

A REVISION OF *MELALEUCA* L. (MYRTACEAE) IN NORTHERN AND EASTERN AUSTRALIA, 3.

N.B. Byrnes

formerly Queensland Herbarium, Meiers Road, Indooroopilly, Qld 4068

Summary

Melaleuca alternifolia (Maiden & Betche) Cheel, *M. arcana* S.T. Blake, *M. argentea* W.V. Fitzg., *M. armillaris* (Sol. ex Gaertner) Smith, *M. bracteata* F. Muell., *M. cajaputi* Powell, *M. capitata* Cheel, *M. dealbata* S.T. Blake, *M. deanei* F. Muell., *M. decora* (Salisb.) J. Britten, *M. diosmatifolia* Dum-Cours., *M. ericifolia* Smith, *M. groveana* Cheel & White, *M. howeana* Cheel, *M. kunzeoides* Byrnes, *M. lanceolata* Otto, *M. leucadendra* (L.) L., *M. linophylla* F. Muell., *M. nervosa* Lindley, *M. parvistaminea* Byrnes, *M. pustulata* J.D. Hook., *M. saligna* Schauer, *M. sericea* Byrnes, *M. sieberi* Schauer, *M. squamea* Labill., *M. stenostachya* S.T. Blake, *M. styphelioides* Smith, *M. viminalis* (Sol. ex Gaertner) Byrnes are described and maps of their distributions given. *M. quinquenervia* (Cav.) S.T. Blake is included in *M. viridiflora* (as *M. viridiflora* var. *rubriflora* Brong. & Gris). Four other varieties of the species are recognised. *Callistemon viminalis* is referred to *Melaleuca* (as *M. viminalis* (Sol. ex Gaertner) Byrnes).

This is the last of a series of three papers. The others appeared in *Austrobaileya* 2: 65-76 (1984) and *Austrobaileya* 2: 131-146 (1985). Detailed descriptions of some taxa whose names were validated in the first paper are given. The map numbers correspond with the species numbers.

32. *M. nervosa* (Lindley) Cheel, Proc. Roy. Soc. N.S.W. 78: 65 (1944); S.T. Blake, Cont. Qd Herb. 1: 43 (1968). Based on *Callistemon nervosus* Lindley in Mitch., Trop. Aust. 235 (1848). **Type:** Queensland, Balmy Creek, Jul 1846, *Mitchell* 241 (holo CGE, iso MEL, NSW).

Synonyms: see S.T. Blake (*loc. cit.*).

Shrub or tree to 10 m high. Bark layered, fibrous and papery. Branchlets tomentose with short and long hairs. Leaves scattered, flat, narrowly to very broadly obovate or elliptical, acute to obtuse, commonly apiculate, narrowly attenuate to cuneate at base, 30-120 mm long, 5-30 mm wide, tomentose with long weak and short crispid hairs, glabrescent, 3-7-veined, oil glands obscure; petioles 4-10 mm long, usually retaining indumentum. Inflorescence a many-flowered, open or dense terminal or upper axillary spike, often 2-4 together; flowers in triads; rachis densely villous, growing out after anthesis; bracts ovate, to 8 mm long, striate, villous with glabrous margins, caducous; bracteoles absent. Calyx tube turbinate to cylindrical, 1.8-3 mm long and wide, densely tomentose; lobes broadly triangular, to 1 mm long, tomentose, usually without hyaline margins. Petals white, yellow or red, elliptical to nearly circular, without claws, to 4 mm long. Stamens usually yellow-green or red; claw 0.5-2 mm long (sometimes with free stamens); filaments 3-5(-7) attached to margin of each claw; free part to 20 mm long. Style to 20 mm long, glabrous; stigma capitate. Ovary to 2 mm long, pubescent above. Fruit cup-shaped, 24 mm long and wide, orifice 1-3 mm diam., calyx lobes deciduous; in open or dense spikes.

Melaleuca nervosa has a wide range of forms which are partly genetically and partly ecologically determined. Intermediates between these forms are common but because the forms are distinct in appearance in the field and occur in comparatively large populations in pure stands their recognition is warranted (see key).

M. nervosa f. *nervosa* is usually a shrub with erect branchlets and a more fibrous than papery bark. It is found growing in drier localities; that is, in desert regions or on stony or sandy ridges.

Selected specimens. Western Australia. 27 miles [43 km] SW of Luluigui Station, Kimberley, Sep 1959, *Lazarides* 6543 (BRI). Northern Territory. 35 miles [56 km] SSE of Victoria River Downs, Jun 1949, *Perry* 2145 (BRI); near Tennant Creek, Jun 1946, *Blake* 15986 (BRI). Queensland. BURKE DISTRICT: 13 miles [21 km] SW of Croydon Township, Aug 1953, *Perry* 3927 (BRI). NORTH KENNEDY DISTRICT: 1.5 miles [2 km] W of Pentland, Jun 1953, *Perry* 3566 (BRI).

Melaleuca nervosa f. *latifolia* Byrnes, *Austrobaileya* 2: 74 (1984). **Type:** Northern Territory, about SE of Brocks Creek, Jul 1946, *Blake* 16344 (BRI, holo).

This form is similar to *f. nervosa* but differs in having broader more distinctly obovate leaves sometimes up to 40 mm wide. It is common on heavy soils which are seasonally flooded.

Selected specimens. Western Australia. Near Beagle Bay Mission, Kimberley, Sep 1959, *Lazarides* 6560 (BRI). Queensland. COOK DISTRICT: Bathurst Bay, Jul 1972, *Hyland* 6303 (BRI). PORT CURTIS DISTRICT: 4 miles [6 km] N of Marlborough Township, Jun 1963, *Lazarides* 6878 (BRI); Curtis Island, Apr 1962, *Home* s.n. (BRI).

Melaleuca nervosa f. pendulina Byrnes, *Austrobaileya* 2: 74 (1984). **Type:** Queensland. Cook District: Coen, Aug 1948, *Brass* 19778 (BRI, holo).

This form is usually a pendulous tree with papery bark growing on levees. It has commonly been confused with *M. argentea* but differs from this species in having fewer stamens, usually less than 25 per flower, and having a less persistent indumentum on the leaves consisting of short crispid hairs and longer straight hairs.

Selected specimens. Northern Territory. Nicholson R. area, Jun 1974, *Henshall* 303 (BRI); 62 miles [99 km] 149° from Darwin, Aug 1965, *Story* 7789 (BRI). Queensland. COOK DISTRICT: Laura R., Laura, Jun 1971, *Hyland* 5204 (BRI). PORT CURTIS DISTRICT: Auckland Ck, Gladstone, Jun 1960, *Trapnell* 14 (BRI).

Intergrades among all three forms can be found and specimens may be hard to identify, but usually populations can be readily distinguished in the field. Indications are that ecological conditions influence the growth pattern of the plants.

33. Melaleuca dealbata S.T. Blake, Cont. Qd Herb. 1:41 (1968). **Type:** Northern Territory. ca 12° 40'S, 131° 25'E, Sep 1946, *Blake* 17000 (holo, BRI).

Tree to 25 m high. Bark layered, papery. Branchlets densely tomentose with short crispid hairs. Leaves scattered, flat, broadly elliptical to broadly obovate, acute, commonly apiculate, attenuate at base, 50–120 mm long, 10–32 mm wide, densely tomentose with short crispid hairs and few long straight hairs mainly near margin, hairs usually semi-persistent (some trees leaves glabrescent early), 3–9-veined, usually visible, oil glands obscured by indumentum; petioles 6–10 mm long, tomentose. Inflorescence a usually open, many-flowered, upper-axillary or terminal spike, often several together; flowers in triads; rachis densely tomentose, usually growing out at anthesis (some not growing out at all); bracts narrowly triangular, tomentose, caducous; bracteoles absent. Calyx tube cylindrical to turbinate, 2–2.5 mm long, 2.5–3.5 mm wide, densely tomentose; lobes triangular to ovate, 0.8–1.6 mm long, densely tomentose. Petals white, broadly elliptical, 2.5–3.5 mm long. Stamens white, glabrous; claw 0.8–2 mm long; filaments 4–9 attached to margin of each claw, free part to 8 mm long. Style 8–10 mm long, glabrous, stigma capitate. Ovary to 1.5 mm long, pubescent above. Fruit barrel or cup-shaped, 3–4 mm long and wide, orifice 1.5–2 mm diam.; calyx lobes absent; in open elongate spike.

Northern Australia including Arnhem Land, Northern Territory, Cape York Peninsula and the east coast of Queensland south to Fraser Island; also in New Guinea.

