PACIFIC CAPSULAR MYRTACEAE 5

The Metrosideros Complex: M. elegans Group

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INTRODUCTION

The species at present known as *Metrosideros elegans* was the basis for *Ballardia* Montr., Mem. Acad. Lyon 10 (1860) 204. The later described species of the *M. elegans* group were placed in *Metrosideros* Banks *ex* Gaertn., Fruct. 1 (1788) 170, t. 34, and Beauvisage (1901) finally sank *Ballardia* in *Metrosideros* when he combined *B. elegans* Montr., Mem. Acad. Lyon 10 (1860) 205, with *M. laurifolia* var. *minor* Br. et Gris, Bull. Bot. Soc. Fr. 12 (1865) 300 under the binomial *Metrosideros elegans*. The group has remained in *Metrosideros* since that time.

So far as is known the group is restricted to New Caledonia. The species may occur at quite low elevations, but are most common between about 300 and 1,500 metres altitude in forest or shrubland.

The distinctions between the species are still not clear. Guillaumin (1948) lists three members of the group — *M. demonstrans* Tison, *M. laurifolia* Br. et Gris, Bull. Bot. Soc. Fr. 12 (1865) 300, and *M. elegans* (Montr.) Beauv. — and some ramiflorous specimens recently collected by Dr. McKee (*McK. 19.658, 20.482*) are probably of an undescribed species.

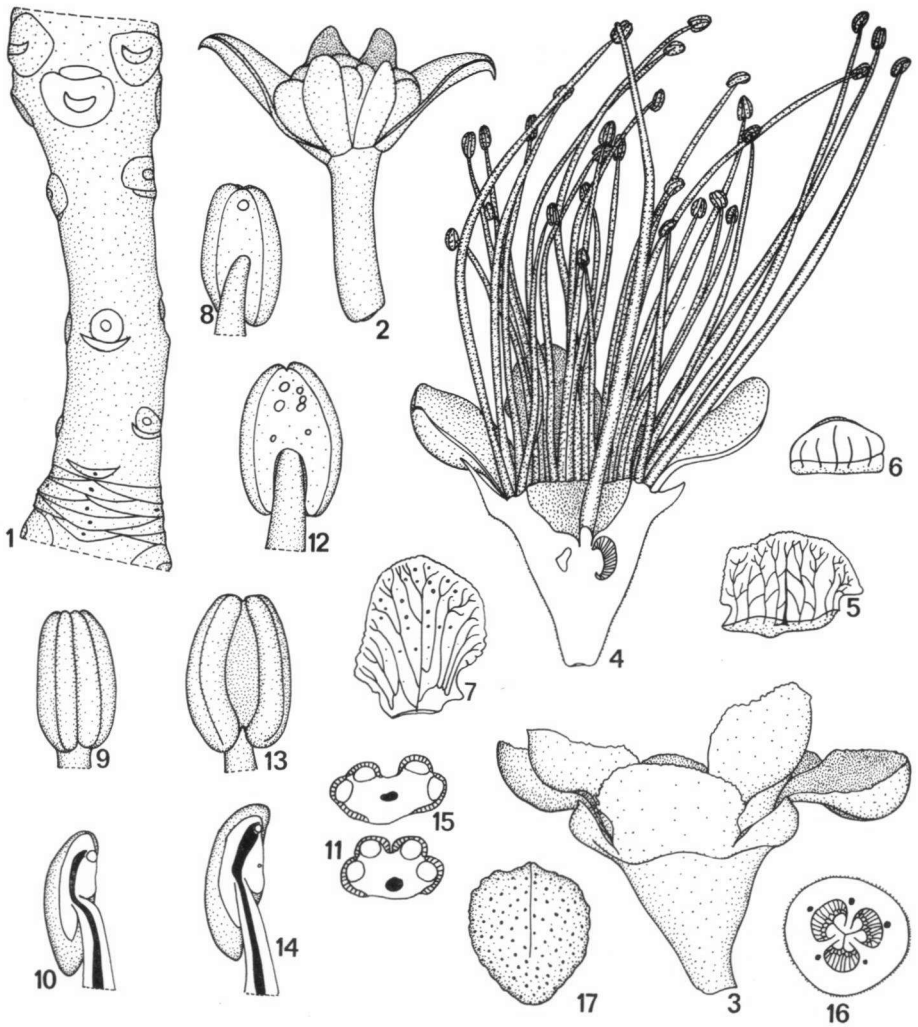
DESCRIPTION OF THE METROSIDEROS ELEGANS GROUP

