

**PACIFIC CAPSULAR MYRTACEAE 14.
BAECKEA (NEW CALEDONIA)**

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INTRODUCTION

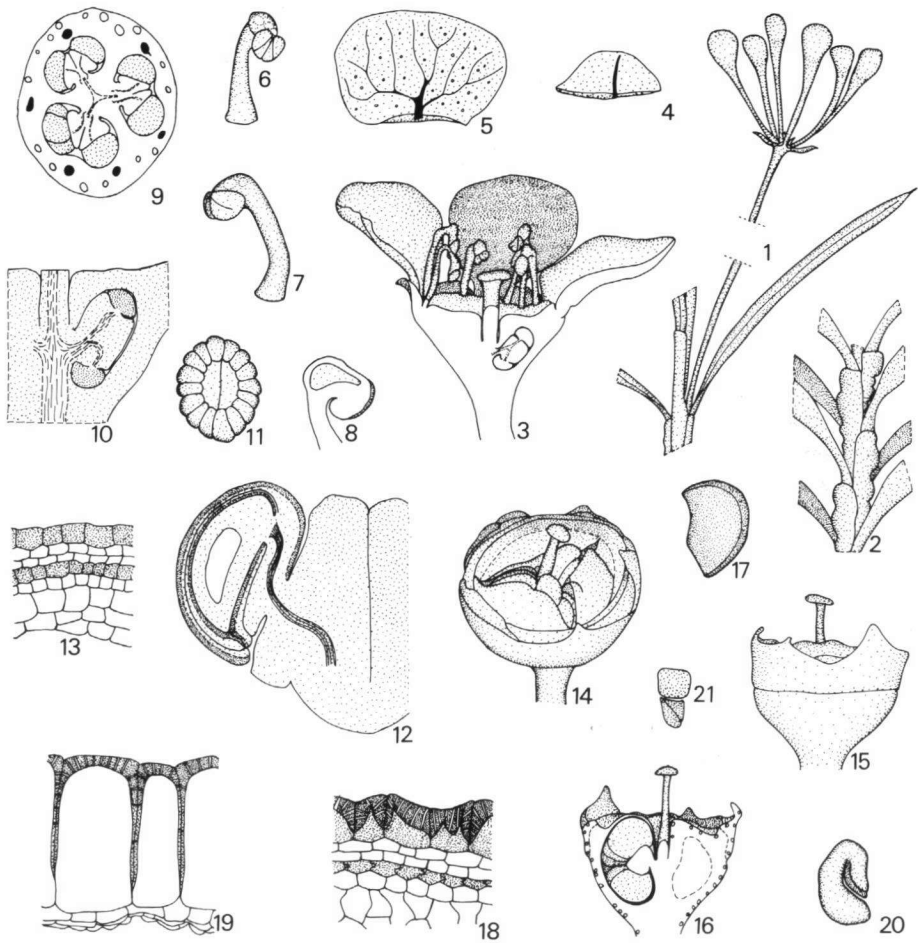
Baeckea Linn., Sp. Pl. 1 (1753) 358, ranges from Australia to south east Asia, New Guinea, and New Caledonia. About 70 of the approximately 90 species are endemic to Australia, being found there in all states, except the Northern Territory, with the greatest concentration in Western Australia.

The type species is *B. frutescens* L. from Malaya and south China.

The taxonomy of the New Caledonian representatives is still being worked out, but there are about five species and their combined ranges extend throughout the main island and the Isle of Pines at low to middle elevations on rocks of all types.

DESCRIPTION OF BAECKEA (NEW CALEDONIA)

Shrubs; branching monopodial; bud scales wanting; leaves nanophyllous, ovate to needle-like (fig. 1), dorsiventral, opposite, acute to rounded at the tip and apiculate, strongly decurrent with saccate bases extending through two internodes (fig. 2); all parts glabrous. *Inflorescences* (fig. 1) in the axils of unreduced leaves, simple umbels with up to 7 flowers, reduced from dichasial cymes; bracts and bracteoles lanceolate, the terminal flowers ebracteolate; hypanthium not (fig. 3) or only a little extended above the top of the ovary; sepals (fig. 4) 5, rounded; petals (fig. 5) 5, more or less orbicular; stamens (figs. 6, 7, 8) 8—19 in a single series, tending to be grouped opposite the sepals (fig. 3), shorter than the petals, filaments tending to be curved over distally towards the centre of the flower; anthers small, dorsifixed, non-versatile with protuberant connectives usually containing one large oil gland (fig. 8), dehiscence longitudinal; ovary completely inferior (fig. 3), three-locular (fig. 9); style short (fig. 3), deeply set in to the ovary; stigma discoid, sometimes more or less triangular, wider than the style; placentas adjacent to the base of the style (figs. 3, 10), axile, downwardly angled and extending nearly or completely across the locules to the ovary wall, rhomboidal (fig. 12) to triangular (fig. 9) in transverse section; ovules (fig. 12) numerous, hemitropous, in a single ring round the shaft of the placenta (fig. 11); each integument two-layered and the nucellus three- to four-layered in the median transverse plane of the ovule; the outer layer of the outer integument and the inner layer of the inner integument with brown pigmentation (fig. 13); all ovules potentially fertile. *Fruits* (figs. 14, 15, 16) with slightly exserted capsules, placentas becoming separated from the ovary wall (fig. 16); seeds laterally flattened and semi-discoid (fig. 17); fertile seeds few, testa (fig. 18) derived from both integuments, the outer layer of the outer integument with brown contents and heavily thickened, prominently pitted outer walls; the inner layer of the outer