Selected specimens. Northern Territory. Bank of Howard R., Sep 1946, *Blake* 16949 (BRI). Queensland. COOK DISTRICT: Lankelly Ck, 13° 55'S, 143° 15'E, Oct 1969, *Webb & Tracey* 9688 (BRI). WIDE BAY DISTRICT: Fairymead, near Bundaberg, Oct 1948, *Smith* 4147 (BRI).

This species is usually persistently hoary and so easily distinguished from related species in the field but early glabrescent populations have been found in the Northern Territory.

34. Melaleuca stenostachya S.T. Blake, Cont. Qd Herb. 1:50 (1968). **Type:** Burke District: Croydon, Jul 1954, *Blake* 19566 (BRI, holo).

Shrub or small tree to 8 m high. Bark layered, fibrous and/or papery. Branchlets tomentose, glabrescent. Leaves scattered, flat, narrowly ovate to narrowly obovate, acute to acuminate, often apiculate, narrowly cuneate at base, 30–140 mm long, 4–14 mm wide, appressed sericeous, soon glabrescent, 3–7-veined, oil glands often obscure; petioles to 4 mm long. Inflorescence a many-flowered, dense to open, upper-axillary or terminal spike, often 2–4 together; flowers in triads; rachis villous, usually growing out after anthesis; bracts caducous (not seen); bracteoles absent. Calyx tube campanulate, 1–1.6 mm long, ca 1 mm wide, pubescent; lobes ovate, to 1.1 mm long, partly pubescent with hyaline ciliate margins. Petals white, broadly ovate to circular with or without short claw, ca 2 mm long. Stamens white, glabrous; claw 1–2 mm long (sometimes split or stamens free); filaments 5–9 attached to margin of each claw; free part to 7 mm long. Style 6–8 mm long, glabrous; stigma small. Ovary ca 1 mm long, pubescent above. Fruit cup or barrel-

shaped, to 2.5 mm long and 3 mm wide, orifice 1.5 mm diam.; calyx lobes usually deciduous; borne in an open spike.

Melaleuca stenostachya var. **stenostachya** is usually an erect, hard-barked shrub with narrow, closely spaced leaves found growing on heavy or skeletal soils in drier areas.

North-eastern Australia including the southern Gulf of Carpentaria and Cape York Peninsula.

Specimens examined. Northern Territory. 24 miles [39 km] N of Macarthur River Stn, Jul 1948, *Perry* 1776 (BRI). Queensland. BURKE DISTRICT: Settlement Ck, May 1923, *Brass* 363 (BRI); 6 miles [10 km] W of Westmoreland Stn, Jun 1948, *Perry* 1334 (BRI). COOK DISTRICT: near Chillagoe, Apr 1938, *Blake* 1364 (BRI).

Melaleuca stenostachya var. **pendula** Byrnes, *Austrobaileya* 2: 74 (1984). **Type:** Queensland. Cook District: Jacky Jacky airstrip, Bamaga District, May 1962, *Webb & Tracey* 5989 (BRI, holo).

North-eastern Australia including Cape York Peninsula and Torres Strait Islands.

Specimens examined. Queensland. COOK DISTRICT: Lockerbie, 10 miles [16 km] WSW of Somerset, Apr 1948, *Brass* 18350 (BRI); bank of lagoon near Karumba Rd, Jul 1977, *Craven & Pajmans* 4801 (BRI); Badu Is., Torres St, Dec 1979, *Garnett* 284 (BRI); Friday Is., near Prince of Wales Is., Nov 1966, *Hindmarsh & Wolloston* 118 (BRI); Rutland Plains near mouth of Mitchell R., *Whitehouse* (BRI).

The two varieties are usually distinct but some intermediates may be present. The variation is apparently related to the ecological conditions.

35. Melaleuca sericea Byrnes, *Austrobaileya* 2: 74 (1984). **Type:** Western Australia. 9.5 miles [15 km] W of Tableland Station, Apr 1955, *Lazarides* 5133 (BRI, holo; CANB, iso).

Shrub or small tree to 5 m high. Bark layered, papery. Branchlets densely villous. Leaves scattered, flat, narrowly obovate to obovate, obtuse to acuminate, apiculate, cuneate at base, 15–50 mm long, 2–10 mm wide, appressed sericeous, glabrescent at length, 3–5-veined, often obscure, oil glands visible with lens on older leaves; petioles to 3 mm long, poorly defined. Inflorescence a few- to many-flowered dense or open upper-axillary or terminal spike; flowers in triads; rachis villous, growing out before anthesis; bracts variable, caducous sometimes replaced by leaves; bracteoles absent. Calyx tube campanulate 1.5–2 mm long, villous; lobes ovate to triangular, 0.8–1.2 mm long, sericeous including narrow margins. Petals white, nearly circular with or without claw, ca 1.5 mm long. Stamens white, glabrous; claw 2–2.5 mm long; filaments 8–11 attached to the upper margin of each claw, to 5 mm long. Style ca 8 mm long, glabrous; stigma capitate. Ovary 1–1.5 mm long, pubescent above. Fruit cup-shaped to urceolate, to 2.5 mm long and 2 mm diam., orifice 1–1.2 mm diam.; calyx lobes and indumentum usually retained at maturity; in an open or dense spike.

North Australia from the Kimberley area of Western Australia to Victoria River area of Northern Territory.

Specimens examined. Western Australia: 45.5 miles [73 km] W of Tableland Stn, Apr 1955, *Lazarides* 5139 (BRI, CANB); near Karunje Stn, Sept 1954, *Speck* 5006 (BRI); Kuranje Stn, East Kimberley, Jan 1955, *Rust* 92 (CANB). Northern Territory. 20 miles [32 km] SW of Auvergne Stn, Aug 1949, *Perry* 2683 (BRI); 18 miles W of Timber Creek, Jan 1971, *Byrnes* 2025 (BRI, DNA); 66 miles E of W. Aust. border, Sep 1969, *Everist* 9248 (BRI) & *Byrnes* 1715 (DNA); Keep R. May 1972, *Aldrick* (DNA).

This species differs from *M. stenostachya* in having a more persistent indumentum on leaves, branchlets, calyx lobes and fruits, longer staminal claws and a shorter flowering spike. The flowering spikes are usually only borne singly and the rachis invariably grows out before anthesis with well developed leaves so that it appears subterminal. *M. sericea* can be mistaken for *M. lasiandra* but it does not have the hairy stamens of that species.

36. Melaleuca cajuputi Powell, *Pharm. Lond. Transl.* 22 (1809); *Blake, Cont. Qd Herb.* 1:22 (1968). **Type.** Description and figures in Rumph., *Herb. Amboin* from plants from the Moluccas.

Synonyms: see S.T. Blake (*loc. cit.*).

Shrub or usually a tree to 25 m high. Bark layered, fibrous and papery. Branchlets patent villous. Leaves scattered, flat, narrowly to broadly ovate or obovate, acute, often apiculate, attenuate at base, 45–120 mm long, 8–20 mm wide (wider outside Australia), villous,

glabrescent or glabrous; oil glands usually obscure; petioles to 7 mm long. Inflorescence a many-flowered terminal or upper-axillary spike, usually single, sometimes 2–3 together; flowers in triads; rachis villous, growing out at anthesis; bracts ovate, striate, villous, caducous; bracteoles absent. Calyx tube turbinate to sub-cylindrical, to 2 mm long and wide, pubescent; lobes semicircular to triangular, 0.5–0.7 mm long, pubescent with glabrous thin margin. Petals broadly obovate, clawed, to 2.5 mm long. Stamens white, glabrous; claw 1–2 mm long; filaments 7–10 attached to the upper margin of each claw, free part to 8 mm long. Style 6–9 mm long, glabrous; stigma small. Ovary *ca* 1 mm long, pubescent above. Fruit cup-shaped to globose, to 3 mm long and 4 mm wide, orifice 1.5–2 mm diam.; calyx lobes deciduous; usually in dense spikes.

Southern Asia to northern Australia including Western Australia, Northern Territory, Queensland north of 18°S latitude; also cultivated beyond its natural range.

Selected specimens. Northern Territory. Reynolds R., May 1969, *Byrnes* 1629 (BRI); Yirrkala, Aug 1948, *Specht* 857 (BRI). Queensland. COOK DISTRICT: Sanamere Lagoon, Jardine R., May 1948, *Brass* 18854 (BRI); 6 km from Cooktown, Cairns Rd, Apr 1975, *Craven* 3206 (BRI).

37. *Melaleuca argentea* W.V. Fitzg., *Western Mail* (Perth), 16 Jun 1906 & also J. Roy. Soc. W. Aust. 3:187 (1918); Blake, *Cont. Qd Herb.* 1:47 (1968). **Type.** Western Australia: base of Mt Bartlett, Sep 1905, *Fitzgerald* 1258 (NSW, holo; K, PERTH, iso).

