971), Maconochie & Byrnes (1971), George (1972) and some others, but is regarded here as a synonym of the Chloanthaceae. Nevertheless, in the majority of recent publications, *Spartothamnella* and its related genera have been recorded in the Verbenaceae.

In the present revision, *Sparthothamnella* is retained in the family Chloanthaceae although it does have some characters suggesting an affinity with the Myoporaceae.

SPARTOTHAMNELLA Briquet

Spartothamnella Briq. in Engl. & Prantl (eds), Natürl. Pflanzenfam. 4, 3a (1895) 161; Black, Fl. S. Aust. 2 ed. (1957) 725; Mold., Résumé Verben. etc. (1959) 345, 404; Burb., Dict. Aust. Pl. Gen. (1963) 275; Mold., Fifth Summary Verben. etc. 2 (1971) 622, 623, 750; Beadle et al., Fl. Syd. Region (1972) 506; Airy Shaw, Willis' Dict. Fl. Pl. & Ferns, 8 ed. (1973) 1082.

Type species: S. juncea (A. Cunn. ex Walp.) Briq. in Engl. & Prantl (eds) Natürl. Pflanzenfam. 4, 3a (1895) 161.

Spartothamnus A Cunn. (in Loud. Hort. Brit. (1830) 600, nom. nud.) ex Walp., Rep. Bot. Syst. 6 (1847) 694, non Presl (1844); DC., Prod. 11 (1847) 705; Benth., Fl. Aust. 5 (1870) 55; Pfeiff., Nomenc. Bot. 2 (1874) 1208; Benth. & Hook. f., Gen. Pl. 2 (1876) 1141; Diels & Pritzel, Bot. Jahrb. 35 (1904) 513; Hutch., Fam. Fl. Pl. 1, 2 ed. (1959) 398.

Type species: S. junceus A. Cunn. ex Walp., Rep. Bot. Syst. 6 (1847) 694.

Number of Species 3.

Derivation of the name

Spartothamnus was probably derived from the Greek words *spartos* and *thamnus*, meaning cord and bush. It is possible that the name alluded to the plant's similarity to the Spanish broom, *spartos*, so named because it was used in making cord. The Latin suffix *ella* denotes the diminutive.

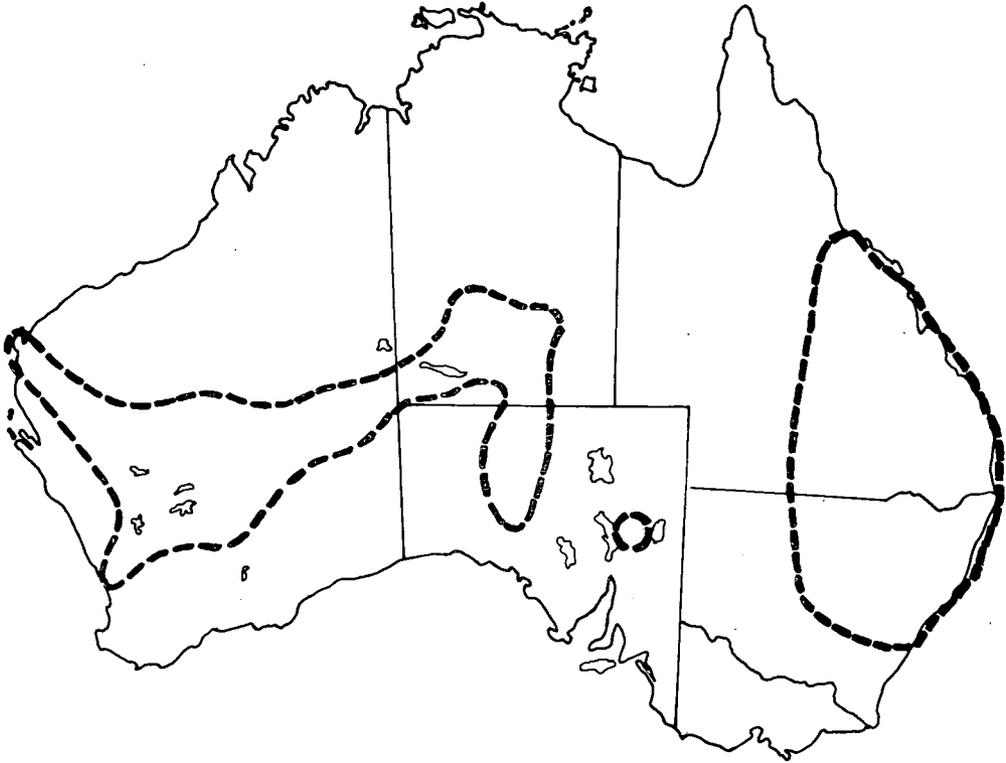
Description

Shrubs or undershrubs. *Stem* branched, 4-angled, solid and woody. *Leaves* cauline and ramal, exstipulate, simple not decurrent. *Flowers* 1-3 in a short axillary cyme, bracteate, with 2-lateral bracteoles, zygomorphic, bisexual, hypogynous. *Calyx* of 5 fused sepals, persistent, deeply 5-lobed, tubular below, spreading under the fruit. *Corolla* of 5 fused petals, caducous, 2-lipped or unequally 5-lobed in the upper half, tubular below; lobes spreading, the anterior (i.e. the middle lower) lobe rather larger than the others; tube short and broad, villous inside. *Stamens* 4, epipetalous, exserted; filaments filiform, glabrous in the upper half, villous towards the base, the anterior two (i.e. beside the middle lower corolla lobe) longer than the posterior two; anthers dorsifixed, 2-lobed, 1-chambered by the confluence of lobes, ± reniform, glandular on the back; lobes free and divergent, mucicous at the lower end, longitudinally dehiscent. *Ovary* bicarpellary, syncarpous, 4-locular, with one axile semi-anatropous ovule in each cell; style filiform, exserted, 2-lobed in the upper half. *Fruit* a globose succulent drupe, the endocarp

separating into 4 one-seeded fruitlets. Seeds exalbuminous; embryo straight, with thick cotyledons and an inferior radicle.

Distribution (Map 1)

The genus *Spartothamnella* is endemic in Australia. Two out of three species, *S. juncea* and *S. puberula*, are restricted chiefly to Queensland and New South Wales with only three localities of *S. puberula* in the Northern Territory. The third species, *S. teucriflora*, occurs in Western Australia, Northern Territory and South Australia. No records are known from Victoria or Tasmania. (See Addendum at end of paper.)



Map 1: Distribution of the genus *Spartothamnella* Briq.

Comments

Although Loudon's (1830) publication of Cunningham's proposed name, *Spartothamnus*, has been treated by all subsequent authors as lacking a description and, therefore, invalid, it does contain some descriptive material and the possibility of its fulfilling the needs of a description or diagnosis (ICBN Art. 32) must be considered.

The descriptive material falls into two sections:

(a) The translation of the generic name (broom-like habit);

(b) The translation of a series of symbols and abbreviations, followed by the name Myoporinae. Some of this is of horticultural significance only; the relevant part providing that it is a shrub three feet high, with white flowers, flowering in August and September and originating in Nova Hollandia.

Article 32 requires either a description or a diagnosis. It does not define a description, but most botanists would probably agree that if a description is very short it should be

treated as a diagnosis and for diagnoses the code does provide a definition. Stafleu (pers. comm.) suggests that Loudon's text could be treated as a diagnosis. For a diagnosis to comply with the requirements of Article 32 it must be "a statement of that which in the opinion of its author distinguishes the taxon from others". However, Recommendation 32B might be seen to contradict this interpretation as it recommends that descriptions (and diagnoses) "should mention the points in which the taxon differs from its allies", thus implying that descriptions are not invalid just because they do not mention these diagnostic characters. Despite this uncertainty, the most useful criterion is probably whether or not Loudon's information complies with the definition of a diagnosis in Article 32.

The translation of the generic name could be considered part of the diagnosis. However, the name was supplied by Cunningham, whose authorship Loudon acknowledged, and there is no evidence that Loudon regarded this information as diagnostic. At that time several members of the Myoporaceae with a broom-like habit were known.

The remaining text contains certain points listed in a similar format and under the same headings for all the species dealt with in the catalogue. None of the information was selected in order to distinguish this new plant from any others and it is unlikely that Loudon considered that it was diagnostic.

It is, therefore, the opinion of the present author that Loudon's work must be examined against the definition of a diagnosis in Article 32 of the Code and that it does not meet these requirements. As this decision agrees with that of previous botanists, it can also be supported on the grounds that it maintains current usage and, therefore, nomenclatural stability.

Briquet (1895) replaced the generic name *Spartothamnus* A. Cunn. ex Walp. with *Spartothamnella* because the name *Spartothamnus* had been previously validly applied to a genus in the Leguminosae by Presl (1844). Dalla Torre & Harms (1904) followed Briquet's arrangement of the major taxa of Verbenaceae but used the name *Spartothamnus*. The generic name *Spartothamnus* was also retained by Post & Kuntze (1904); Gardner (1931) and Lemee (1943), with *Spartothamnella* in synonymy.

The presence of minute tips or appendages at the base of anther-lobes in two genera of the Chloanthaceae (*Spartothamnella* and *Pityrodia*) is mentioned by Bentham (1870), Bentham & Hooker (1876), Bailey (1901), Diels & Pritzel (1904), Hutchinson (1959), Moldenke (1959, 1971) and others, but during the present study these were not found in any species of this genus.

Affinities

Spartothamnella (= *Spartothamnus*) was proposed by Cunningham (1830) in the Myoporaceae and retained there by Endlicher (1836), Spach (1840), Meisner (1840), Walpers (1845, 1847), Lindley (1846, 1847, 1853), de Candolle (1847) and Carruthers (1870). With the exception of the last author, they considered its relationship to be with the genera *Eremophila* and *Pholidia* in the Myoporaceae.

In 1868, F. Mueller transferred *Spartothamnella* (= *Spartothamnus*) to the Verbenaceae, but regarded the "genus transitional between Myoporaceae and Verbenaceae". He noted that the habit of this genus, division of the stigma and the absence of albumen in the seeds are entirely different from the Myoporaceous plants. Following F. Mueller (1868), the genus was retained in the Verbenaceae by Bentham (1870), Bentham & Hooker (1876), Briquet (1895) and many others.

