BLUMEA 22 (1975) 295—297

CAPSULAR MYRTACEAE 10*

The Metrosideros Complex: M. angustifolia (South Africa)

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INTRODUCTION

As is the case with *Tepualia stipularis* for South America, *Metrosideros angustifolia* Sm., Trans. Linn. Soc. 3 (1797) 270, is the sole representative of the capsular *Myrtaceae* in Africa.

It occurs as a shrub or small tree at lower elevations, often along river banks, in the south-west corner of South Africa.

DESCRIPTION OF METROSIDEROS ANGUSTIFOLIA

Shrub to small tree; branching monopodial; bud scales wanting; leaves linear, opposite, dorsiventral, microphyllous; young leaves and stems silky pubescent.

Inflorescences (fig. 1) axillary, in groups at the ends of branches which eventually resume vegetative growth; each inflorescence with a terminal and one or two pairs of lateral dichasial cymes.

Inflorescence axes, bracts, exterior hypanthium, sepals, petals, exposed distal part of ovary and adjacent interior hypanthium with a short pubescence.

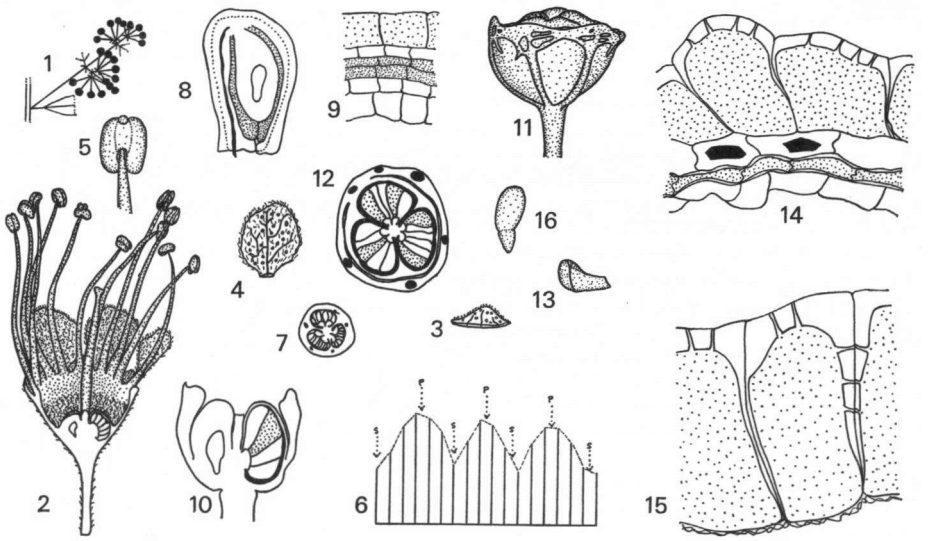
Sepals (fig. 3) 5, free; petals (fig. 4) 5, free, white to cream; stamens (figs. 2, 5) 25—30, free, white or cream, in a single series from the hypanthial rim, varying in length in a regular fashion (fig. 6), the shortest stamens being opposite the sepals and the longest opposite the petals; anthers (fig. 5) dorsifixed, versatile, with one large oil gland at the tip of the connective.

Ovary semi-superior (fig. 2), 3-loculed (fig. 7); style set into the top of the ovary; stigma small, discoid, well below level of anthers; placentas axile; ovules anatropous (fig. 8), numerous, close-set all over the surface of the placenta; nucellus and each integument 2-layered in the median transverse plain of the ovule (fig. 9), the outer layer of the outer integument with a brown pigmentation; all ovules potentially fertile.

Tissue between style and placenta not elongating in the fruit (fig. 10), veins of hypanthium strongly developed (figs. 11, 12).

Fertile seeds (fig. 13) few to many; testa (fig. 14) derived from both integuments, the outer layer of the outer integument with brown contents and thick outer walls containing prominent pits; the inner layer of the outer integument thin-walled and colourless with one or a few prismatic crystals in each cell; the outer layer of the inner integument flattened tangentially with moderately thickened inner and outer walls and brown contents; inner layer of inner integument thin-walled.

* The usual title for this series is "*Pacific Capsular Myrtaceae*" but this seems inappropriate for the present species, although its affinities certainly lie in Australasia and the Pacific.



Figs. 1—16. *Metrosideros angustifolia* — 1. Diagram of inflorescence; black dots represent flowers; ×1.—2. L.S. flower; ×5. —3. Sepal; ×5. —4. Petal; ×5. —5. Anther, dorsal view; ×15. —6. Pattern of stamen lengths. Stamens represented by vertical lines; S=insertion of median sepal trace; P=insertion of petal trace; ×7. —7. T.S. ovary; ×5. —8. L.S. ovule; inner integument stippled; ×90. — 9. Cell detail T.S. ovule; inner integument close-stipple, pigmented outer layer of outer integument open-stippled; ×360. —10. L.S. nearly mature capsule; fertile seed stippled; ×5. —11. Capsule; ×5. —12. T.S. nearly mature capsule; fertile seeds stippled; ×5. —13. Fertile seed; ×5. —14. Cell detail T.S. testa fertile seed; brown pigmented contents of outer layers of integuments stippled; crystals black; ×360. —15. Cell detail T.S. testa sterile seed; brown pigmented contents of cells stippled; ×360. —16. Embryo; ×10. (figs. 1—9: preserved material collected by *E. A. Schelpe* at the Witte River Valley at Bain's Kloof, Paarl Div. Cape Prov.; figs. 10—16: *E. Esterhuysen 15317*).

Sterile seeds similar in shape to fertile; testa (fig. 15) consisting largely of outer layer of outer integument.

Embryo (fig. 16) straight or slightly curved; hypocotyl shorter than the cotyledons; no hypocotyl sheath; cotyledons a little wider than the hypocotyl and lying face to face.

Seed release entirely through the free distal part of the capsule.

DISCUSSION

Metrosideros angustifolia exhibits two features not recorded in previous articles on the "Metrosideros Complex", viz. crystals in the testa, and variation in stamen length in each flower according to a regular pattern. On re-examination, some of the species considered previously were found to have the latter feature, although with less difference in length between the longest and shortest stamens, e.g. *Metrosideros robusta* and *Mearnsia halconensis*. Testa crystals have not yet been observed in other members of the *Metrosiderinae sens. strict.*

Apart from the testa crystals, *Metrosideros angustifolia* seems to be correctly placed in the *Metrosiderinae*, although probably not in *Metrosideros* from which it differs in branching habit, vegetative bud form, inflorescence position, and capsule structure. In these respects it agrees with *Mearnsia* and allied groups.

ACKNOWLEDGEMENTS

I am very grateful to Professor E. A. Schelpe of the Bolus Herbarium, Cape Town, for collecting the material of *Metrosideros angustifolia.*

SUPPLEMENTARY NOTE

In Part 2 of this series (Blumea 18: 441—445) it was stated that in the *Metrosideros collina* group the testa is derived from the outer integument only. An improved sectioning technique has shown that it is derived from both integuments and that its anatomical pattern is similar to that of the other groups considered to be true members of the *Metrosiderinae.* In this pattern the outer layers of each integument have wall thickenings and usually brown contents, and the inner layers have thin walls and lack pigmentation.