M. leucadendron var. *angustata* Riviere, *Bull. Soc. Nat. Acclim. France* 3:537, f. 2 (1882). **Type:** (P? *n.v.*).

Tree to 25 m high. Bark layered, papery. Branchlets appressed sericeous, pendulous. Leaves scattered, flat, narrowly elliptical to narrowly obovate, acute, apiculate, narrowly cuneate or attenuate at base, 50–150 mm long, 6–20 mm wide, appressed sericeous with long straight hairs only, at length glabrescent, 3–9-veined, oil glands obscure; petioles 4–10 mm long, usually retaining indumentum. Inflorescence a many-flowered, open, upper-axillary or terminal spike, 1–4 together; flowers in triads, rachis pubescent and usually growing out before anthesis (some not growing at all out); bracts ovate to triangular, to 10 mm long, appressed pubescent or sericeous, caducous; bracteoles absent. Calyx tube cylindrical to campanulate, 1.6–2.5 mm long and wide, pubescent, rarely glabrous, lobes semicircular to broadly ovate, 1–1.5 mm long usually pubescent including hyaline margins. Petals white, broadly obovate with broad claw, 2.3–4 mm long. Stamens white, glabrous; claw 1–2 mm long; filaments 6–9 attached to margin of each claw, free part to 12 mm long. Style 12–15 mm long, glabrous; stigma capitate. Ovary to 1.5 mm long, pubescent above. Fruit cup-shaped or cylindrical, 2.5–4 mm long and wide, orifice 2–3 mm diam., calyx lobes absent; in an open spike.

Northern Australia from Gascoyne River, Western Australia to Cape York Peninsula, Queensland and New Guinea, usually restricted to creek or river banks.

Selected specimens. Western Australia. Karunjie Station, Jul 1952, *Perry* 3149 (BRI). Northern Territory. 20 miles [32 km] W of Katherine, Sep 1961, *Speck* 1662 (BRI); Settlement Ck, Sep 1922, *Brass* 229 (BRI). Queensland. COOK DISTRICT: Chillagoe, near old smelter, Aug 1965, *Carolin* 4806 (BRI).

This species has been confused with both *M. nervosa* and *M. dealbata* but differs from both in having no short crispid hairs mixed with the long straight hairs on the leaf lamina. Blake confused the narrow-leaved form, *M. nervosa* f. *pedulina*, with this species and stated in his paper that *M. argentea* had crispid hairs. Both taxa grow together on the river banks of northern Queensland and do appear similar, but the indumentum without crispid hairs is more persistent and there are more stamens in *M. argentea*. The two species are difficult to distinguish from each other in the absence of flowers or young leaves.

38. *Melaleuca leucadendra* (L.)L., *Mant.* 1:105 (1767); S.T. Blake, *Cont. Qd Herb.* 1:17 (1968). **Type:** Arbor alba Rumphius, *Herb. Amboin.* 2:72, t. 16, 17. f.1, figure & description of plant from the Moluccas.

Synonyms: see Blake (*loc. cit.*).

Tree to 30 m high. Bark layered, papery. Branchlets glabrous or sericeous, glabrescent early, pendulous. Leaves scattered, flat, narrowly ovate to elliptical, acute, often shortly

apiculate, narrowly attenuate at base, 80–230 mm long, 9–40 mm wide, thin, glabrous or sometimes sericeous when very young, 5–9-veined, oil glands obscure or visible with lens, petioles 6–12 mm long, glabrous. Inflorescence a many-flowered, open to distant-flowered, upper-axillary or terminal spike; flowers in triads, rachis glabrous or sometimes with few scattered hairs, glabrescent, usually growing out at anthesis (some not growing out at all); bracts (not seen) caducous early; bracteoles absent. Calyx tube campanulate to cylindrical, 1.5–2.7 mm long, glabrous; lobes semicircular 0.7–2 mm long, glabrous with hyaline margin. Petals white, obovate to nearly circular with a short broad claw, 2–4 mm long. Stamens white, glabrous; claw 2–4 mm long; filaments 5–10 attached to margin of each claw, free part to 12 mm long. Style 10–14 mm long, glabrous; stigma small to capitate. Ovary 2–3 mm long, pubescent above. Fruit cup-shaped or cylindrical, 4–5 mm long and wide, orifice 3–4 mm diam., calyx lobes absent; in an open spike.

Northern Australia from Kimberley region, Western Australia to Shoalwater Bay, Queensland; also Malesia and New Caledonia; commonly cultivated.

Specimens examined. Northern Territory. 13° 03'S, 131° 70'E, Mar 1978, *Henshall* 1943 (BRI); Angurugu R., Groote Eylandt, Apr 1974, *Levitt* 370 (BRI). Queensland. COOK DISTRICT: Lankelly Ck, Oct 1969, *Webb & Tracey* 9681 (BRI). LEICHHARDT DISTRICT: Bombandy, 40 miles [64 km] S of Nebo township, Sep 1961, *Lazarides & Story* 141 (BRI).

Melaleuca leucandendra is a variable species in habit and leaf size. Trees growing in permanently moist situations commonly have leaves 25–40 mm wide and 150–200 mm long. The type of the species as described by Rumphius and the specimen in the Linnean Herbarium No. 941.2 are both of this form. Another form usually with narrower and shorter leaves is commonly found in Australia. F.M. Bailey (1883) believed it to be a distinct variety and described it under the name *M. leucadendron* var. *saligna* with a specimen from Endeavour River as the type. From his treatment, it appears that this form is what S.T. Blake regarded as typical for the species. Both the wide-leaved and narrow-leaved forms are found in the same areas in Northern Australia, usually in different ecological situations. There are many examples of intermediate forms, so on present knowledge the 'var. *saligna*' of Bailey cannot be maintained.

Because of the variability of *M. leucadendra* and related species and a general similarity of all the species within the group, considerable confusion in the naming of specimens has resulted. If careful examination is made of indumentum, number and length of stamens, and leaf shape and thickness most problems can be resolved.

The combination of relatively thinner leaves, wider below the middle and open, almost totally glabrous, inflorescences distinguishes *M. leucadendra* from related species.

39. *Melaleuca viridiflora* Sol. ex Gaertn., *Fruct. et Semin.* 1:173, t. 35 (1788); Blake, *Cont. Qd Herb.* 1:28–41 (1968) including *M. quinquenervia* (Cav.) S.T. Blake. **Types:** Queensland. Endeavour River, Jul–Aug 1770, *Banks & Solander* (BM, NSW, MEL, W).

Synonyms: see Blake (*loc. cit.*).

Shrub or tree to 25 m high. Bark layered, papery and fibrous, loose to tight and hard. Branchlets usually sericeous, sometimes glabrous. Leaves scattered, flat, narrowly to broadly obovate, sometimes elliptical or broadly ovate, acute to obtuse, sometimes apiculate, narrowly attenuate at the base, 50–220 mm long, 6–70 mm wide, sericeous, hairs persistent or glabrescent, sometimes glabrous, 5- or more-veined, oil glands usually obscure; petioles 4–20 mm long, usually with some indumentum. Inflorescence a many-flowered, dense to moderately open, upper-axillary or terminal spike, often 2–4 together; flowers in triads; rachis glabrous to pubescent, growing out after anthesis; bracts broadly ovate, to 7 mm long, glabrous, striate; bracteoles absent. Calyx tube cup-shaped, 2–3.5 mm long, 1.7–3 mm wide, glabrous or pubescent; lobes semicircular, 1–2 mm long, glabrous or pubescent with hyaline margins. Petals white or red, obovate, with short claw 2–5 mm long. Stamens white, yellow, green, pink or red, glabrous; claw 0.5–4 mm long (sometimes split to base giving apparently more bundles); filaments 4–10 attached to margin of each claw; free part 14–20 mm long. Style 17–24 mm long, glabrous; stigma small. Ovary 1.5–2.5 mm long, pubescent above. Fruit shortly barrel-shaped, 2.5–5 mm long, 4–6 mm wide, orifice 2.5–4 mm diam., calyx lobes deciduous; in an open or dense spike.

Northern and eastern Australia, widespread from Kimberley region, Western Australia to Sydney; also New Guinea and New Caledonia.

This species demonstrates a high degree of variability. Within the species a number of populations can be distinguished, at least at the flowering stage, but intermediate forms can be found. Because of the presence of these forms, the variation within the species, and the variation occurring with growth, varietal status for the distinguishable populations is a more practical approach than recognising them as separate species.