Recently, however, it was placed in the Chloanthaceae by Hutchinson (1959), in the Stilbaceae by Moldenke (1959) and in the Dicrostylidaceae by Airy Shaw (1965, 1966, 1973) and Moldenke (1971). These families are segregated from, but closely related to, Verbenaceae. In the Verbenaceae (s. lat.) and Chloanthaceae, the genus has been

considered "very nearly allied to *Pityrodia*" (Bentham, 1870; Bailey 1901; Hutchinson 1959) chiefly due to their non-decurrent leaves and the mistaken belief that there is a minute tip ("appendage") at the base of the anther-lobes. In the Stilbaceae and Dicrasyliaceae, however, *Spartothamnella* is placed near *Nesogenes* and *Cyclocheilon* because of the cymose inflorescence, fleshy exocarp of their fruit and the supposedly albuminous seeds (Moldenke, 1959, 1971).

In the majority of publications, *Spartothamnella* is retained in the tribe Chloanthaeae of Verbenaceae (s. lat.) or its segregate families apparently on the assumption that it has albuminous seeds and ("minutely") apiculate anther-lobes. Both of these characters were reported for the genus by Bentham (1870) and adopted by others without verifying them. In the present study, however, neither of these characters was found in the genus, although there are other important characters shared by *Spartothamnella* with the Verbenaceae (s. lat.) or its segregate families. On the other hand, other significant features suggest a possible affinity with the Myoporaceae. The relationship of *Spartothamnella* with both the Myoporaceae and the Verbenaceae or its segregate families is, therefore, discussed (table 1).

Spartothamnella has the following characters in common with the Verbenaceae (s. str.): leaves decussate, exstipulate; flowers tubular, bracteate; calyx persistent; stamens epipetalous, anthers dorsifixed, 2-lobed, longitudinally dehiscent, non-apiculate; ovary not lobed, 4-ovuled; ovule placentation axile; seed without albumen. Nevertheless, the Verbenaceae (s. str.) differs from *Spartothamnella* in the following characters: inflorescence usually racemose, spicate or paniculate; flowers without 2 lateral bracteoles; anther-lobes not confluent at the top end. In contrast to *Spartothamnella* which is restricted to Australia, the Verbenaceae (s. str.) are widely distributed in both hemispheres.

In many characters, the Chloanthaceae (= Dicrasyliaceae) are also close to *Spartothamnella*. They agree with each other in having the following characters in common: leaves simple, exstipulate, decussate; inflorescence cymose; flowers tubular, bracteate, with 2 lateral bracteoles; calyx persistent; stamens 4, epipetalous; anthers 2-celled, longitudinally dehiscent; ovary not lobed; ovules pendulous and anatropous. Both *Spartothamnella* and the Chloanthaceae are endemic in Australia. The genus *Spartothamnella*, however, is easily distinguished by its very small flowers (3-8(-12)mm long), confluent anther-lobes at the apex to become unilocular, succulent drupaceous fruit and ex-albuminous seeds.

There are a few characters common to *Spartothamnella* and the Myoporaceae. Both of them have the following characters: leaves simple; flowers axillary, solitary or in cymes; calyx persistent, 5-lobed; corolla tubular, 2-lipped; stamens 4, epipetalous; anthers 2-lobed, the lobes confluent at the apex forming a single reniform cell; pollen grains isopolar, radiosymmetrical and 3-colpate; ovary non-lobed; ovules pendulous, anatropous; placentation axile; fruit succulent drupe. *Spartothamnella* and the Myoporaceae are largely endemic in Australia. The family Myoporaceae, however, is readily distinguished by its mostly alternate or scattered leaves; flowers without bracteoles; calyx often less than half the length of corolla-tube; ovary 2-celled; stigma almost entire, (i.e. not deeply 2-lobed); seeds albuminous. There are oil glands in the Myoporaceae which are not found in *Spartothamnella*.

The above mentioned similarities in the characters of *Spartothamnella* and different families show that the genus is related to them to a certain degree. In the majority of its characters, however, it seems more closely related to the Chloanthaceae, but the many important characters shared between this genus and the Myoporaceae cannot be overlooked. Therefore, although it is retained here in the Chloanthaceae, the present author agrees with F. Mueller (1868) in regarding the genus transitional between Chloanthaceae and Myoporaceae. Note: In 1868, the Chloanthaceae had not been segregated from the Verbenaceae (sensu lato).

		Verbenaceae (s. str.)	Chloanthaceae (=Dicrasyliaceae)	Spartothamnella	Myoporaceae
Leaves	mostly decussate	+	+	+	-
Flowers	with 2 bracteloes	-	+	+	-
Corolla	2-lipped	+	+ -	+	+
Androecium	stamens mostly 4	+ -	+ -	+	+
	anther-lobes confluent at the apex forming a 1-chambered reniform cell	-	-	+	+
	anther-lobes apiculate at the lower end	-	+ -	-	-
Gynoecium	ovary not lobed	+ -	+	+	+
	ovary mostly 4-celled	+ -	+	+	-
	stigma 2-lobed	+ -	+	+	-
Fruit	succulent drupe	+ -	-	+	+ -
Seed	albuminous	-	+	-	+
Oil glands	present	+ -	-	-	+
Endemic	in Australia	-	+	+	90%

Table 1. Table to show the diagnostic characters of the genus *Spartothamnella* and the families Verbenaceae (s. str.), Chloanthaceae and Myoporaceae.

(+ = present; - = absent; ± = sometimes present.)

Key to the Species

1. (a) Plant pubescent with branched hairs; flowers sessile;
calyx longer than corolla 1. *S. puberula*
- (b) Plant glabrous of grey-puberulous in young plant with simple hairs;
flowers pedicellate; calyx shorter than corolla 2
2. (a) Plant glabrous; stem acutely 4-angled, longitudinally striate;
pedicel and calyx glabrous 2. *S. juncea*
- (b) Plant grey-puberulous when young, later glabrescent; stem obtusely 4-angled,
non-striate; pedicel and calyx grey-puberulous 3. *S. teucriflora*

1. *Spartothamnella puberula* (F. Muell.) Maid. & Betche, Cens. N.S.W. Pl. (1916) 177; Mold., Resume Verben. etc. (1959) 210, 345; Chipp., Proc. Linn. Soc. N.S.W. 96 (1971) 256; Mold., Fifth Summary Verben. etc. 1 & 2 (1971) 348, 622, 623.

Type: F. Mueller, s.n.: From near the Suttor River, Queensland — 1856 (MEL 68872, lectotype; K).

Spartothamnus puberulus F. Muell., Sec. Syst. Cens. Aust. Pl. 1 (1889) 171 — Basionym (In listing this species in the Second Census, Mueller refers back to his note in Wing's South. Sc. Rec. 2 (1882) 55, where he showed how it differs from *Spartothamnus junceus*, and merely suggests that it should be given specific rank); Tate, Trans. & Proc. R. Soc. S. Aust. 12 (1889) 113; Tate, Fl. Extratrop. S. Aust. (1890) 254, 302; Bail., Cat. Indig. & Natur. Pl. Qld. (1890) 35; Tate in Spencer (ed.), Horn Sc. Exped. 3 Bot. (1896) 174; Diels & Pritzel, Bot. Jahrb. 35 (1904) 513; Dixon, Pl. N.S.W. (1906) 236.

Type: As for *Spartothamnella puberula* (F. Muell.) Maid. & Betche.

S. junceus A. Cunn. ex Walp.: Benth., Fl. Aust. 5 (1870) 55 p.p. [quoad spec. A. Cunningham 246, Mt Aiton, Peel's Range, N.S.W. — K]; Bail., Qld. Fl. 4 (1901) 1169 p.p. quoad descr. "pubescent with branching hair".

S. junceus A. Cunn. ex Walp. var. *puberulus* Bail., Qld. Fl. 4 (1901) 1170.

Type: Barton 230, between the Warrego and Maranoa Rivers, Queensland (MEL); syntype of *S. puberula* (F. Muell.) Maid. & Betche.

S. puberulus Bail., Cat. Qld. Pl. (1913) 381 nom. nud.

Typification

S. puberulus F. Muell is based on three syntypes from Queensland, one collected by F. Mueller (the author) from near the Suttor River, the other by Bowman from near the Cape River and the third one by Barton from between the Warrega and the Maranoa Rivers. Of the above mentioned syntypes, the one collected by F. Mueller from near the Suttor River seems a better representative of this species and is, therefore, designated here as the lectotype.

Description (Fig. 1)

An erect branched shrub 0.5 - 1 (-1.5) m high, puberulous-pubescent with branched (\pm stellate) hairs. *Stem* of several rigid divaricate branches arising from a woody rootstock, dull green, acutely 4-angled, longitudinally striate. *Leaves* sessile, linear-lanceolate, narrowly elliptic or sometimes ovate-lanceolate, entire, recurved along the margin, (0.5-) 1 - 2.5 (-3) cm long, 2 - 4 (-6) mm broad, puberulous-pubescent. *Flowers* solitary, axillary, sessile, borne towards the end of branches; bract leafy, sessile, linear-lanceolate with somewhat recurved margins, 0.5 - 1 (-1.5) cm long, 1 - 2 (-4) mm broad, pubescent; bracteoles sessile, linear or linear-lanceolate, persistent, (1-) 1.5 - 2.5 (-3) mm long, (0.3-) 0.5 - 1 mm broad, pubescent. *Calyx* longer than corolla, (2-) 2.5 - 3.5 (-4) mm long, pubescent all over, densely glandular outside, sparsely so on the inner face of the lobes; lobes narrow lanceolate, spreading, longer than the tube, strongly ribbed at the back, 1.5 - 2.5 (-3) mm long, (0.2-) 0.3 - 0.5 (-1) mm broad at the base; tube broad, glabrous inside, 0.5 - 1 mm long. *Corolla* greenish-white, 2.5 - 3 mm long, glandular and puberulous outside, glabrous within excepting the villous throat; anterior-lobe \pm elliptic-oblong, 1.5 - 2 mm long, \pm 1 mm broad; the other 4-lobes almost equal, broadly elliptic-ovate, 1 - 1.5 mm long, 0.5 - 1 mm broad at the base; tube broad, cylindrical, \pm 1 mm long. *Stamens* shortly exserted; filaments filiform, the anterior two 1.5 - 2 mm long, the posterior two 1 - 1.5 mm long; anthers \pm reniform in outline, glandular on the back, 0.3 - 0.5 mm long, 0.2 - 0.3 mm broad, lobes \pm rounded. *Ovary* \pm globose in outline, faintly 4-lobed when young, sometimes cuneate towards the base, (0.5-) 1 - 1.5 mm long, 0.5 - 1 mm in diameter at the upper end, puberulous and glandular at the top, glabrous below; style shortly exserted, filiform, (1-) 1.5 - 3 mm long, glabrous, sometimes puberulous towards the base. *Fruit* globular, orange-red, often scarcely exceeding the persistent open calyx, 2.5 - 4 mm in diameter, glabrous, smooth.