Figs. 1—21. *Baeckea* L. — 1. *B. pinifolia*. Leaf and inflorescence with flower buds; $\times 3$. — 2. *B. ericoides*. Saccate leaf bases; $\times 5$. — 3. *B. virgata*. L.S. flower; $\times 8$. — 4. *B. virgata*. Sepal; $\times 8$. — 5. *B. virgata*. Petal; $\times 8$. — 6, 7. *B. pinifolia*. Stamens; $\times 15$. — 8. *B. pinifolia*. Anther. L.S. through connective. Oil gland, open stipple; $\times 20$. — 9. *B. pinifolia*. T.S. ovary. Ovules stippled; $\times 13$. — 10. *B. virgata*. L.S. ovary. Ovules, close stipple; $\times 15$. — 11. *B. pinifolia*. Distal view placenta and ovules; $\times 15$. — 12. *B. virgata*. L.S. ovule. Pigmented outer layer outer integument and inner layer inner integument stippled; $\times 75$. — 13. *B. virgata*. Cell detail T.S. ovule. Pigmented layers of integuments stippled; $\times 250$. — 14. *B. pinifolia*. Dehiscing fruit; $\times 8$. — 15. *B. pinifolia*. Fruit, side view. Distal portion hypanthium of collapsed brown cells; $\times 8$. — 16. *B. pinifolia*. L.S. fruit; $\times 8$. — 17. *B. pinifolia*. Fertile seed; $\times 15$. — 18. *B. pinifolia*. Cell detail T.S. testa fertile seed. Close stipple, wall thickening. Open stipple, pigmented outer layer outer integument and inner layer inner integument; $\times 250$. — 19. *B. pinifolia*. Cell detail T.S. testa sterile seed. Wall thickening stippled; $\times 250$. — 20. *B. pinifolia*. Embryo; $\times 15$. — 21. *B. pinifolia*. T.S. embryo; $\times 20$. (*B. pinifolia*. Fig. 1: WELTU 9662; figs. 7—9, 11: McKee 28907; figs. 6, 14—21: McKee 23302. *B. virgata*. Figs. 3—5, 10: McKee 29905; figs. 12, 13: WELTU 9616. *B. ericoides*. Fig. 2: McKee 29235.)

integument colourless and thin-walled and without crystals; the outer layer of the inner integument colourless and thin-walled; the inner layer of the inner integument thin-walled and with brown contents; a few layers of nucellus tissue persistent within the testa. Sterile seeds similar in shape to the fertile, testa (fig. 19) derived from the outer integument and crushed remains of the inner integument; outer layer of the outer integument of radially elongate cells with thick outer and moderately thick radial walls and brown contents; inner layer of outer integument with small, relatively thin-walled cells. *Embryo* (fig. 20) bent through 180° at the hypocotyl/cotyledons junction; cotyledons lying face to face, smaller than the hypocotyl and obliquely oriented to it (fig. 21); no hypocotyl sheath.

DISCUSSION

The New Caledonian species of *Baeckea* agree in all essential features, but an examination of material of the type species and of six species from Western Australia reveals considerable variation in the genus as a whole (Table I).

Table I

	Placentas protruding	Anther connectives enlarged	Filaments versatile	
<i>B. frutescens</i> (type species) (D. A. Faber 3, Billiton Isld. nr E. Sumatra)	-	-	+	-
<i>B. spp</i> (New Caledonia)	+	+	-	-
<i>B. crispiflora</i> (UWA 824)	+	+	-	-
<i>B. pentagonantha</i> (UWA 826) <i>B. tenuirama</i> (UWA 829)	-	+	-	-
<i>B. camphorosmae</i> (UWA 823) <i>B. grandiflora</i> (UWA 825) <i>B. pulchella</i> (UWA 827) <i>B. staminosa</i> (UWA 828)	-	+	-	+

The New Caledonian species come into Niedenzu's subgenus *Hysterobaeckea*, section *Harmogia*, which is based on stamen characters. Consideration of other characters, including placenta form, may make necessary a revision of Niedenzu's scheme (Niedenzu, 1892).

Baeckea is the type genus of the tribe *Baeckeeae*, which is characterised by short stamens and more particularly by the small cotyledons of the embryo which are bent back against the much larger hypocotyl (fig. 20).

Comparing the New Caledonian species of *Baeckea* with genera reviewed earlier in this series it is surprising to find that they share some distinctive features with

Xanthostemon (Dawson, 1973), a genus of very different habit, comprising shrubs and trees with large leaves and large flowers with long stamens. The shared features are the protruding placentas with a lateral ring of hemitropous ovules, the semi-discoid seeds, the pattern of pigmented layers in the testa, and the bent embryo. It is perhaps significant that the two species of another genus of the *Baeckeeae*, *Balaustion*, although small plants with small leaves, have large flowers, which despite their short stamens are very reminiscent of those of some species of *Xanthostemon*, for example, *X. aurantiacum* of New Caledonia.

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