Distinguishing *M. viridiflora* from related species and the recognition of possible infraspecific taxa has been a problem and the species has been considered difficult to diagnose. Blake's 1968 taxonomic classification of the group, for the most part, is followed here. However, for the species *M. viridiflora* and *M. quinquenervia* there is an overlap in all ranges of measurements given for key characters by Blake. Considerable difficulty has been experienced in trying to place some herbarium material as *M. viridiflora* or *M. quinquenervia*. The same problem is experienced by field workers trying to identify plants in areas where the species overlap. Consequently *M. quinquenervia* is here treated as conspecific with *M. viridiflora* but maintained as a variety.

Melaleuca viridiflora var. **viridiflora** is widespread in Northern Australia and New Guinea. Within the variety a wide range of flower colour and habit is found but it can be distinguished by the characters given in the key.

Selected specimens. Northern Territory. Near Banka Banka Station, 18°52'S, 134°3'E, Jun 1946, *Blake* 16016 (BRI); Sir Edward Pellew Group, 15°44'S, 136°37'E, Feb 1976, *Craven* (BRI). Queensland. BURKE DISTRICT: 3 miles [5 km] E of Normanton, Mar 1954, *Lazarides* 4280 (BRI). PORT CURTIS DISTRICT: 4 miles [6 km] from Yeppon towards Byfield, May 1970, *Telford* 1711 (BRI).

Melaleuca viridiflora var. **canescens** Byrnes, *Austrobaileya* 2: 74 (1984). **Type:** Queensland. Cook District: 30 miles [48 km] SSE of Strathleven homestead, Nov 1965, *Pedley* 1843 (BRI, holo).

This variety usually has a gnarled habit and distinctive canescent leaves with persistent appressed sericeous indumentum.

The leaves are wide and a number of colour forms have been collected. It is found in drier areas of northern Queensland.

Selected specimens. Queensland. COOK DISTRICT: Wrotham Park, Apr 1983, *Blake* 13710 & 13711 (BRI); 6 miles [10 km] NE of Strathmore Station, Aug 1953, *Perry* 3921 9 (BRI); 18°15'S, 141°00'E, May 1966, *Moore* 44 (BRI).

Melaleuca viridiflora var. **glabra** (C. White) Byrnes, *Austrobaileya* 2: 74 (1984). Based on *M. cunninghamii* var. *glabra* C. White. **Type:** Papua New Guinea. Tarara, *Brass* 8485 (BRI).

Blake referred *M. cunninghamii* var. *glabra* to *M. quinquenervia* but the type has the typical wide leaves of *M. viridiflora* var. *viridiflora* from which it differs in being glabrous in all parts, except for the very young buds.

Eastern Queensland north of Rockhampton; also Papua New Guinea.

Specimens examined. Queensland. COOK DISTRICT: Outside Port Douglas, Jul 1967, *Moriarty* 7 (BRI); Cumberland, Gilbert R., May 1937, *Brass* 8809 (BRI); 12°48'S, 143°03'E, Jul 1968, *Pedley* 2753 (BRI). PORT CURTIS DISTRICT: Nine Mile Beach, 22°52'S, 150°47'E, Jul 1977, *Batianoff & McDonald* 452 (BRI).

Melaleuca viridiflora var. **attenuata** Byrnes, *Austrobaileya* 2: 74 (1984). **Type:** Cook District: outside Port Douglas, ca 7 miles [11 km] ESE of Mossman, July 1967, *Moriarty* 9 (BRI, holo).

A narrow-leaved variety with glabrous or early glabrescent inflorescences. Leaves exceeding 100 mm long but less than 20 mm wide are common.

Queensland, mainly Cape York Peninsula.

Specimens examined. Queensland. COOK DISTRICT: between Cook Hwy & Port Douglas, Jul 1962, *Tracey & Webb* 6433 (BRI); Dimbulah, Jun 1929, *Tardent* (BRI); Dimbulah area, Dec 1955, *White* 1263 (BRI); Stannary Hills, *Bancroft* (BRI); near Chillagoe, Apr 1938, *Blake* 13565 (BRI); Frewhurst, Feb 1922, *White* 1369 (BRI); Yaramulla Stn, Apr 1980, *Williams* 80048 (BRI).

Melaleuca viridiflora var. **rubriflora** Brong. & Gris, Bull. Soc. Bot. France 11: 183 (1864).
Type: New Caledonia, near Balade, *Vieillard* (P).

M. quinquenervia (Cav.)S.T. Blake, Contrib. Qd Herb. 1:28 (1968). Based on *Metrosideros quinquenervia* Cav., Ic. Pl. 4: 19, t. 333 (1779). **Type:** Port Jackson, Apr 1793, *Nee* (MA, lost, see Blake, *loc. cit.*).

M. viridiflora var. *angustifolia* (L.f.)Byrnes, *Austrobaileya* 2:74 (1984), nom. illeg. non Bl., *Bijdr.* 1099 (1826). Based on *Melaleuca leucodendra* var. *angustifolia* L.f., *Suppl. Pl.* 342 (1781). **Type:** New Caledonia, *Forster* (LINN, holo, *n.v.*; BRI, microfiche).

S.T. Blake considered this to be a species distinct from *M. viridiflora* and related species and made the combination *M. quinquenervia* (Cav.)S.T. Blake based on *Metrosideros quinquenervia* Cav. The variety is not as distinct as some other varieties of *M. viridiflora* but is considered to be worthy of varietal status. It can usually be distinguished from other varieties by its thinner and shorter leaves and shorter stamens.

Widespread in eastern coastal Australia north of Sydney; also in New Guinea and New Caledonia.

Selected specimens. Queensland. COOK DISTRICT: Summit of Mt Tozer, Jul 1948, *Brass* 19477 (BRI). PORT CURTIS DISTRICT: Curtis Island, Mar 1966, *Blake* 22582 (BRI). WIDE BAY DISTRICT: Fraser Island, May 1919, *Petrie* (BRI). MORETON DISTRICT: Bulimba, Brisbane, Apr 1963, *Henderson* H5 (BRI).

40. Melaleuca bracteata F. Muell., *Fragm.* 1:15 (1885); Blake, *Cont. Qd Herb.* 1:65 (1968); Carrick & Chorney, *J. Adelaide Bot. Gard.* 1:286 (1979). **Type:** Moreton Bay, *W. Hill* (MEL, lecto, chosen by Blake).

Synonyms: see Blake. (*loc. cit.*)

Shrub or tree to 15 m high. Bark grey to black, fissured, hard. Branchlets densely pubescent, hairs glabrescent or persistent, rarely glabrous. Leaves scattered, flat or concave above, sometimes twisted, narrowly ovate to ovate, acute to acuminate, 5–28 mm long, 1–3 mm wide, veins (3–) 5–11, usually visible with lens in thinner leaves, pubescent, persistent or soon glabrescent, rarely glabrous, oil glands usually visible with lens in thinner leaves; petioles absent. Inflorescence a few- to many-flowered, dense or open, upper axillary, terminal or subterminal spike; flowers single or in triads; rachis pubescent, growing out about anthesis; bracts leaf-like but usually shorter and broader; bracteoles ovate, apiculate, to 2 mm long, pubescent, deciduous. Calyx tube hemispherical, cup-shaped, or globose-urceolate, 1–2 mm long and wide, pubescent, sometimes faintly ribbed; lobes ovate or triangular, sometimes shortly acuminate, 0.5–1.7 mm long, usually with 1–3 ribs, pubescent or glabrous. Petals white, nearly circular, without claws, 1.5–2 mm long, deciduous. Stamens white, glabrous; claw 3–4 mm long; filaments 16–25, attached to upper margin of each claw commonly in two series, free part to 5 mm long. Style 7–8 mm long, glabrous; stigma small. Ovary *ca* 1 mm long, pubescent above. Fruit cup-shaped, 2–2.5 mm long excluding persistent calyx lobes, 2.5–3 mm wide, orifice 2–2.5 mm diam.; in open or dense spikes.

Widespread species found in the Northern Territory, Queensland, northern New South Wales, South Australia and Western Australia.

Selected specimens. Northern Territory, Victoria River Downs, Sep 1969, *Everist* 9273 (BRI). Queensland. NORTH KENNEDY DISTRICT: 5 miles [8 km] West of Hervey Ra., Nov 1980, *Hawkeswood* 598 (BRI). LEICHHARDT DISTRICT: Minerva, Springsure, Jul 1934, *Blake* 7021 (BRI). New South Wales. Unumgar State-Forest, Nov 1952, *Constable* (BRI).

M. bracteata displays a wide range of variation mainly in the leaves. The eastern coastal specimens have glabrescent, or sometimes glabrous, large, thin leaves which usually have more than seven veins and oil glands visible with a lens. Specimens from Central Australia have smaller thicker leaves with fewer obscured veins, more persistent indumentum and oil glands visible with lens. Between these extremes there is a wide range of intermediate forms which makes it impossible to recognise infraspecific taxa.