Specimens examined

QUEENSLAND: *Barton 230*, between the Warrego and Maranoa Rivers, 1867 (MEL syntype). *Bick s.n.*, Charleville, Dec. 1916 (BR1 190721 and 190722, NSW 135923). *Bowman s.n.*, Cape River, undated (MEL 68873)

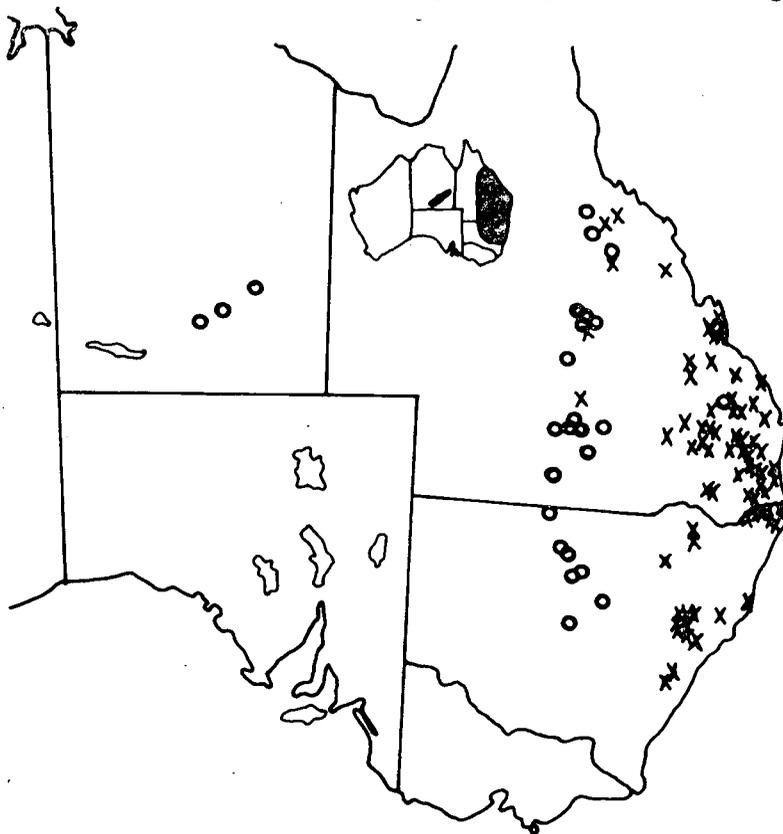
syntype). *Clemens s.n.*, Jericho, 1.v. 1946 (BRI 070166. GH). *Dockrill 411*, Barrabas, Atherton Tableland, 17.v. 1972 (BRI). *Domin 3025, 3132, 3181 and 8101*, near Jericho, Nov. 1910 (PR). *Everist 3091*, Boatman Stn., 17. vii. 1947 (BRI, NY). *Macuean 1*, Warrego River, 1888 (MEL). *Mikee 10345*, Cunnamulla, 12. iv. 1963 (NSW). *F. Mueller s.n.*, Alice River, undated (P); *s.n.*, Burnett River, undated (GH p.p., K); *s.n.*, Suttor River, "Suttor Range". 1956 (MEL 68872 lectotype: K). *Shirley s.n.*, Charleville, undated (BRI 190723). *White 9461*, Roma, 24.x. 1941 (BRI); *12020*, Morven, 6.iv. 1941 (A, BRI); *12400*, Enniskillen Mt., 14.xi. 1943 (A, BRI, US).

NEW SOUTH WALES: *Althofer s.n.*, along Girilambone to Booramugga road, 1970 (NSW 135924). *Betche s.n.*, "Gilargambone", Oct. 1886 (G). *Boorman s.n.*, Byrock, Nov. 1903 (G, NY). *Cunningham 246*, Mt. Aiton, Peel's Range, 1.vi. 1817 (K, syntype of *S. juncea* A. Cunn. ex Walp.). *Cunningham & Milthorpe 2520*, 32 km NW of Condobolin, 16.vii. 1974 (NSW). *Maclean s.n.*, Trangie, Feb. 1951 (NSW 135925). *F. Mueller s.n.*, Warrego River, undated (GH). *Rat s.n.*, Byrock, undated (P). *Anon. s.n.*, Girilambone, Nov. 1890 (US, W).

NORTHERN TERRITORY: *Latz 655*, Old Huckitta Homestead, 20.vii. 1970 (NT); *1930*, Georgina Range 23° 27' 134° 23', 7.i. 1972 (AD, CANB, NT). *Tate s.n.*, Mt. Gillen c. 5 km W. of Alice Springs, 1894 (AD, K).

Distribution (Map 2)

S. puberula is known chiefly from Queensland and New South Wales with a few localities in the Northern Territory. Distribution in Queensland is mainly between lat. 20° and 33° S. and between long. 145° and 148° E. The only other unspecified locality (in Qld.) is near the Burnett River along the Burnett Highway, Queensland. In New South Wales, one specimen was collected from NW of Condobolin and all the rest from between Dubbo and Barrington along the Mitchell Highway. In the Northern Territory, it is known from west of Alice Springs and near the Georgina Range and Jervis Range.



Map 2: Distribution of *Sparthamnella puberula* (circles) and of *S. juncea*.

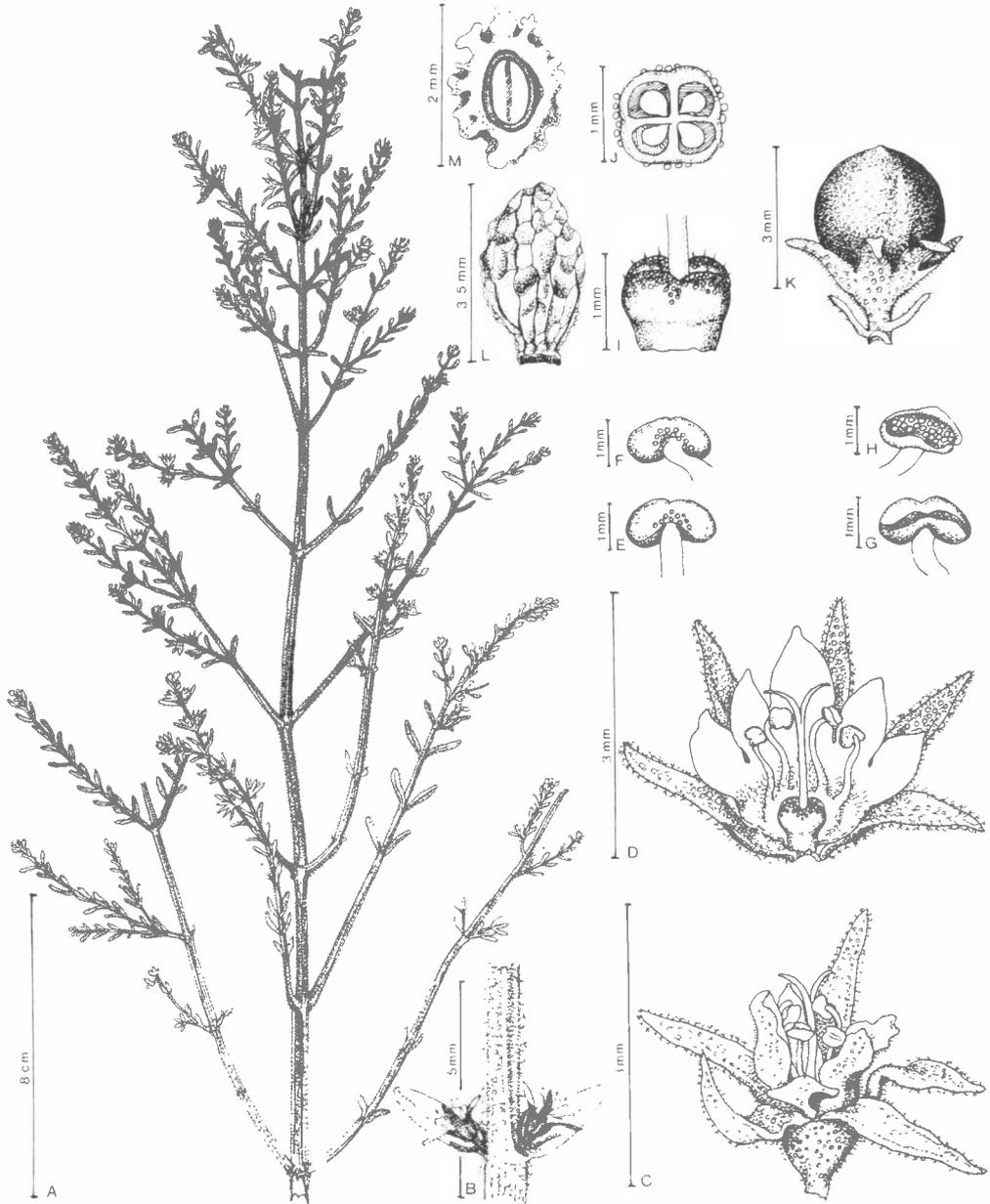


Fig. 1. *Spartothamnella puberula* (F. Muell.) Maid & Betche (*M. S. Clemens* s.n.; BRI 070166). A. habit drawing; B. portion of stem showing longitudinal striation, branched hairs and solitary axillary flowers with bract and bracteoles; C. flower; D. flower with calyx and corolla vertically cut open showing androecium and gynaecium; E. back view of undehiscent anther; F. back view of dehiscent anther; G. front view of semi-dehiscent anther; H. front view of dehiscent anther showing the single chamber formed by the confluent anther-lobes at the apex; I. ovary; J. T.S. ovary; K. fruit with persistent calyx; L. corrugate fruitlet; M. T.S. fruitlet.

Moldenke (1959, 1971) recorded this species from South Australia, but its occurrence in that state has not been confirmed. (See Addendum at end of paper.)

Comments

Bailey (1901) cited *Spartothamnus puberulus* F. Muell. (1882) as a synonym for his own *S. junceus* var. *puberulus*, although in 1882 Mueller had merely proposed the epithet in anticipation of the acceptance of this species. In terms of Article 34 of the International Code of Botanical Nomenclature (1972) the name had therefore not been validly published in 1882. In 1913, Bailey again cited *S. puberulus* as a synonym for the same variety but gave himself as author, apparently realizing his previous error but not realizing that Mueller had, in 1889, formally validated the name. Bailey did not at any stage provide his own description for his variety, depending instead on diagnostic features supplied by Mueller in 1882: The variety and species, although bearing the same epithet and depending on the same diagnosis are not based on a common basionym and do not necessarily have the same type. Bailey cited only one specimen, which must, therefore, be the type for the variety. Mueller cited several specimens (including the type of var. *puberulus*) but the lectotype of *S. puberulus* chosen by the present author is not the type of *S. junceus* var. *puberulus*. These names are therefore taxonomic but not nomenclatural synonyms.