Shrubs to small trees, terrestrial or epiphytic; branching monopodial; dormant buds protected by several to many pairs of caducous scales (fig. 1), leaves opposite, dorsiventral, microphyllous to mesophyllous; young parts almost glabrous or with appressed silvery hairs, mature parts mostly glabrous.

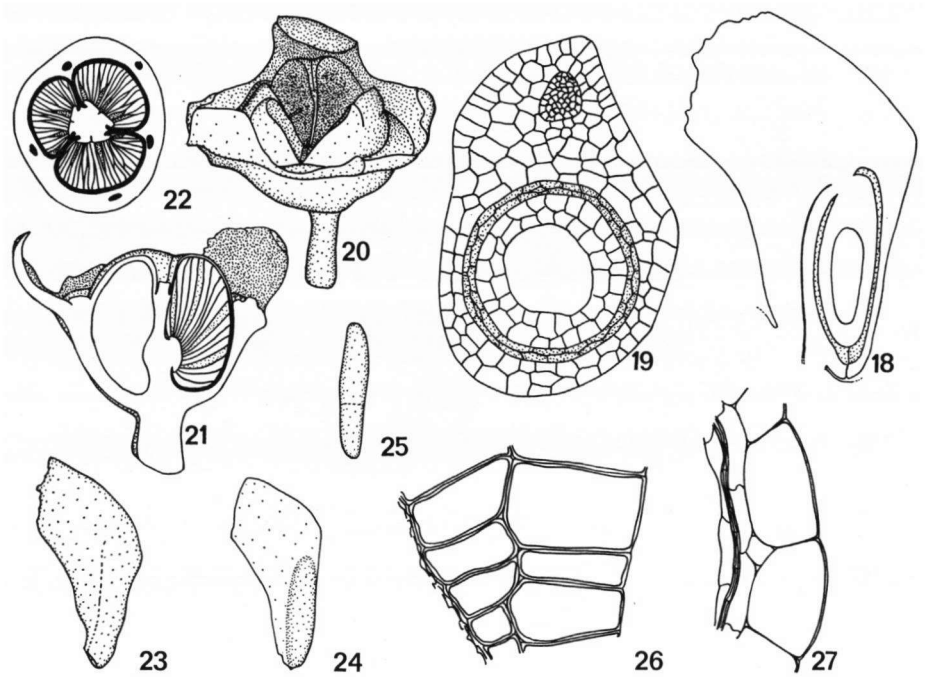
In each seasons growth (fig. 1) the inflorescences are formed in the axils of caducous bracts immediately above the bud scales and below a few pairs of foliage leaves and the terminal overwintering bud; the opposite pairs of inflorescences (sometimes in whorls of four) are separated by internodes, but the foliage leaves are often pseudoverticillate; inflorescences (fig. 2) mostly, and at most, 3-flowered, the central flower ebracteolate.

Hypanthium and sepals thick and firm in texture (fig. 4); sepals 5, two much smaller than the others (figs. 3, 5, 6); petals (fig. 7) 5, sometimes 2 or 3 then probably caducous*, yellow; stamens also yellow, about as long as or several times longer than the petals (fig. 4) in one, two, or sometimes three whorls, in the last two cases the inner stamens shorter than the outer (fig. 4), free, not grouped; anthers (figs. 8—15) with fairly broad, flat to slightly convex connectives which overlap the tip of the filament to varying

*) This refers to the undescribed species of which only flower buds and young fruits have been seen.