41. Melaleuca styphelioides Smith, *Trans. Linn. Soc. Lond.* 3:275 (1797). **Type:** Port Jackson, *D. Burton* (LINN, *n.v.*).

Shrub or small tree, rarely to 20 m high. Bark layered, papery or hard and scaly. Branchlets pubescent. Leaves scattered, sessile, flat, often twisted or concave above, ovate

to broadly ovate, acute, tapered to pungent point, cuneate at base, 4–25 mm long, 2–6 mm wide, 15–30-veined, puberulous or at least ciliate on margins, glabrescent early, oil glands visible with lens. Inflorescence a few- to many-flowered, dense, some-times leafy, upper-axillary, terminal or subterminal spike; flowers in triads, sometimes single; rachis tomentose, growing out before anthesis; bracts leaf-like but deciduous; bracteoles ovate, subulate, to 3 mm long, pubescent, deciduous. Calyx tube ovoid, rarely urceolate, pubescent or sometimes glabrous, 1.5–2.5 mm long, *ca* 2 mm diam., ribbed; lobes triangular, acuminate, 1.5–2 mm long, conspicuously veined, pubescent or glabrous. Petals white, nearly circular, shortly clawed, 1–2 mm long, deciduous before anthesis. Stamens white, glabrous; claw 3–4 mm long; filaments 12–26, attached to margin of upper third of each claw, free part to 6 mm long. Style 7–11 mm long, glabrous; stigma small. Ovary to 2 mm long, pubescent above. Fruit cup-shaped to ovoid 2–3.5 mm long excluding the semi-persistent calyx lobes, 2–3 mm wide, orifice *ca* 1.5 mm diam.; in open or dense spikes.

Eastern Australia, coastal areas and adjoining ranges from Mary River, southern Queensland to Shoalhaven River, New South Wales.

Melaleuca styphelioides var. **styphelioides**

Selected specimens. Queensland. MORETON DISTRICT: 1.5 miles [2 km] N of Caloundra, Nov 1969, *Lebler* (BRI). New South Wales. 5 miles [8 km] E of Raymond Terrace, Apr 1960, *Story* 7261 (BRI); Gosford, Nov 1952, *J. King* (BRI); Kanimbla Valley, Blackheath, Nov 1948, *Constable* (BRI).

Melaleuca styphelioides var. **squamophloia** Byrnes, *Austrobaileya* 2:74 (1984). **Type:** Darling Downs District: Kogan, Dec 1949, *K.R. Kerr* (BRI, holo; CANB, NSW, iso).

This variety in many respects is intermediate between *M. styphelioides* var. *styphelioides* and *M. bracteata* and may be a hybrid. It has the smaller calyx lobes and more numerous stamens of the latter, an intermediate bark, but the clawed petals and more numerous leaf veins of *M. styphelioides*. It grows on the black soil plains usually in wetter areas chiefly of the Darling Downs District.

Specimens examined. Queensland. DARLING DOWNS DISTRICT: 19 miles [30 km] E of Meandarra, Dec 1958, *Walter* (BRI); 3 miles [5 km] E of Jandowae, Nov 1969, *Nielsen* (BRI); 3 km W of The Gums, Nov 1971, *Stevenson* (BRI) & Sep 1980, *Byrnes* 3957 (BRI); between Meandarra & Condamine, Nov 1962, *Everist* 7231 (BRI); 4 miles [6 km] S of Rywung, Apr 1971, *Williams* (BRI); Dogwood Creek, E of Gurulmundi & N of Miles, Nov 1930, *Belson* (BRI); 2 miles [3.2 km] N of Ehlma, May 1958, *Johnson* 482 (BRI). BURNETT DISTRICT: Kingaroy, May 1952, *Benham* (BRI).

42. **Melaleuca viminalis** (Sol. ex Gaertner) Byrnes, *Austrobaileya* 2: 75 (1984). *Callistemon viminalis* (Sol. ex Gaertner) G. Don ex Loudon, Hort. Brit. 197 (1830). Based on *Metrosideros viminalis* Sol. ex Gaertner, Fruct. et Semin. 1: 171, t. 34, f. 4. (1788). **Type:** Endeavour River, *Solander* (K, *n.v.*).

Callistemon speciosus auct. non DC.; Bailey, Qd Flora 2: 594 (1900).

Shrub or small tree to 10 m high. Bark dark, rough, furrowed. Branchlets villous or glabrous, usually pendulous. Leaves scattered, flat, elliptical to narrowly elliptical, acute, apiculate, cuneate or narrowly attenuate at base, 35–105 mm long, 5–30 mm wide, glabrous or villous, usually glabrescent, 3-veined, veins usually visible, oil glands visible with lens; petioles 1–8 mm long. Inflorescence a many-flowered, dense to open, terminal spike; flowers single within each bract; rachis villous or glabrous, growing out usually after anthesis; bracts broadly ovate, apiculate, 7–8 mm long, multiveined, pubescent, caducous; bracteoles absent. Calyx tube cylindrical, 3–4 mm long, glabrous to densely villous; lobes semicircular to truncate elliptical, 1–2 mm long, glabrous or villous, margins hyaline, ciliate. Petals pink to red, obovate to nearly circular, with or without short broad claw, 4–5 mm long. Stamens red, glabrous; claw 0.5–3 mm long or sometimes fused to form a ring; filaments 6–11 on margin of each claw, free part to 24 mm long. Style to 26 mm long, glabrous; stigma capitate. Ovary 1–2 mm long, pubescent above. Fruit cup-shaped, 5–6 mm long, 4–5 mm wide, orifice 3–4 mm diam., calyx lobes deciduous; in open spike.

Eastern Australia along coast and ranges, rarely inland, from Cape York, Queensland to Clarence River, New South Wales. Commonly cultivated.

Melaleuca viminalis var. **viminalis** is generally larger in all parts and has fewer hairs than *M. viminalis* var. *minor*. It has longer claws, often 2–3 mm long as in the type (pers. comm. M.D. Crisp) and is found in the northern part of the species' range of distribution.

Selected specimens. Queensland. COOK DISTRICT: Chester R., Sep 1973, *Hyland* 6836 (BRI); Mowbray R., Jan 1932, *Brass* 1930 (BRI). NORTH KENNEDY DISTRICT: Hinchinbrook Is., Aug 1975, *Sharpe* 1639 (BRI). PORT CURTIS DISTRICT: Marlborough Ck, Jul 1962, *Trapnell & Williams* 211 (BRI).

Melaleuca viminalis var. **minor** Byrnes, *Austrobaileya* 2: 75 (1984). **Type:** Moreton District: Albert River, S of Brisbane, Aug 1930, *Hubbard* 3828 (BRI, holo).

In this variety the stamens may be united in a ring with little indication of the claw. Other structures are generally smaller and more persistently villous than found in the variety represented by the type of the species.

Selected specimens. Queensland. BURKE DISTRICT: Hughenden, Sep 1925, *Longman* (BRI). DARLING DOWNS DISTRICT: 9.6 km 9°E of N of Pittsworth, Jan 1975, *Stanley* 72 (BRI). New South Wales. Clarence R., Sep 1916, *Cheel* (BRI).

Intermediates between the varieties can be found but the two populations represented by the varieties are, for the most part, distinct.

The species is quite variable in habit, length of flower spike and density and persistence of indumentum. Many of the forms are genetically controlled and have been selected for horticultural purposes.

Although *Metrosideros viminalis* was described from Australian material in 1788 it was not mentioned by Bentham in *Flora Australiensis*. It was placed in *Callistemon* by both G. Don and Cheel but here is placed in *Melaleuca* on the criterion of having staminal bundles, particularly in the northern populations which the type represents.

43. Melaleuca arcana S.T. Blake, *Cont. Qd Herb.* 1: 54 (1968). **Type:** Cook District: NW of Cooktown and W of Cape Bedford, Feb 1958, *Blake* 20260 (BRI, holo).

M. leucadendra f. *ruscifolia* Cheel in Ewart & Davies, *Fl. N. Terr.* 302 (1917). **Type:** [Queensland, Point Lookout] *Banks & Solander* (NSW, holo).