The corolla and epipetalous stamens often fall off long before the fruiting stage and are often missing in a well developed flower.

Tate's collection (AD 95836012) from Mt Gillen, N.T., has the largest leaves measuring up to 3 by 0.6 cm and more dense tomentum than any other known collection of this species.

Betche's collection from New South Wales is noted to have come from "Gilargambone", which is probably an error for the locality Girilambone where this species is known to grow commonly.

Affinity

This species seems nearer to *S. teucriflora* in having a hairy covering all over the stem, leaves and on the outside of calyx and corolla. Nevertheless, it may be easily distinguished by its pubescence being stellately hairy, leaves more copiously developed, flowers sessile and calyx longer than corolla.

2. *Spartothamnella juncea* (A. Cunn. ex Walp.) Briq. in Engl. & Prantl, Pflanzenfam. 4. 3a (1895) 161; Maid. & Betche, Cens. N.S.W. Pl. (1916) 177; Mold., Resume Verben. etc. (1959) 210, 211, 345; Mold., Fifth Summary Verben. etc. 1 & 2 (1971) 348, 350, 623, Beadle et al., Fl. Syd. Region (1972) 506.

Type: A. Cunningham 78, Brisbane River, Queensland, x.1824 (K, lectotype; K, W).

Spartothamnus junceus A. Cunn. [in Loud. Hort. Brit. Suppl. (1830) 600, nom. nud.] ex Walp., Rep. Bot. Syst. 6 (1847) 694 — *Basionym*: DC., Prod. 11 (1847) 705; F. Muell. Fragm. 6 (1868) 153; Benth., Fl. Aust. 5 (1870) 55 p.p. (exclud. F. Muell. s.n., Burnett River, Queensland and Cunningham 246, Mt Aiton, Peel's Range, N.S.W.); Bail., Qld. Fl. 4 (1901) 1169 p.p. (exclud. F. Muell. s.n., Suttor Range and Burnett River, Queensland and descrip. "pubescent with branching hairs"); Diels & Pritzel, Bot. Jahrb. 35 (1904) 513; Dixon, Pl. N.S.W. (1906) 236; Bail., Qld. Agric. Journ. 28 (1912) 199; Bail., Cat. Qld. Pl. (1913) 381; White, Qld. Agric. Journ. 13 (1920) 29; Blake et al., Proc. Roy. Soc. Qld. 52 (1941) 73.

Type: As for *Spartothamnella juncea* (A. Cunn. ex Walp.) Briq.

Typification

Allan Cunningham (1830) proposed the name *Spartothamnus junceus* for the only species of a new genus which he had collected "from the interior of the Colony" (i.e. New South Wales & Queensland). This name was not validated until 1847 when Walpers published a detailed description. Walpers had seen living material in the Berlin Botanic Gardens and considered Cunningham to be the author of the binomial, but did not specifically cite any Cunningham herbarium collection. De Candolle, later in the same

year, republished Walper's description and added that he had seen at least one of Cunningham's collections and, in addition, that there were specimens in both the Berlin herbarium and his own. He did not make clear whether these specimens were Cunningham's collections or had been made from the plant(s) growing in the Berlin Botanic Gardens. It is probable that Walpers had had access to the same specimens as De Candolle had and that he had, therefore, also seen original Cunningham's specimens. It is not known whether these Cunningham specimens belonged to the Berlin Herbarium or had been borrowed from elsewhere. There are now no specimens of this species in the Berlin Herbarium (where it is likely they were destroyed during the last war) or in the De Candolle Herbarium (G). Cunningham's specimens occur in several herbaria (Lanjouw & Stafleu, 1954), but his collections of this species have only been traced at Kew and Vienna (W). It is considered extremely probable that Walpers did see one or more of these specimens. (The Kew specimens were at that time in the possession of Cunningham's friend, Robert Heward). It is also very likely that any specimens which may have been in Berlin were duplicates of specimens now in Kew or Vienna.

It is, therefore, proposed to select a lectotype from this material. None bears annotations by Walpers, which could have been used as a guide in choosing the lectotype.

There are six herbarium sheets of Cunningham's collections of *Spartothamnella* in Herb. K and four in Herb. W. One of these in Herb. K, collected from Mt Aiton on 1st June, 1817, numbered 246, is found to be of a different species, *S. puberula* (F. Muell.) Maid. & Betche. Since this specimen does not agree with the type description because it is pubescent with branching hairs, it therefore seems very unlikely that Walpers (1847) used this in preparing the original description and it is, therefore, excluded. Of the remaining five specimens at Kew, the one labelled "Coll. no. 78", gathered from Brisbane River, in October, 1824, seems the best representative of this species and is therefore selected here as the lectotype. A duplicate is in Herb. K and another in Herb. W.

Description (Fig. 2)

A scrambling shrub 1 - 2 (-3) metres high. *Stem* dark-green, acutely 4-angled, longitudinally striate, glabrous, somewhat glutinous. *Leaves* caducous, sessile or very shortly petiolate, narrowly elliptic or elliptic-oblong, obtuse, entire, (3-) 4 - 10 (-18) mm long, (1-) 2 - 3 (-5) mm broad, glabrous, somewhat glandular when young; petiole 1-2 mm long, glabrous, glandular. *Flowers* axillary, solitary, rarely more, pedicellate; pedicel (1-) 2 - 3 (-4) mm long, glabrous; bracts almost sessile, ovate-oblong, 0.5 - 1 (-1.5) mm long, \pm 0.5 mm broad, glandular and puberulous on the outer (i.e. lower) surface, almost glabrous above; bracteoles sessile, linear, \pm 1 mm long, puberulous-ciliate along the margin. *Calyx* deeply 5-lobed, sometimes 6-lobed, 1.5 - 2.5 mm long, glabrous, glandular outside only; lobes narrow lanceolate, spreading, strongly ribbed, 1 - 2 mm long, 0.5 - 1 mm broad at the base; tube 0.5 - 1 mm long. *Corolla* "white", 3 - 4 mm long, scarcely puberulous outside the tube, \pm villous in the throat; anterior-lobe \pm oblong, 1.5 - 2.5 mm long, 1 - 1.5 mm broad; the other 4-lobes almost equal, \pm ovate, 1 - 1.5 mm long, \pm 1 mm broad at the base; tube \pm cylindrical, (0.5-) 1 - 1.5 (-2) mm long. *Stamens* shortly exerted; filaments filiform, the anterior two (1.5-) 2 - 2.5 (-3) mm long, the posterior (lateral) two 1 - 1.5 (-2) mm long; anthers \pm reniform in outline, glandular at the back, 0.5 - 1 mm long, 0.3 - 0.5 mm broad; lobes \pm rotundate. *Ovary* \pm globose, faintly 4-lobed at the top end, 1 - 1.5 mm in diameter, glandular and puberulous in the upper half, glabrous below; style exerted, filiform, 3 - 4 mm long, glabrous. *Fruit* globose, orange-red or "tomato-red", often exceeding the persistent calyx, 2.5 - 3.5 mm in diameter, glabrous, smooth.

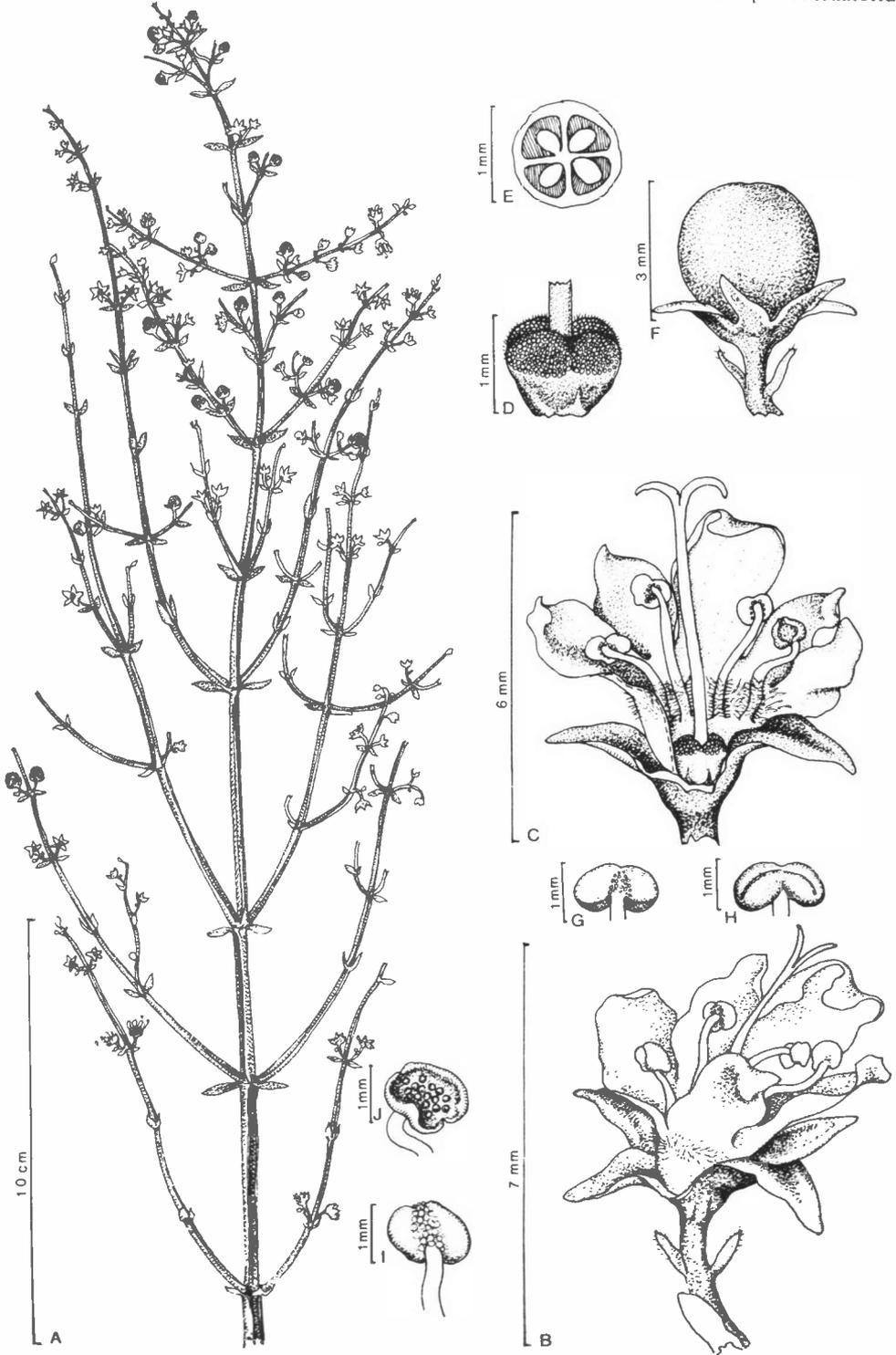
Specimens examined

QUEENSLAND: *Bancroft* 5343, Eidsvold, July 1917 (NSW). *Barnard s.n.*, Yarraman, 9.vii. 1941 (BRI 052343). *Beasley* 7, Chinchilla, 3.v. 1912 (BRI). *Bell* 591, Coalstoun Crater, Burnett district, lat. 25° 36', long. 150° 53', Aug. 1972 (BRI). *Blake* 4747, Goodna, 10.iv. 1933 (BRI). *Boorman s.n.*, Acacia Creek near Killarney, Feb. 1905 (AD, BRI 190719, G, S, SYD). *Boorman s.n.*, Warwick, March 1911 (F, NSW 135910). *Cameron* 41, Yarraman, 13.xi. 1933 (A, BRI). *Carey s.n.*, Goodna, May 1930 (SYD). *Clemens* 43762, Crows Nest, 24.ii. 1944

