PACIFIC CAPSULAR MYRTACEAE 8

Tepualia

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INTRODUCTION

The sole species of *Tepualia* Griseb., Goett. Abh. 6 (1854) 119, *T. stipularis* (Hook. *f.* et Arn.) Griseb., loc. cit. 119, occurs in South America remote from the main Australasian concentration of the subfamily *Leptospermoideae*. It is the only representative of the subfamily in the Americas.

The species was first placed in *Myrtus* (Hooker and Arnott, 1833), later transferred to *Metrosideros* (J. D. Hooker, 1847), and was finally segregated as a new genus by Grisebach (1854). Grisebach (l.c., 120) described a second species, *T. philippiana*, which is now treated as a synonym of *T. stipularis*. *Tepualia stipularis* is restricted to southern Chile and southern Argentina in lowland to lower montane sites where, according to herbarium labels, it grows in open, often swampy forest including Nothofagus forest.

DESCRIPTION OF TEPUALIA GRISEBACH

Small trees; branching apparently varying from predominantly monopodial to predominantly sympodial; specialised bud scales wanting; leaves (fig. 1) opposite, dorsiventral, leptophyllous, leaf bases flanked by pairs of spherical vesicles produced from the winged ridges of the stems (fig. 1); young vegetative parts and flowers sparsely pubescent, mature vegetative parts glabrous.

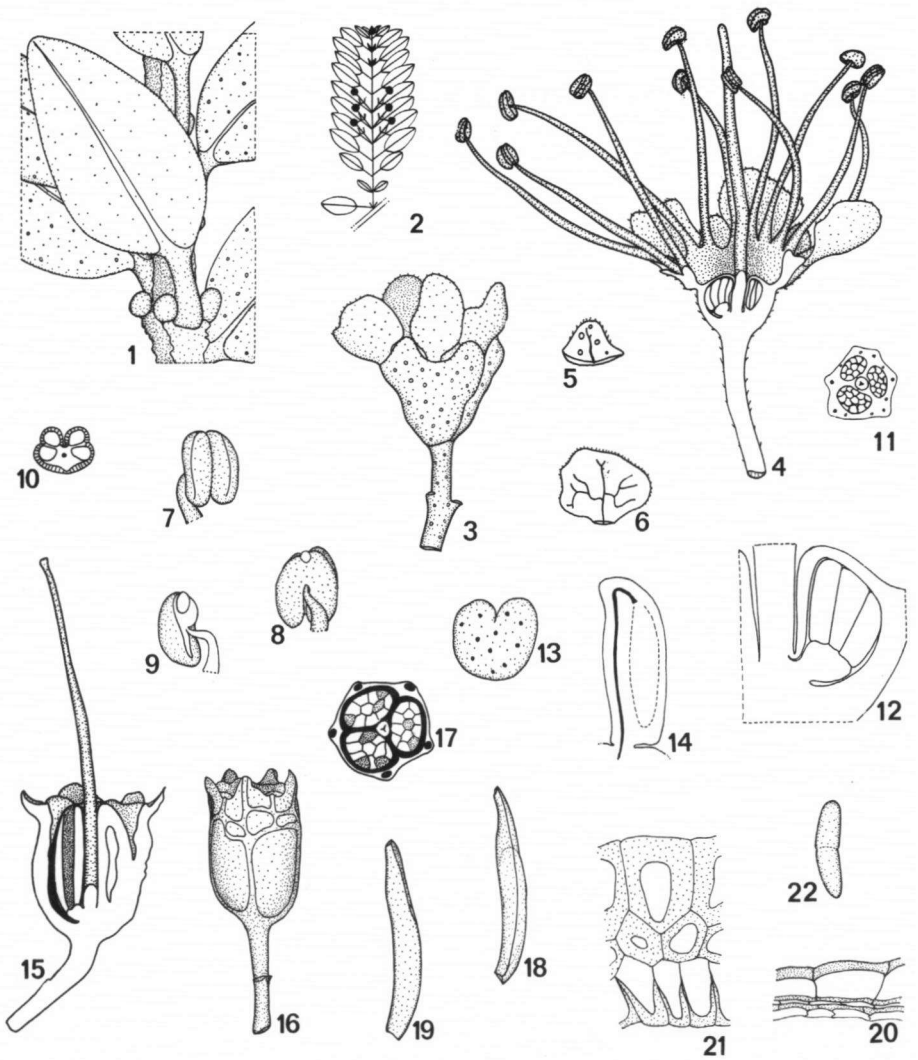
Inflorescences one-flowered[1]), bracteolate, in leaf axils at the beginning or towards the middle of a season's growth (fig. 2); the part of the branch beyond the inflorescence group eventually ending in a bud (fig. 2) which is sometimes abortive; a few resting buds often formed in leaf axils a few nodes below the branch tip (fig. 2).