Shrub or tree to 10 m high. Bark layered, papery. Branchlets sericeous, glabrescent. Leaves scattered, flat, broadly to narrowly obovate or elliptical, obtuse or acute, shortly attenuated at base, 18–50 mm long, 8–20 mm wide; sericeous, glabrescent early, 5–7-veined, oil glands obscure; petioles 0.5–3 mm long, sericeous. Inflorescence a many-flowered dense, short, terminal spike; flowers in triads (obscured by density); rachis villous (obscure), growing out after anthesis; bracts broadly ovate, to 4 mm long, multiveined, deciduous; bracteoles absent. Calyx tube turbinate, usually angular, ca 2 mm long, indumentum in patches; lobes ovate, 1–1.5 mm long, margins ciliate. Petals white, obovate, with or without short broad claw, 1.7–2.5 mm long. Stamens white, glabrous; claw 0.2–1.4 mm long (sometimes divided to base); filaments 5–9, unevenly united to margin of each claw, free part to 12 mm long. Style 9–10 mm long, glabrous; stigma small. Ovary ca 1 mm long, pubescent above. Fruit turbinate, angular, 3–5 mm long and wide, orifice 1.5–3 mm diam., calyx lobes deciduous; in a dense head or short spike.

North-eastern Australia in coastal areas of Cape York Peninsula, north Queensland.

Selected specimens. Queensland. COOK DISTRICT: Between McIvor R. & Cape Flattery, Nov 1972, *Dockrill* 618 (BRI); 15°12'S, 145°06'E, Aug 1969, *Bates* (BRI); ca 24 km SW of Cape Melville, Jul 1972, *Stanton* 21 (BRI); Newcastle Bay, 2.5 miles [4 km] S of Somerset, May 1948, *Brass* 18651 (BRI).

44. Melaleuca saligna Schauer in Walpers, *Rep. Bot. Syst.* 2: 927 (1843); Blake, *Cont. Qd Herb.* 1: 52 (1968). **Type:** Queensland, Endeavour R., in 1819, *A. Cunningham* 256 (BM, iso).

Tree to 10 m high, bark layered, papery. Branchlets thinly pilose, glabrescent, pendulous. Leaves scattered, flat, narrowly obovate, acute, cuneate at base, 30–105 mm long, 4–18 mm wide, thinly pilose, glabrescent early, 3–7-veined, often indistinct, oil glands obscure; petioles 2–8 mm long, usually pilose. Inflorescence a many-flowered, dense, axillary and terminal, globose or ellipsoid head, rarely a spike, sometimes succeeding heads confluent; flowers in triads; rachis densely villous growing out at anthesis; bracts ovate or pentagonal, ca 2 mm long, pubescent, multiveined, semipersistent; bracteoles absent. Calyx tube

turbinate to campanulate, often angular, 1–1.5 mm long, pubescent; lobes triangular to broadly ovate with narrow margin 0.5–0.8 mm long, pubescent. Petals white, obovate to nearly circular, shortly clawed, 1.5–2 mm long. Stamens white, glabrous; claw variable in size, 0.5–2.5 mm long, sometimes divided to base; filaments 6–9 attached to margin of each claw, free part to 8 mm long. Style 7–9 mm long, glabrous; stigma small. Ovary to 1 mm long, pubescent above. Fruit cylindrical, 2.5 mm long and wide, orifice 2 mm diam., calyx lobes deciduous; in heads or short dense spikes.

Northern Australia from Torres Strait Islands to near Cooktown, Queensland.

Selected specimens. Queensland. COOK DISTRICT: Portland Roads, Jun 1948, *Brass* 18978 (BRI); 14°20'S, 144°20'E, Sep 1970, *Hyland* 4618 (BRI); Cooktown, May 1962, *Blake* 21799 (BRI); between Forsyth & Einsleigh, Feb 1980, *Mitchell* 1 (BRI).

Specimens with confluent inflorescences may key as *M. stenostachya* but usually *M. saligna* can be distinguished by its dense heads borne both terminally and in the axils. *M. stenostachya* has dense or open spikes borne either terminally or only in the upper axils.

45. *Melaleuca groveana* Cheel & C. White, Proc. Roy. Soc Qd 36, 5: 41 f. 1 (1925); Blake, Cont. Qd Herb. 1: 59 (1968). **Type:** Queensland, near Edenvale Railway Station, *Grove* 132 (NSW, BRI).

Shrub or small tree to 10 m high. Bark layered, papery and fibrous, becoming hard. Branchlets puberulous, glabrescent early. Leaves scattered, flat, narrowly elliptical, acute, usually apiculate, attenuate or cuneate at base, 10–55 mm long, 3–7 mm wide, puberulous, soon glabrescent, 3(–5)-veined, at least midvein visible, oil glands commonly visible on undersurface; petioles 1.5–3 mm long, glabrescent. Inflorescence a few- to many-flowered, usually open terminal spike; flowers single within each bract; rachis glabrous or puberulous, growing out after anthesis; bracts not seen, caducous; bracteoles nearly circular, ca 0.5 mm diam., puberulous with ciliate margins, deciduous. Calyx tube campanulate, 3–4.5 mm long, glabrous; lobes broadly ovate, with hyaline ciliate margins, 1–1.5 mm long. Petals white, broadly ovate, with or without short broad claw, to 4 mm long. Stamens white, glabrous; claw 1–3 mm long; filaments 11–26 attached to margin and sometimes upper surface of each claw, free part to 10 mm long. Style 10–12 mm long, glabrous; stigma capitate. Ovary ca 2 mm long, pubescent above. Fruit barrel-shaped or truncate-ovoid, 4–7 mm long and wide, orifice 2–3 mm diam., calyx lobes absent; in an open spike.

Eastern Australia on central and coastal highlands from central Queensland to North Coast, New South Wales.

Selected specimens. Queensland. LEICHHARDT DISTRICT: 23°45'S, 149°05'E, Sep 1964, *Gittins* 941 (BRI). BURNETT DISTRICT: near Kingaroy, Edenvale, Sep 1954, *Blake* 19703 (BRI). MORETON DISTRICT: Mt Beerwah, Sep 1957, *McGillivray* 290 (BRI). New South Wales. South Brother Mt, Johns River, Feb 1926, *Cheel* (NSW, BRI).

46. *Melaleuca deanei* F. Muell., Proc. Linn. Soc. N.S.W. ser II, 1: 1106 (1887); Blake, Cont. Qd Herb. 1: 56 (1968). **Type:** New South Wales: Lane Cove R., *Deane* (MEL, holo; NSW, iso).

Synonyms: see Blake (*loc. cit.*).

Shrub to 3 m high. Bark rough, fissured. Branchlets puberulous soon glabrescent. Leaves scattered, flat, narrowly elliptical to narrowly obovate, acute, apiculate, narrowly attenuated at base, 10–25 mm long, 3–7 mm wide, glabrous or thinly pilose, soon glabrescent, 3- sometimes 5-veined, midvein at least visible, oil glands visible or obscure; petioles 0.8–2.2 mm long, glabrescent. Inflorescence a many-flowered, open, terminal or upper axillary spike; flowers single within each bract; rachis villous, growing out after anthesis; bracts elliptical, to 5 mm long, densely villous, caducous; bracteoles nearly circular, ca 0.5 mm long, villous, caducous. Calyx tube turbinate to campanulate, 4–5 mm long, villous; lobes broadly ovate to semicircular, without hyaline margins, 1.3–2 mm long, villous. Petals broadly ovate to circular with short claw, 3–5 mm long, sericeous outside. Stamens white, glabrous or puberulous towards base; claw 1.5–2 mm long; filaments 17–28 attached to margin or few on inner surface of each claw, free part to 10 mm long. Style 11–14 mm long, glabrous or with few scattered hairs towards base; stigma capitate to peltate. Ovary to 4 mm long, velutinous above. Fruit barrel-shaped or subcylindrical,

7–8 mm long, 5.5–7 mm wide, orifice 3 mm diam., calyx lobes deciduous; in open spikes.

Eastern Australia from Sydney to Nowra, New South Wales.

Selected specimens. New South Wales. Cooks R., Oct 1901, *Hamilton* (BRI); Waterfall, 21 miles [34 km] S of Sydney, Nov 1952, *King* (BRI); Arncliffe, Oct 1897, *Camfield* (NSW, BRI); Hornsby, Oct 1918, *Blakely* (NSW).

47. *Melaleuca sieberi* Schauer in Walpers, Rep. Bot. Sys. 2: 928(1843); Blake, Cont. Qd Herb. 1: 60 (1968). **Type:** near Sydney, *Sieber* 601 (MO, iso, photo BRI).

M. parviflora Lindley var. *latifolia* Maiden & Betche, Census N.S.W. Pl. 155–56 (1916). **Type:** Wardell, Jun 1884, *Betche* (NSW, lecto selected by Blake).