(A). *Clemens s.n.*, Yarraman, Aug. 5-15, 1944 (A, NY). *Clemens s.n.*, Jericho, March 1946 (BRI 190990). *Cunningham 78*, Brisbane river, Oct. 1824 (K lectotype; K 2 spec., W). *Darnell-Smith s.n.*, Parlardo-Chinchilla, April 1926 (NSW 135913). *Dietrich 132*, Rockhampton, undated (HBG). *Dietrich 1272, 1376, 1558, 1851, 2081*, loc. incert. undated (HBG). *Dietrich 1286*, Rockhampton, undated (HBG, WU). *Dookrill 522*, Atherton district, lat. 20° 05' S, long. 146° 55' E, 16.v. 1972 (BRI). *England s.n.*, Kilcoy, Oct. 1919 (BRI 190714). *Everist s.n.*, Bendemere 10 miles N of Yuleba-Brigalow, 8.vii. 1951 (BRI). *Gittins 863*, Rockland Springs, ca. 22 miles S of Bluff, July 1964 (BRI). *Hubbard 5366*, near Boonah between Teviotville and Antony, 30.xi. 1930 (BRI. K 2 spec.). *R. W. Johnson 2639*, Fitzroy Basin, Brigalow Research Stn. 20 miles NW of Theodore, 25.iv. 1963 (BRI). *Kenny s.n.*, Gayndah, March & May 1913 (BRI 094268 & 190709). *Kenny s.n.*, Crows Nest, Sept. 1919 (BRI 190716). *Lazarides 6912*, 8 miles SW of Moura Township, 6.vii. 1963 (BRI, CANB, NSW). *Leichhardt s.n.*, Moreton Bay, 1.iv. 1844 (P, NSW 135909). *Leichhardt s.n.*, upper part of Castle Creek, 4.iii. 1847 (NSW 135912). *Leichhardt 80*, Condamine, 1849 (P). *Longman s.n.*, Toowoomba, presented ix. 1931 (K). *McDonald s.n.*, 72 Cockenzie, Dipperu National Park, lat. 21° 55', long. 148° 40', Aug. 1971 (BRI 129076). *McKee 10182*, Blackbutt, upper Brisbane Valley, 2.iv. 1963 (NSW). *Michael 1995*, Kalbar Rd near Boonah, 18.xii. 1933 (A, BRI). *F. Mueller s.n.*, Rockhampton, 1869 (GH, K, MEL). *F. Mueller s.n.*, Burnett River, undated (GH p.p., K). *F. Mueller s.n.*, Port Mackay, undated (GH). *F. Mueller s.n.*, Suttor River, undated (MEL). *Phillips 1218, 4* miles from Yarraman in Cooyar logging area, 6.vi. 1961 (CBG). *Roe s.n.*, Table, Mt. Toowoomba, undated (BRI 052342). *Salisbury s.n.*, Mary River, April 1906 (CGE). *Shirley s.n.*, Nanango, undated (A). *Simmonds 375*, Goodna, 10.xii. 1889 (BRI). *Simmonds s.n.*, Wooroolin, Aprl. 1914 (BRI 190710 and 190711). *Simmonds s.n.*, Barmoya NE of Rockhampton, May 1937 (GH). *E. J. Smith s.n.*, Kalbar, S. of Ipswich, Sept. 1935 (BRI 190993). *L. S. Smith 591*, Kinson Stn., ca. 54 miles NNE of Goondiwindi, 7.xii. 1938 (BRI). *L. S. Smith 9871*, Bundaberg, lat. 24° 50', long. 152° 20', 13.vi. 1957 (BRI). *Tallegalla s.n.*, Mt. Morgan near Rockhampton, undated (BRI 190718). *Telford 903*, Kalpowar Forest, 24 miles NE of Monto, 26.v. 1969 (CBG). *Telford 3450*, 4 km SE of Kingaroy, 3.x. 1973 (CBG). *Thozet s.n.*, loc. incert., 1870 (G). *Webb & White 1134*, Wandooan, 1.vi. 1946 (BRI). *White s.n.*, Rosewood, Sept. 1911 (NSW 135914). *White s.n.*, loc. cit., May 1913 (BRI 190715). *White s.n.*, Wallumbilla, May 1916 (BRI 190713). *White s.n.*, Wyaga, Goondiwindi distr., Sept. 1919 (BRI 190708). *White s.n.*, Bunya Mt., Oct. 1919 (AD, BRI 190706 & 190707). *White 884*, Goodna, 4.viii. 1922 (A). *White 10785*, Callide Valley, Apr. 1937 (BRI). *White 12399*, Enniskillen, 14.xi. 1943 (A, BRI). *Wilson 729*, 40 miles SW of Bundaberg, 13.vi. 1957 (BRI, US). *Young s.n.*, Barakula, undated (BRI 190705).

NEW SOUTH WALES: *Beadle s.n.*, near Bingara, June 1947 (SYD). *Beckler s.n.*, Macleay river, undated (K). *Blaxwell 263*, *Pickard & Hayes s.n.*, Pikapene S.F., W of Casino, 20.iv. 1969 (NSW 130591). *Boorman s.n.*, Sandiland Ranges, Nov. 1904 (BR, NSW 135908, W 3939). *Boorman s.n.*, Mt Danger, Gungah, Sept. 1905 (NSW 135920). *Boorman s.n.*, Narrabri, June 1907 (G, GH, NSW 135917, NY). *Boyd & McGillivray 2036*, 0.2 mile E Esk River and 5.5 miles NNW Iluka, 27.vi. 1966 (NSW). *Burgess s.n.*, Razorback Mt. near Camden, 15.i. 1962 (CBG 009500). *Burgess s.n.*, Owen's Gap, 8.viii. 1963 (CBG 002946). *Burgess s.n.*, loc. cit., west of Scone, 13.viii. 1969 (CBG 03170). *Cabbage s.n.*, Pokolbin near Cessnock, 25.viii. 1910 (SYD). *Clark, Pickard & Coveny 1758*, ca. 39 miles E of Liston, ca. 25 miles NW of Tabulam, 26.vii. 1969 (BRI, NSW). *Cleland s.n.*, Scone, 1.iii. 1917 (AD 97608108). *Clements s.n.*, Palisthan via Condobolin, Feb. 1892 (NSW 135922). *Clements s.n.*, Port Macquarie, Apr. 1894 (NSW 135915). *Constable 78*, Unumgar Stn., 18.iv. 1947 (NSW). *Coveny s.n.*, Gloucester, Apr. 1966 (NSW 135918). *Coveny 4136 & Biaby s.n.*, 12.7 km WNW of Scone, lat 32° 01' S, long. 150° 45' E, 27.iii. 1972 (NSW). *Cunningham 491*, "Nova Hollandia", undated (W syntype). *Cunningham s.n.*, interior of NSW, 1817 (W syntype). *Cunningham 247*, Hamilin's Valley, 9.viii. 1817 (K syntype). *Cunningham s.n.* in Herb. Endl. & Herb. Hook., Nova Hollandia, undated (K, W syntypes). *Forester s.n.*, Hadleigh, near Warialda, Aug. 1912 (NSW 135916). *Gandoger s.n.*, loc. incert., June, 1906 (MO 117716). *Johnson 23444*, Mt. Dangar, S. of Gungah, 10.iv. 1953 (MO, NSW, US). *Johnson & Constable 42207*, Pickapene State forest, 5 miles N Busby's Flat, WSW of Casino, 8.vi. 1957 (NSW). *Julius 5513/17*, Ticketty Wells, July 1917 (NSW). *Maiden s.n.*, Scone, Aug. 1899 (NSW 135919). *Maiden s.n.*, Bruschy Mts., Sept. 1897 (G). *McAuliffe 2566/12*, Casino, May 1912 (NSW). *McBarron 15077*, Razorback Mt. near Camden, 6.iv. 1968 (NSW). *McBarron 15491*, loc. cit. 3.viii. 1968 (NSW). *McKee 639*, near Mt. Dangar, 10.iv. 1953 (SYD). *Mitchell 517*, Nova Hollandia, Aug. 1846 (K). *Salasoo 1801*, on banks of Page River, between Gundy and Scone, 4.x. 1959 (NSW). *Schrader s.n.*, loc. incert., 1855 (LE). *Stafford s.n.*, Denman, 26.v. 1945 (NSW 135921). *Story 7121*, ca. 2 miles of Jerry's Plains, 19.iii. 1960 (BRI, CANB, NSW). *White 12562*, Toonumbar, near Kyogle, 14.iii. 1944 (A, BRI).

Fig. 2. *Spartothamnella juncea* (A. Cunn. ex Walp.) Briq. (*C. Burgess s.n.*: CBG 009500). A, flowering twig; B, flower with bract and bracteoles; C, flower with calyx and corolla vertically cut open showing androecium and gynaecium; D, ovary; E, T.S. ovary; F, fruit with persistent calyx; G, back view of undehisced anther; H, front view of undehisced anther; I, back view of dehisced anther; J, front view of dehisced anther, showing the single chamber formed by the confluent anther-lobes at the apex.



Distribution (Map 2)

S. juncea is endemic in Queensland and New South Wales. The major distribution is in the eastern parts of these states where this species is restricted chiefly between lat. 20° and 35° S. and between long. 146° and 153° E. The Queensland localities are mainly in the South-eastern part of the state, occurring chiefly to the east of long. 149° E. A few scattered collections are made from south-south-east of Townsville in the north, and from the north of Charleville towards the interior of the state.