Sepals (fig. 5) 5, short, rounded; petals (fig. 6) 5, rounded, white; stamens about four times as numerous and several times longer than the petals, free, not grouped; anthers (figs. 7—10) dorsifixed, versatile, with one large oil gland at the tip of the connective.

Ovary 3-loculed (fig. 11); style longer than the stamens, set in almost to the base of the ovary (figs. 4, 12); stigma small, convex; placentas oblique in the basal angles of the locules (fig. 12); ovules 10—15 per locule (fig. 11), in a random pattern on the placenta (fig. 13), anatropous (fig. 14), nucellus and inner integument probably[2]) two-layered and the outer integument partly two-layered in the median transverse plane of the ovule; all ovules potentially fertile.

[1]) Hooker (1847) describes the inflorescences as 1—3-flowered. The flowers were all single in leaf axils in the specimens I have seen.

[2]) Sections were made from soaked herbarium material so cell details could not be seen so clearly as in preserved material.



Figs. 1—22. *Tepualia stipularis*.—1. Portion of stem showing leaves and nodal vesicles; ×5. — 2. Diagram of a branch with a group of flowers. Terminal, probably abortive bud and four lateral buds shown as black triangles; nat. size. — 3. Habit of flower with stamens and style removed; ×7. — 4. L.S. flower; ×7. — 5. Sepal; ×7. — 6. Petal; ×7. — 7. Ventral view anther; ×20. — 8. Dorsal view anther; ×20. — 9. L.S. anther; × 20. — 10. T.S. anther; × 20. — 11. T.S. ovary; ×7. — 12. L.S. ovary; ×18. — 13. Placenta. Large spots are ovule scars; × 20. — 14. L.S. ovule. Position of nucellus indicated by dotted line; × 23. — 15. L.S. undehisced fruit. A fertile seed stippled; ×7. — 16. Dehisced fruit; × 5. — 17. T.S. undehisced fruit. Fertile seeds stippled. Lignified tissue black; ×7. — 18. Fertile seed; ×10. — 19. Sterile seed; ×10. — 20. Cell detail T.S. testa fertile seed. Outer layer inner integument and wall thickenings outer layer outer integument stippled; × 300. — 21. Cell detail T.S. testa sterile seed. Wall thickenings stippled; × 300. — 22. Embryo; × 10. (Figs. 1—14: *K.H3824/67.2*; figs. 15—22: *K.H3824/67.1*).

In the mature fruit the capsule extending to about the level of the hypanthial rim (fig. 15); style not carried up during extension of capsule; veins of hypanthium strongly developed (figs. 16, 17).

Fertile seeds (fig. 18) few; testa derived from both integuments (fig. 20); outer layer of outer integument brown and with moderately thickened inner and outer walls; inner layer of outer integument thin-walled and crushed; outer layer of inner integument brown and greatly flattened tangentially, wall thickenings, if any, not discernable; inner layer of inner integument thin-walled and colourless.

Sterile seeds (fig. 19) consisting of the outer integument only, the cells of the outer layer, or layers, strongly and evenly thickened, the cells of the inner layer moderately thickened on their inner and radial walls.

Embryo (fig. 22) straight or slightly curved; hypocotyl about equal to the cotyledons; hypocotyl sheath wanting; cotyledons approximately the same width as the hypocotyl and lying face to face.

Seed release entirely through the distal free part of the capsule (Movia, 1964).

DISCUSSION

The peculiar stem vesicles, the gynobasic style and more or less basal placentas with relatively few erect ovules support the generic segregation of *Tepualia*. In addition, Pike (1956) reports that the genus differs from all others in the subfamily in having dicolporate instead of tricolporate pollen.

Tepualia is correctly placed in the subtribe *Metrosiderinae*, but appears to be more akin to *Mearnsia* (Dawson, 1970a) than to *Metrosideros* (1970b). The frequent sympodial branching of *Tepualia* might suggest a link with *Metrosideros*, but the manner of this branching is more like that occasionally found in some species of *Mearnsia* i.e. the last one or two internodes as well as the apex of a branch abort rather than just the apex alone as in *Metrosideros* (Dawson, 1968).

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