Shrub or small tree to 20 m high. Bark layered, papery. Branchlets glabrous or crisped pubescent, glabrescent. Leaves scattered, flat, narrowly elliptical to narrowly ovate, acute, often apiculate, cuneate at base, 4–15 mm long, 1–4 mm wide, glabrous or pubescent, glabrescent early, 3-veined usually obscure or only mid-vein visible, oil glands visible with lens; petioles to 1 mm long, glabrescent. Inflorescence a few- to many-flowered, upper axillary or terminal spike; flowers single within each bract or rarely in triads; rachis densely pubescent, growing out after anthesis; bracts narrowly to broadly ovate, 2–3 mm long, pubescent or puberulous, deciduous; bracteoles absent. Calyx tube campanulate to cylindrical, 2–3 mm long and wide, pubescent; lobes ovate to triangular, 1–1.5 mm long, pubescent to glabrous, without hyaline margins. Petals often pink in part, nearly circular with a short claw, 2–3 mm long. Stamens white, glabrous; claw 2–3 mm long; filaments 11–25 attached to margin of upper half of each claw, free part to 6 mm long. Style 8–10 mm long, glabrous; stigma capitate. Ovary *ca* 2 mm long, pubescent above. Fruit barrel-shaped to cup-shaped, 3–5 mm long and wide, orifice 2–3 mm wide, calyx lobes semipersistent; in an open spike.

Eastern coastal areas from Wide Bay, Queensland to Sydney area, New South Wales.

Selected specimens. Queensland. MORETON DISTRICT: 26°25'S, 153°02'E, Oct 1968, *Baxter & Lebler* 1107 (BRI); off Fredrick Street, Bribie Island, Sep 1973, *Bates* 516 (BRI); Albert R., near Plunkett, Sep 1930, *Curtis* 4027 (BRI). New South Wales. CENTRAL COAST: Gosford, Oct 1952, *King* (BRI).

48. *Melaleuca kunzeoides* Byrnes, *Austrobaileya* 2: 75 (1984). **Type:** Warrego District: near Bat Cave, Milo Holding, *ca* 20 km NW of Adavale, 13 Apr 1981, *Sandercoe* s.n. (BRI, holo; CANB, K, NSW, iso).

Shrub 1–2 m high. Bark layered, papery to hard. Branchlets glabrous, glandular. Leaves scattered, flat or slightly concave above, narrowly ovate to rectangular, acute to obtuse, shortly apiculate, shortly attenuate at base, 4–8 mm long, 1–2 mm wide, glabrous or thinly puberulous, glabrescent, 1–3-veined obscure, oil glands visible with lens; petioles *ca* 0.5 mm long. Inflorescence a few- to many-flowered, dense usually leafy terminal short raceme; flowers single or in pairs on very short pedicels; rachis glabrous, growing out after anthesis; bracts leaf-like; bracteoles subulate, 1–2 mm long, glabrous. Calyx tube campanulate, 1–1.5 mm long and wide, glabrous; lobes triangular, 1–1.5 mm long, glabrous, sometimes partly fused in pairs. Petals white, elliptical, clawed, 1.5–2 mm long. Stamens yellow-green, glabrous; claw 2.5–3.5 mm long; filaments 4–6 attached to the upper margin of each claw; free part to 4 mm long. Style 4–5 mm long, glabrous; stigma small. Ovary *ca* 1 mm long, puberulous above. Fruit hemispherical to globular with persistent calyx lobes, *ca* 3 mm long, 2 mm wide, orifice *ca* 1.5 mm diam., thin walled; in a short raceme, deciduous at maturity.

South-western Queensland.

Specimens examined. Queensland. WARREGO DISTRICT: near Bat Cave, Milo Holding, *ca* 20 km NW of Adavale, May 1979, *Sandercoe* 122 (BRI) & Nov 1981, *Sandercoe* 2004 (BRI).

This species is known only from the type locality but probably has been overlooked in other areas as the flowers are not easily seen. It exhibits characters of *Kunzea* and *Melaleuca* and is placed in the latter genus on the basis of the fusion of the lower filaments into a claw.

49. *Melaleuca armillaris* (Sol. ex Gaertner) Smith, Trans. Linn. Soc. Lond. 3: 227 (1797); Bentham, Fl. Austr. 3: 146 (1867). Based on *Metrosideros armillaris* Sol. ex Gaertner, Fruct. et Semin. Pl. 1:171 t. 34 f. 5 (1788). **Type:** *Solander* (NSW, iso).

M. ericaefolia Andr., Bot. Rep. 3: t. 175 (1801).

Shrub to 5 m high. Bark layered, hard, fissured. Branchlets glabrous or pubescent, glabrescent early. Leaves scattered, flat or concave above, linear, acute, apiculate, recurved towards apex, narrowly cuneate at base, 12–25 mm long, to 1 m wide, glabrous or puberulous, soon glabrescent, 1–3-veined obscure, oil glands visible with lens; petioles 1–2 mm long, glabrous. Inflorescence a many-flowered, dense spike on a short lower axillary branchlet; flowers single within each bract; rachis minutely puberulous to woolly, growing out before anthesis; bracts ovate-acuminate, to 14 mm long, deciduous; bracteoles absent. Calyx tube cylindrical, laterally compressed at base, longitudinally attached, 1–1.5 mm long, glabrous, lobes broadly triangular, *ca* 1 mm long with lateral hyaline margins, glabrous. Petals white, ovate, clawed, 2–3 mm long. Stamens white, glabrous; claw 5–6 mm long; filaments 16–18 attached to margin and upper surface of top third of each claw, free part to 4 mm long. Style 8–10 mm long, glabrous; stigma capitate. Ovary 1–1.5 mm long, pubescent above. Fruit shortly cylindrical, 3–5 mm long and wide, orifice 2–4 mm diam.; calyx lobes semipersistent, incurved; in a dense spike.

From Manning River to Two Fold Bay, New South Wales, coast and adjacent ranges. Commonly cultivated.

Selected specimens. New South Wales. Cronulla, Oct 1952, *King* (BRI); 4 miles [6 km] W of Green Cape, Oct 1954, *Constable* (BRI); South Head, Jan 1899, *Boorman* (BRI).

50. *Melaleuca alternifolia* (Maiden & Betche) Cheel, Proc. Roy. Soc. N.S.W. 58: 195 (1924); based on *M. linariifolia* var. *alternifolia* Maiden & Betche, Proc. Linn. Soc. N.S.W. 29: 742 (1905). **Type:** New South Wales: Coffs Harbour to Grafton, Nov 1903, *J.H. Maiden & J.L. Boorman* (NSW, holo).

Shrub to 7 m high. Bark layered, papery. Branchlets puberulous, soon glabrescent. Leaves variously arranged, scattered to whorled often on one branchlet, flat or concave above, linear, acute, narrowly cuneate at base, 10–35 mm long, usually less than 1 mm wide, puberulous, soon glabrescent, 3-veined, usually only midvein visible, oil glands visible with lens; petioles *ca* 1 mm long. Inflorescence a many-flowered, open to dense, upper-axillary or terminal spike; flowers solitary within each bract; rachis puberulous, growing out at anthesis; bracts linear to ovate, *ca* 2 mm long, caducous; bracteoles ovate, caducous. Calyx tube cup-shaped, 1.5–2 mm long, glabrous; lobes triangular to ovate with narrow thin margin, *ca* 1 mm long, glabrous. Petals white, broadly elliptical with a short narrow claw, 2–3 mm long. Stamens white, glabrous; claw 6–12 mm long; filaments 30–60 attached to margins and upper surface for most of the length of each claw; free part to 4 mm long. Style 3–4 mm long, glabrous; stigma capitate. Ovary 1.5–2 mm long, pubescent above. Fruit cup-shaped, 2–3 mm long and wide, orifice 1.5–2.5 mm diam., calyx lobes usually fallen by maturity; in an open spike.

Along coast and adjacent ranges from Darling Downs, Queensland to Hunter River, New South Wales.

Selected specimens. Queensland. DARLING DOWNS DISTRICT: Messines via Cottonvale, Nov 1930, *Greener* (BRI); Wyberba, Jan 1933, *Blake* 4599 (BRI). New South Wales. O.B.X. Ck, Dalmorton to Grafton, Oct 1952, *Constable* (BRI, NSW).

This species is closely related to *M. linariifolia* but differs in its irregular leaf arrangement, shorter style and the bracts falling earlier. *M. alternifolia* has narrower leaves than *M. linariifolia* when populations of the two occur in the same area. It is a valuable oil producing species.

51. *Melaleuca decora* (Salisb.) J. Britten, J. Bot 54: 62 (1916); Blake Cont. Qd Herb. 1: 67 (1968). Based on *Metrosideros decora* Salisb., Prod. 352 (1796). **Type:** New South Wales, near Port Jackson, *David Burton* (LINN, *n.v.*).

Synonyms: see Blake (*loc. cit.*).