In New South Wales, this species is restricted chiefly to the north-eastern part of the state. Most of the localities are to the north-west and north-east of Newcastle towards the Queensland border. Elsewhere, two collections are made from near Camden to the south-west of Sydney and one from north-west of Condobolin at Palisthan. (See Addendum at end of paper.)

Comments

The lectotype duplicate in Herb. W is annotated (probably by Cunningham himself) as "*Spartothamnus ephedraeoides* A. Cunn". A habit sketch of this with analytical drawing of flower and its parts is also preserved in Herb. W (Icon. no. 168). It bears the above-mentioned species name as well as the family name "Myoporineae" under which this species was originally published. The name "*Spartothamnus ephedraeoides* A. Cunn.", however, is not known to have been validly published.

Moldenke (1959, 1971) recorded this species from New Zealand, but there is no collection to confirm this and the genus is believed to be endemic to mainland Australia. He seems to have followed F. Mueller (Fragm. 6 (1868) 153), who erroneously considered *Teucrium parvifolium* Hook.f., from New Zealand, as a species of this genus under the name "*Spartothamnus hookeri*".

Maiden noted on his collection (no. NSW 135919) from Scone, New South Wales, that the stem attained 3 inches (i.e. ca. 7.5 cm) in diameter at the base, which is very much larger than any other recorded.

Dietrich's collection (no. 132) in Herb. HBG has two labels with different localities. One of them refers this specimen to Port Mackay and the other to Rockhampton. Since there is only one specimen on this herbarium sheet and the species is now known to occur in both the above named localities, it is difficult to assign this collection to either of these localities with certainty. Nevertheless, this species is much more frequent around Rockhampton, and Dietrich did name another collection of this species (no. 1286 in Herb. HBG and WU) from this locality. It is, therefore, thought likely that this specimen also came from Rockhampton.

This species is popularly known as "Goodnight Scrub".

Affinity

S. juncea is closely allied to *S. teucriflora* in having pedicellate flowers and calyx shorter than corolla. However, it can be easily identified by its stem, leaves, pedicels and calyx being glabrous and stem very acutely 4-angled and distinctly longitudinally striate.

3. *Spartothamnella teucriflora* (F. Muell.) Mold., *Phytologia* 1 (1940) 430; Black, *Fl. S. Aust.* 4, 2 ed. (1957) 725; Mold., *Resume Verben. etc.* (1959) 210, 345; Blackall & Grieve, *W. Aust. Wildfls* 3 (1965) 567; Beard (ed.), *W. Aust. Pl.* 2 ed. (1970) 114; Mold., *Fifth Summary Verben. etc.* 1 & 2 (1971) 348, 622, 623; Chipp., *Proc. Linn. Soc. NSW.* (1971) 256.

Type: Rev. H. Kempe 438, near the Finke River, Northern Territory, 1882 (MEL 68887, lectotype; MEL 68886).

Spartothamnus teucriflorus F. Muell. in Wing (ed.), *South Sc. Rec.* 2 (1882) 55 Basionym; F. Muell., *Syst. Cens. Aust. Pl.* 1 (1882) 102; Kempe, *Trans. R. Soc. S. Aust.* 5 (1882) 22; Tate, *Trans. & Proc. R. Soc. S. Aust.* 12 (1889) 113; F. Muell., *Sec. Syst. Cens. Aust. Pl.* 1 (1889) 171; F. Muell. & Tate, *Trans. R. Soc. S. Aust.* 13 (1890)

105; Tate, Fl. Extratrop. S. Aust. (1890) 156, 254; Tate, Trans. R. Soc. S. Aust. 15 (1892) 262; F. Muell. & Tate, Trans. R. Soc. S. Aust. 16 (1896) 375; Tate in Spencer (ed.), Horn Sc. Exped. 3 (1896) 174; Diels & Pritzel, Bot. Jahrb. 35 (1904) 513; Ewart & Davies, Fl. N. Terr. (1917) 239 in obs.; Domin, Mem. Soc. Sc. Boheme (1923) 106; Black, Fl. S. Aust. 1 ed. (1926) 483; Gard., Enum. Pl. Aust. Occ. 3 (1931) 111; Black, Trans. R. Soc. S. Aust. 60 (1936) 172; Beard (ed.), W. Aust. Pl. 1 ed. (1965) 93.

Type: As for *Spartothamnella teucrifflo* (F. Muell.) Mold.

Typification

S. teucrifflo was originally described on two collections, one by Rev. H. Kempe (no. 438) from the Northern Territory and the other by E. Giles (s.n.) from Western Australia. Kemp's collection (no. 438, 3 spec.) has flowers and fruit, but Giles' collection (s.n., 2 spec.) has a few young flowers only. Therefore, a specimen of Kempe's collection no. 438, preserved in Herb. MEL, seems to be the better representative of this species and is, therefore, selected here as the lectotype.

Description

A much branched semi-scandent shrub to 1.5 metre high. *Branches* green, slender, rigid, obtusely 4-angled, grey-puberulous when young, later almost glabrous and leafless. *Leaves* caducous, sessile, linear-lanceolate or narrowly ovate-lanceolate, entire, (5-) 7 - 15 (-25) mm long, (1-) 2 - 3 (-4) mm broad, glabrous (and glutinous) above, pubescent below. *Flowers* axillary, solitary or 2 - 3 on a short axillary peduncle, pedicellate; pedicel 3 - 5 mm long, slender, grey-pubescent; bracts \pm leafy, sessile, linear or linear-lanceolate, 3 - 5 (-7) mm long, 1 - 2 mm broad, grey-pubescent below (i.e. on the outer surface), glabrous above (i.e. on the inner surface); bracteoles persistent, sessile, linear, (1-) 1.5 - 2 mm long, 0.3 - 0.5 mm broad. *Calyx* deeply 5-lobed, 4 - 6 (-7) mm long, grey-pubescent outside, glabrous within; lobes lanceolate, spreading, longer than the tube, (2-) 3 - 4 (-5) mm long, 1 - 1.5 mm broad at the base; tube (1-) 1.5 - 2 mm long. *Corolla* creamy-white, 8-11 mm long, puberulous outside, villous in the throat; anterior-lobe \pm elliptic, 5 - 7 mm long, 3 - 4.5 mm broad; the other 4-lobes almost equal, \pm oblong-ovate, 3 - 4 (-5) mm long, 2 - 3 mm broad; tube (2-) 3 - 4 mm long. *Stamens* 4, much exerted, the anterior two filaments 8 - 10 mm long, the posterior (or lateral) two 7 - 8 mm long; anthers reniform, somewhat glandular at the back, \pm 1 mm long, 0.5 mm broad. *Ovary* \pm globose, faintly 4-lobed in the upper half, \pm 1 mm in diameter, glabrous, sparsely glandular at the top; style much exerted, filiform, 9 - 13 mm long, glabrous. *Fruit* globose, green when young, later orange-red or somewhat blackish, often exceeding the open persistent calyx, 3 - 4 (-5) mm in diameter, glabrous, smooth and shiny.