Figs 1—17. *Metrosideros demonstrans*. — 1. Part of stem several years old. Bud scale scars below, more or less circular inflorescence scars in middle region each associated with a bract scar, leaf scars above; × 1½. — 2. Inflorescence with three flower buds; × 1½. — 3. Habit of flower with stamens removed; × 2. — 4. L.S. flower; × 2. — 5. Large sepal; × 2. — 6. Small sepal; × 2. — 7. Petal; × 2. — 8—11. Plant A. Dorsal, ventral, L.S. and T.S. views of anther; × 12. — 12—15. Plant B. Dorsal, ventral, L.S. and T.S. views of anther; × 12. — 16. T.S. ovary; × 2. — 17. Placenta. Large dots are ovule scars; × 12. (Figs. 1, 12—15: *WELTU 9547*; figs. 2—11, 16, 17: *WELTU 9559*).



Figs. 18—27. *Metrosideros demonstrans.* — 18. L.S. ovule. Inner integument stippled; ×50. — 19. T.S. ovule. Inner integument stippled; ×150. — 20. Empty fruit; ×2. — 21. L.S. undehisced fruit. Fertile seeds stippled; ×2.— 22. T.S. undehisced fruit. Fertile seeds stippled; ×2.— 23. Sterile seed; ×8.—24. Fertile seed; ×8. — 25. Embryo; ×12. — 26. T.S. testa sterile seed. Epidermis to right; ×400. — 27. T.S. testa of fertile seed. Outer integument to right; × 400. (Figs. 18, 19: *WELTU 9559*; figs. 20—27: *Blanchon 775*).

extents (figs. 10, 14); one to several prominent oil glands towards the tips of the connectives; filament dorsifixed, versatile; anther dehiscence longitudinal.

Ovary inferior; usually three locules; style shorter than to about as long as the longest stamens, more or less set into the top of the ovary; stigma small, eonvex; placentas axile (figs. 4, 16); ovules (fig. 18) anatropous, numerous, obliquely winged from the chalazal end, close set all over the placenta (fig. 17); nucellus and integuments mostly two-layered in the median transverse plane of the ovule (fig. 19); all ovules potentially fertile.

In the mature fruit the base of the style and the placentas become separated by the elongation of the tissue between them (cf. figs. 4 and 21).

Fertile seeds few, obliquely winged (fig. 24); testa derived from both integuments (fig. 27), colourless; outer layer of outer integument of large thin-walled cells; inner layer of outer integument of smaller thin-walled cells, often crushed; outer layer of inner integument greatly flattened tangentially with moderately thickened inner and outer walls; inner layer of inner integument thin-walled, often crushed.

Sterile seeds (fig. 23) apparently consisting of outer integuments only with moderately and evenly thickened cells (fig. 26).

Embryo (fig. 25) straight; hypocotyl equal to or shorter than the cotyledons; hypocotyl sheath wanting; cotyledons approximately the same width as the hypocotyl and lying face to face.

DISCUSSION

The *Metrosideros elegans* group appears to be correctly placed in the subtribe *Metrosiderinae*. It agrees (a) with typical *Metrosideros* (Dawson, 1970a) in having bud scales, in sometimes being epiphytic, and in the elongation of the tissues between the placentas and style base during maturation of the fruit; and (b) with *Mearnsia* (Dawson 1970b) in its monopodial branching and in the derivation of the testa.

However, the group differs from the above genera in the following respects: each season's growth in mature plants is at first reproductive, then vegetative; the flowers are yellow (In *Metrosideros* and *Mearnsia* the flowers of most species are red and of the remainder white or pink. However, some of the red-flowered species have yellow-flowered forms, usually rare.); the sepals are very unequal; the connective of the anther is fairly broad and overlaps the tip of the filament to some extent; the ovules and seeds are winged; brown pigmentation is apparently wanting in the testa; the epidermal cells of the testa are thin-walled.

These differences may be sufficient to justify recognition of the group as a distinct genus.

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