Specimens examined

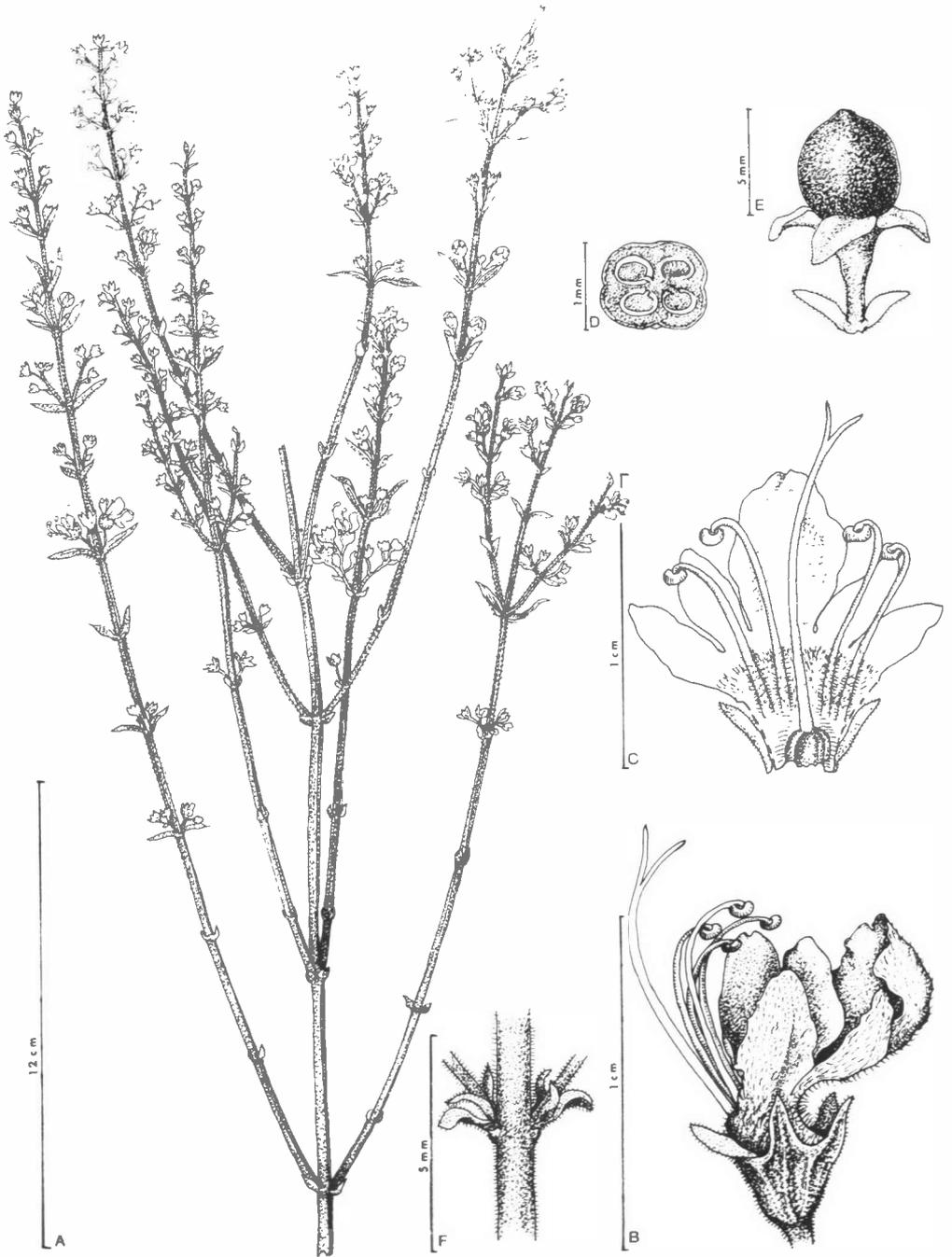
NORTHERN TERRITORY: *Chippendale 1767*, ¼ m. E. no. 2 Desert Bore, Hamilton Downs, 24.ix. 1955 (AD, BRI, NT, NSW, PERTH). *Chippendale 2013*, 3 m. SW no. 2 Desert Bore, Hamilton Downs, 12.iv. 1956 (NT). *Chippendale 2904*, 6 m. E. Mt Olga, 13.ix. 1956 (AD, BRI, NT). *Chippendale 6236*, Turrarurra Bore, 34½ m. WSW Haasts Bluff, 22.vi. 1959 (NT). *Chippendale 6281*, ca. 20 m. S Glen Edith, 25.vi. 1959 (AD, BRI, NT). *Cleland s.n.*, 16 km NE of Ayers Rock, 13.vi. 1935 (AD). *Cleland s.n.*, 50 km NE of Ayers Rock, 10.vi. 1935 (AD). *Cleland s.n.*, Yuendumu, 17.viii. 1951 (AD). *Cleland s.n.*, Burt Plain N of Mt Hay, 31.viii. 1951 (AD). *Cleland s.n.*, Haast's Bluff Reserve, 21.viii. 1956 (AD). *Cleland s.n.*, north of Mt Hay, 16.viii. 1957 (AD). *Dietrich s.n.*, Charlotte Waters, 1885-6 (LE). *George 4977*, 26 m. NW of Mt Olga, 11.vii. 1963 (PERTH). *Hill & Lothian 810*, 3 m. N of Mt Olga, 4.vii. 1958 (AD, NT). *Kempe 438*, near the Finke River, 1882 (MEL lectotype; MEL 2 spec.). *Latz 141*, 87 m along Harts Range Road, 10.ii. 1968 (NT). *Latz 2403*, Petermann Ranges, 24° 47' S, 129° 32' E, 11.iv. 1972 (AD, CANB, NT, PERTH). *Lazarides 5768*, 36 m. NNW of Alice Springs, 21.viii. 1956 (AD, BRI, CANB, NSW, NT, PERTH, US). *Lazarides 6099*, 7 m. W of Aileron Township, 30.ix. 1956 (AD, BRI, CANB, NT). *Maconochie 1826*, ca. 2 m N Ayers Rock, 25° 19' S, 131° 03' E, 27.viii. 1973 (CANB, NT, MO). *Munir 5144*, Mt Olga, 24.viii. 1973 (AD). *Nelson 351*, Burt Plain, 36 m. N Alice Springs, 13.vii. 1962 (CANB, NT). *Nelson 445*, Aileron Lagoon, 77 m. N Alice Springs, 3.viii. 1962 (AD, BRI, CANB, NT, PERTH). *Nelson 573*, Burt Plain, loc. cit., 13.xii. 1962 (NT). *Nelson 605*, loc. cit., 6.iii. 1963 (NT). *Nelson 737*, loc. cit., 13.v. 1963 (NT). *Nelson 865*, loc. cit., 6.i. 1964 (NT). *Swartz & Schultz 30*, near the Finke River, Gosses Range, undated (MEL). *Swartz s.n.*, loc. cit., 1885 (MEL). *Swinbourne 533*, Burt Plain, 30.x. 1962 (CANB, NT). *Tietkens s.n.*, loc. incert., 4.vi. 1889 (AD). *Winkworth 1122*, 16 m. N Alice Springs, 2.v. 1955 (NT, NSW).

SOUTH AUSTRALIA: *Forde 489*, 50 m. E of Emu, 4.ix. 1956 (CANB). *Helms s.n.*, Arckaringa Valley, 21.v. 1891 (AD). *Kuchel 437*, ca. 275 km N of Coober Pedy, 13.viii. 1962 (AD). *Perry 5517*, 22 m. S of De Rose Stn., 12.ix. 1955 (BRI, CANB, NT, US). *Shaw 459*, ca. 16 km E of Teyon Homestead, 10.x. 1966 (A, AD). *Tate s.n.*,

between Mt Stuart and Mt Boothby, ca. 20 km E of Beltana, May, 1891 (AD). *Weber 2853*, Durkin Out Stn., ca. 15 km W of Mulgathing, 27.ix. 1971 (A).

WESTERN AUSTRALIA: *Aplin 2451*, 37 m. E of Meekatharra, 23.viii. 1963 (PERTH). *Ashby 4225*, S. of Meekatharra, 7.viii. 1971 (PERTH). *Beard 3518*, 3 m. S of Warroora Stn., 20.vii. 1964 (PERTH). *Beard 4378*, Kennedy Range near old Merlinleigh Homestead, ca. 80 m. NE of Carnarvon, 23.viii. 1965 (PERTH). *Bennett 105*, Wongawol Stn., July, 1941 (PERTH). *Chinnock 825*, near James Pool, Windidda Stn., 6.ix. 1973 (AD). *Chinnock 952*, 16 km SW of Earraheedy Homestead, 10.ix. 1973 (AD). *Cumming s.n.*, Ernest Giles Range, 27° 03' S, 124° 06' E, 18.iii. 1892 (AD, NSW). *Drummond s.n.*, Swan River, 1843 (P). *Fitzgerald s.n.*, Nannine, near Mt Magnet, Sept. 1903 (NSW 135930, PERTH). *Gardner 2270*, Boolardy Stn., Murchison River, July 1927 (PERTH). *Gardner s.n.*, loc. cit. July 1927 (PERTH 2 spec.). *Gardner 2270*, Cue, 13.viii. 1931 (PERTH 3 spec.). *Gardner 3277*, Barrabiddy Hills, Minilya River, 31.viii. 1931 (PERTH). *George 702*, Ca. 31 m. S of Mt Magnet, 16.iv. 1960 (PERTH). *George 2509*, Cape Range — road to no. 4 Well, 2.vi. 1961 (PERTH). *George 2810*, ca. 1 m. S of Laverton, 23.viii. 1961 (PERTH). *George 4543*, between White Cliffs and Ivor Rocks, E of Laverton, 1.vii. 1963 (PERTH). *George 5359*, 12 m. W of Todd Ranges, Gunbarrel Hwy., 24.vii. 1963 (PERTH). *Giles s.n.*, between the Murchison and Gascoyne Rivers, undated (MEL 2 spec. syntypes; AD photo). *Goodall 852*, 22 km from Mt Magnet, Geraldton Road, 9.iii. 1963 (PERTH). *Green 1619*, 34 m. E of Mt Magnet, 27.viii. 1957 (PERTH). *Helms s.n.*, near Mt Squires, 28.viii. 1891 (AD). *Helms s.n.*, Victoria Desert, camp 40 Eld. Expl. Exped., 4.ix. 1891 (AD 2 spec., K, NSW 135927-28). *Ince 8102*, loc. incert., 1909-10 (PR); *Ince s.n.*, loc. incert., 23.vi. 1908 (k 2 spec.). *Maiden s.n.*, Laverton, Sept. 1909 (NSW 89902 & 135926). *Melville 133*, Boolardy Stn., 1936 (K, PERTH). *Moore s.n.*, Goldfields, June 1895 (NY). *Phillips s.n.*, 5 m. from Menzies towards Kalgoorlie, 7.ix. 1968 (CBG 038558, NSW, PERTH). *Royce 10433*, 65 m. N of Sandstone towards Wiluna, 15.x. 1972 (PERTH). *Speck 1088*, 22 m. N of Meekatharra, 27.vii. 1958 (CANB, PERTH). *Staer s.n.*, Nannine, Oct. 1905 (E). *Weber 4766*, ca. 2 km N of Leonora, 19.ix. 1975 (AD). *Wilson 7548*, Edjudina Stn., Ca. 130 km NNE of Kalgoorlie, 31.viii. 1968 (PERTH). *Wittwer 1148*, Meekatharra — Cue road, 25.viii. 1973 (PERTH).

Fig. 3. *Spartothamnella teucriflora* (F. Muell.) Mold. (A-D, A. M. Ashby 4225: PERTH; E-F, P. K. Latz 2403: AD). A, flowering twig; B, flower; C, flower with calyx and corolla cut open showing androecium and gynaeceum; D, T. S. ovary; E, fruit with persistent calyx; F, opposite bracts with bracteoles.



Distribution (Map 3)

S. teucriflora is by far the most wide spread species of the genus, occurring chiefly in the eremean parts of the Northern Territory, South Australia and Western Australia. In the Northern Territory, it is restricted to the southern part between lat. 22° and 26° S and between long. 129° and 135° E. The main localities are to the west-north-west of Alice Springs, and to the east-north-east of the Petermann Ranges. There are also two disjunct localities, at Harts Range and near Charlotte Waters.

There are a few scattered localities in the far north of South Australia. Two of these are to the north-west of Tarcoola in the Victoria Desert, one to the east of Beltana and the remaining to the north of Coober Pedy towards the Northern Territory border.

In Western Australia, this species is widespread to the north-north-east of Perth between lat. 22° and 32° S. and between long. 113° and 128° E. The major distribution is in the Eremeian Province* excepting a solitary collection from along the Swan River in the South Western Province. Within the Eremeian Province, most of the localities are in the Ashburton and Austin districts, one in the Coolgardie district and a few in the southern half of the Carnegie district. Equatorially, the distribution in the Eremeian Province extends from Exmouth Gulf in the west up to the Barrow Range in the east. (See addendum at end of paper).

Comments

Flowers of *S. teucriflora* are the largest in the genus, measuring 8 - 11 (-13) mm in length.

Domin (1923) and Black (1936) erroneously spelt this species "S. teucrifolius" and "S. teucrifolia" respectively.

A discrepancy exists in Gardner's collection 2270 (PERTH) which consists of four herbarium sheets. Three of them, annotated in the collector's hand were gathered from Webb's Patch, Cue, and are dated "13 July, 1931". The other, in an unidentified hand, is labelled as being from "Boolarly Station, Murchison River", and is dated "July 1927". The latter probably belongs to a different collection because its two duplicates in Herb. PERTH are unnumbered.

Affinities

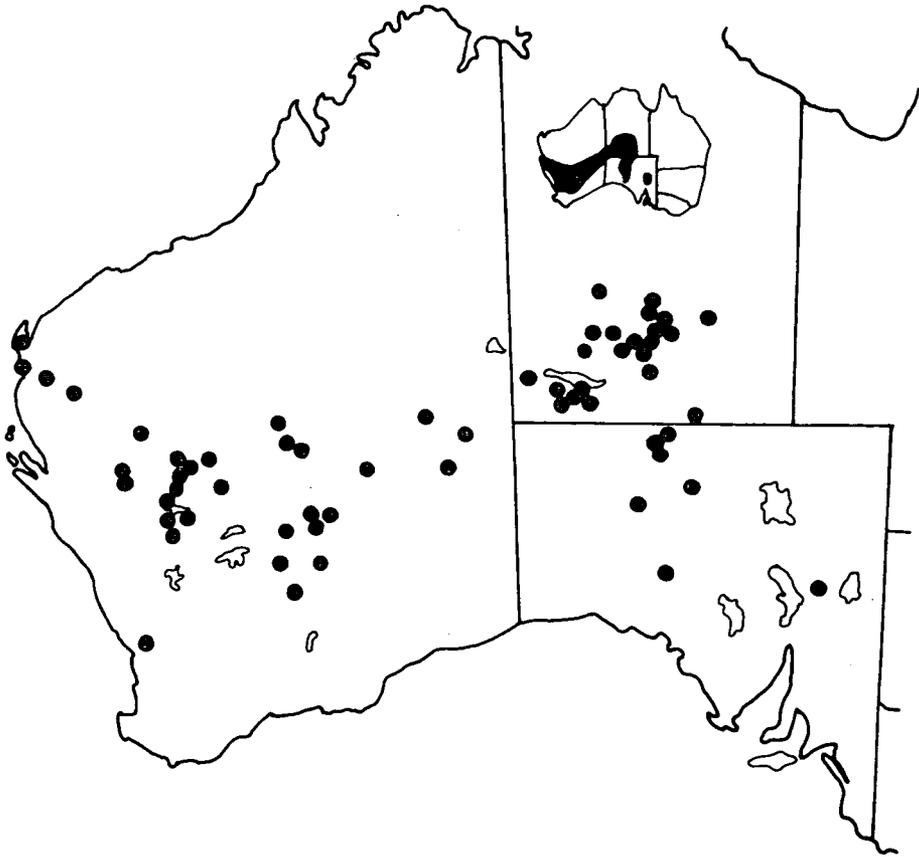
S. teucriflora is closely related to *S. juncea* in the majority of its flower characters. Nevertheless, it is readily distinguished by its stems being rather obtusely 4-angled and non-striate and by the young branches, pedicel and calyx being grey puberulous.

Acknowledgements

The author is grateful to Dr. J. P. Jessop for looking through the draft of this manuscript and making some useful suggestions; other botanist colleagues for discussions on some aspects of this study; Mr. L. Dutkiewicz for preparing the illustrations and Miss B. Welling for typing the manuscript.

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Note: *The Botanical Provinces and Districts of Gardner & Bennetts (1956) are used to record the distribution in Western Australia.



Map 3: Distribution of *Spartothamnella teucriflora*.

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Index to Collections

Collectors' names are in alphabetical order, and their numbers (in Arabic numerals) are followed by the numbers (in Roman numerals) given below to each species. T represents holo- or lecto- type of the species indicated.

Spartothamnella puberula = I

S. juncea = II

S. teucriflora = III

Althofer s.n., I. — *Aplin* 2451/III. — *Ashby* 4225/III. — *Bencroft* 5343/II. — *Bernard* s.n./II. — *Barton* 230. I. — *Beadle* s.n., II. — *Beard* 3518/III; 4378/III. — *Beasley* 7/II. — *Beckler* s.n./II. — *Bell* 591/II. — *Bennett* 105/III. — *Biaby* s.n./II. — *Bick* BRI 190721/I; BRI 190722/I; NSW 134923/I. — *Blake* 4747/II. — *Blaxell* 263/II. — *Boorman* s.n./I; s.n./I; s.n./II; NSW 135908/II; NSW 135917/II; NSW 135920/II; W 3939/II. — *Bowman* s.n./I. — *Boyd & McGillivray* 2036/II. — *Burgess* CBG 002946/II; CBG 009500/II; CBG 031170/II. — *Cabbage* s.n./II. — *Cameron* 41/II. — *Carey* s.n./II — *Chinnock* 825/III; 952/III. — *Chippendale* 1767/III; 2013/III; 2904/III; 6236/III; 6281/III. — *Clark, Pickard & Coveny* 1758/II. — *Cleland* AD 97608108/II; s.n./III; s.n./III; s.n./III; s.n./III; s.n./III; s.n./III. — *Clemens* BR1 070166/I; 43762/II; s.n./II. — *Clemens* NSW 135915/II; NSW 135922/II. — *Constable* 78/II. — *Coveny* 4136/II; NSW

135918/II. — *Cumming* s.n./III. — *Cunningham* s.n./II; 78/II T; 246/I; 247/II; 491/II. — *Cunningham & Mithorpe* 2520/I. — *Darnett-Smith* s.n./II. — *Dietrich* 132/II; 1272/II; 1286/II; 1376/II; 1558/II; 1851/II; 2081/II; s.n./III. — *Dockrill* 411/I; 522/II. — *Domin* 3025/I; 3132/I; 3181/I; 8101/I. — *Drummond* s.n./III. — *England* s.n./II. — *Everist* 3091/I; s.n./II. — *Fitzgerald* NSW 135930/III; s.n./III. — *Forde* 489/III. — *Forester* NSW 135916/II. — *Gandoger* MO 117716/III. — *Gardner* 2270/III; 3277/III; s.n./III. — *George* 702/III; 2509 III; 2810/III; 4543/III; 4977/III; 5359/III. — *Giles* s.n./III. — *Gittins* 863/II. — *Goodall* 852/III. — *Green* 1619/III. — *Helms* s.n./III; s.n./III; s.n./III. — *Hill & Lothian* 810/III. — *Hubbard* 5366/III. — *Ince* 8102 III; s.n./III. — *Johnson* 2639/II; 23444/II. — *Johnson & Constable* 42207/II. — *Julius* 5513/II. — *Kempe* 438 III T. — *Kemys* s.n./II. — *Kuchel* 437/III. — *Latz* 655/I; 1930/I; 2403/II. — *Lazarides* 5768/III; 6099/III; 6912 II. — *Leichhardt* 80/II; s.n./II. — *Longman* s.n./II. — *Maclean* s.n./I. — *Maconochie* 1826/III. — *Maclean* I/I. — *Maiden* NSW 135919/II; s.n./II; s.n./III. — *McAuliffe* 2566/II. — *McBarron* 15077/II; 15491 II. — *McDonald* s.n./II. — *McKee* 639/II; 10182/II. — *Michael* 1995/II. — *Mikee* 10345/I. — *Mitchell* 517 II. — *Moore* s.n./III. — *F. Mueller* s.n./II; s.n./I; s.n./II. — *Munir* 5144/III. — *Nelson* 351/III; 445/III; 573/III; 605/III; 737/III; 865/III. — *Perry* 5517/III. — *Phillips* 1218/II; CBG 038558/III. — *Pickard & Hays* NSW 130591 /II. — *Rat* s.n./I. — *Roe* s.n./II. — *Royce* 10433/III. — *Salasoo* 1801/II. — *Salisbury* s.n./II. — *Schrader* s.n./II. — *Shaw* 459/III. — *Shirley* s.n./I; s.n./II. — *Simmonds* 375/II; s.n./II. — *Smith*, E. J. s.n./II. — *Smith*, L. S. 9871/II. — *Speck* 1088/III. — *Staer* s.n./III. — *Stafford* NSW 135921/II. — *Story* 7121/II. — *Swartz* s.n./III. — *Swartz & Schultz* 30/III. — *Swinbourne* 533/III. — *Tallegalla* s.n./II. — *Tate* s.n./I; s.n./III. — *Telford* 903/II; 3450/II. — *Thozet* s.n./II. — *Tietkens* s.n./III. — *Weber* 2853/III; 4766/III. — *Webb & White* 1134/II. — *White* 9461/I; 884/II; 10785/II; 12020/I; 12399/II; 12400/I; 12562/II; BR1 190706/II; BR1 190707/II; BR1 190708/II; BR1 1907013/II. — *Wilson* 729/II; 7548/III. — *Winkworth* 1122/III. — *Wittwer* 1148/III. — *Young* BR1 190705/II.

Addendum

The following data, based on material in Herb. MEL, became available while this paper was in press. Only specimens of major distributional importance are listed.

S. puberula (F. Muell.) Maid. & Betche

WESTERN AUSTRALIA: *Willis* s.n., N. declivities of Mt Bruce, Hamersley Range National Park, 17.viii. 1974 (MEL 68882).

NORTHERN TERRITORY: *Willis* s.n., Inner N. rock Walls of Gosse's Bluff, south of MacDonnell Ranges, ca. 160 km W.S.W. of Alice Springs, 26.vii. 1966 (MEL 68883). *Swartz* s.n., Finke River, 1885 (MEL 68881). *Swartz & Schultz* 30, near the Finke River, Gosse's Range, undated (MEL 68880).

QUEENSLAND: *Birch* s.n., Alice River, 1883 (MEL 68878). *Biddulph* s.n., Mt Playfair, 1891 (MEL 68903).

NEW SOUTH WALES: *Musson* s.n., Namoi River, 1890 (MEL 68877).

Comments

J. H. Willis' collection from Mt Bruce, Hamersley Range, is the first record of *S. puberula* from Western Australia. This locality is nearly 1460 km west of its previously known range.

S. juncea (A. Cunn. ex Walp.) Briq.

QUEENSLAND: *Bourn* 280, Head of the Isaac River, undated (MEL). *Harman* 127, Boyne, 1873 (MEL). *F. Mueller* s.n., Warwick, undated (MEL 68849).

NEW SOUTH WALES: *Carson* s.n., Marthaguy Creek, July 1890 (MEL 68865). *Musson* 53, Narrabri, Namoi River, 1890 (MEL). *Musson* 592, Peel River, 1890 (MEL). *Woolls* s.n., near Mudgee, 1872 (MEL 68857-9).

S. teucriflora (F. Muell.) Mold.

WESTERN AUSTRALIA: *Helms* s.n., Skirmish Hill, 22.vii. 1891 (MEL 68893). *F. Mueller* s.n., Hemelin Harbour, Oct. 1877 (MEL 68896).

Comments

F. Mueller's collection from Hemelin Harbour is the only record of this genus from the far south-west of Western Australia.

Index to scientific names

Page numbers in **bold type** refer to main taxonomic treatment, those in *italics* indicate synonyms and misapplied names. Numbers with round brackets () indicate key.

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