Shrub or tree to 12 m high. Bark layered, papery and fibrous. Branchlets pubescent with short crisped hairs, glabrescent. Leaves scattered, flat or concave above, linear, oblong or narrowly elliptical, acute, cuneate or narrowly attenuate at base, 15–16 mm long, 1–2 mm wide, shortly pubescent, glabrescent early, 3-veined usually obscure; oil glands usually obscure; petioles to 1 mm long, glabrescent. Inflorescence a many-flowered, open, upper-axillary or terminal spike (sometimes leafy so flowers appear axillary); flowers single within each bract to triads; rachis shortly pubescent, growing out before anthesis;

bracts leaf-like or ovate-acute to 5 mm long, deciduous; bracteoles rarely present, minute. Calyx tube campanulate to urceolate or subcylindrical, 1.5–2.2 mm long, glabrous or puberulous, sometimes with ciliolate margins. Petals white, broadly ovate-elliptical with a long claw, 2–2.5 mm long, often reflexed. Stamens white, glabrous; claw 2–3.5 mm long; filaments 20–40 attached to margin and sometimes upper surface of each claw, free part to 3.5 mm long. Style 6–7 mm long, thinly pubescent; stigma small. Ovary 1–1.5 mm long, pubescent above. Fruitcup-shaped or truncate-ellipsoid, 2–3 mm long and wide, orifice 1–2.5 mm diam.; calyx lobes deciduous; in open spikes.

Coast and adjacent ranges from Burnett River, Queensland to Shoalhaven River, New South Wales.

Selected specimens. Queensland. BURNETT DISTRICT: 11 miles [18 km] from Cracow on Eidsvold Rd, Jul 1966, *Everist & McDonald* 4 (BRI). DARLING DOWNS DISTRICT: R. 16, Malcolm, N of Chinchilla, in 1958, *Cameron* 59/156 (BRI). MORETON DISTRICT: Salisbury, near Brisbane, Nov 1930, *White* 7175 (BRI). New South Wales. Chullora, Nov 1952, *King* (BRI).

52. *Melaleuca linophylla* F. Muell., *Fragm.* 3: 115 (1862); Benth., *Fl. Austr.* 3: 145 (1867); Carrick & Chorney, *J. Adelaide Bot. Gard.* 1(5): 291 (1979). **Type:** NW Australia, in 1861, *F. Gregory* (MEL).

Shrub to 4 m high. Bark layered, papery. Branchlets woolly, glabrescent. Leaves scattered, flat, narrowly elliptical, tapered to long acute apex, narrowly cuneate at base, 10–35 mm long, 1–3 mm wide, 3-veined, usually only midvein visible, woolly, soon glabrescent, oil glands visible with lens. Inflorescence a many-flowered very dense upper axillary or terminal spike; flowers solitary within each bract; rachis villous, growing out before anthesis; bracts linear, caducous (very early); bracteoles absent. Calyx tube turbinate to subcylindrical, *ca* 1 mm long, thinly pubescent; lobes triangular, *ca* 0.5 mm long, glabrous, without hyaline margin. Petals white to yellow, broadly elliptical with long narrow claw, 1.5 mm long. Stamens white to yellow, glabrous; claw 1–3 mm long; filaments 8–15 attached to margin and upper surface of each claw, free part to 1.5 mm long. Style to 2 mm long, glabrous; stigma capitate. Ovary to 0.7 mm long; pubescent above. Fruit campanulate or subcylindrical, to 2 mm long and wide, orifice 1.5 mm diam., calyx lobes semipersistent; in a dense spike.

Western Australia: Pilbara area.

Selected specimens. Western Australia. Strelly, E of Port Hedland, *Cleland* (PERTH); 5.5 miles [9 km] N of Bonnie Downs, Oct 1975, *Demarz* (PERTH); 21 km N of Marble Bar, Aug 1965, *Beauglehole* (PERTH); NW Australia, between Ashburton & de Gray Rivers, *Clement* (PERTH).

This species has been confused with *M. dissitiflora* in the past. Recent collections have shown the species to be distinct and distinguishable by its very small flowers and short style. Carrick & Chorney (*loc. cit.*) considered Mueller's description of the style as 1 line long (2 mm) an error.

53. *Melaleuca diosmatifolia* Dum.-Cours., *Bot. Cult.* ed. 2 5: 373 (1811). No type nominated.

M. erubescens Otto, *Pl. Rar. Hort. Berol* 37 in Nees, *Hor., Phys. Berol* (1820). *M. ericifolia* var. *erubescens* (Otto) Benth., *Fl. Austr.* 3: 159 (1867). No type nominated.

M. fraseri Hooker, *Bot. Mag.* 60: t. 3210 (1833).

Shrub to 2 m high. Bark hard, rough. Leaves scattered, terete at least at base, sometimes flattened towards apex, apiculate, narrowly attenuate at base, 5–11(–15) mm long, about 0.5 mm diam., glabrous, 3-veined, veins obscure; oil glands visible, often raised below; petioles *ca* 0.5 mm long. Inflorescence a many-flowered, open to dense spike on axillary branchlets; flowers single within each bract; rachis glabrous, growing out before anthesis; bracts and bracteoles absent. Calyx tube cylindrical to campanulate, 2 mm long, glabrous; lobes triangular to semicircular, herbaceous with thin margins, 0.5 mm long. Petals pink, ovate, with or without short claw, to 2 mm long. Stamens pink, glabrous, claw 3.5–6 mm long; filaments 15–30 attached in two rows to margin of upper third of each claw, free part to 4 mm long. Style 8–10 mm long; stigma small. Ovary to 1.5 mm long, pubescent above. Fruit shortly cylindrical or barrel-shaped, 3 mm long and 4 mm wide, orifice 2 mm diam., calyx lobes persistent becoming obscure; usually in dense spike.

From Darling Downs in Queensland to coast and ranges near Sydney and western slopes south to Temora in New South Wales.

Selected specimens. Queensland. DARLING DOWNS DISTRICT: 5 miles [8 km] W of Kogan, Nov 1956, *Bowles* (BRI). New South Wales. Barradine & Narrabri, Dec 1916, *Burrows* (BRI); Lane Cove R., *Fletcher* (BRI); Weddin Mtn, 6 miles [10 km] SSW of Grenfell, Mar 1956, *Constable* (BRI).

Melaleuca diosmatifolia was first described by Dumont de Courset in 1811 from cultivated material and he gave a detailed description of habit, branchlets and leaves comparing the species with *M. armillaris* and *M. ericifolia*. His description of the leaves 'Feuilles cylindriques, eparses, vertes et glabres, longues 13 a 15 millimetres, et larges de trois quarts' can only be applied to one taxon from eastern Australia although the dimensions given are slightly larger than usually found in native populations. This name predates that of *M. erubescens* Otto. Otto placed Dumont de Courset's name in synonymy in 1820.

Bentham placed this taxon under *M. ericifolia* Smith as a variety, but de Candolle and Cheel recognised it as a separate species under the name *M. erubescens* and placed *M. diosmatifolia* in synonymy, misspelling it 'diosmifolia'.

The species differs from *M. ericifolia* in having terete or slightly flattened leaves with large oil glands, no bracts, pink flowers with more stamens and longer claws but shorter free part of the filaments.

If only eastern Australian species are considered *M. fraseri* can only be placed here. The description given is within the range of variation of the species. The illustration of the staminal bundle and flower are typical of the species but the general habit indicates wider leaves. This may be due either to the plants being cultivated in very much different situations to its natural environment or to artistic license.

54. *Melaleuca parvistaminea* Byrnes, *Austrobaileya* 1: 75 (1984). **Type:** Victoria: beside Goulburn River, 4 miles [6 km] NW of Yea, Oct 1964, Muir 3549 (MEL, holo; AD, iso).

Shrub or small tree to 4 m high. Bark layered, rough. Branchlets glabrous. Leaves scattered or ternate, linear, shallowly concave above, acute to obtuse, narrowly attenuate at base, 4–11 mm long, *ca* 1 mm wide, glabrous, 3-veined, veins obscure, oil glands few but often visible; petioles to 1 mm long. Inflorescence a many-flowered, dense, axillary, terminal or subterminal spike; flowers single within each bract; rachis ovate to leaf-like at apex of spike, caducous; bracteoles absent. Calyx tube campanulate, 1–1.5 mm long, glabrous; lobes triangular, *ca* 0.5 mm long, glabrous. Petals pink at first, fading, circular or broadly ovate, with or without short claw, to 1.5 mm long. Stamens white or yellow, glabrous; claw to 0.5 mm long; filaments 4–7 attached to margin of each claw, free part to 3 mm long. Style 5–6 mm long; stigma small. Ovary *ca* 1 mm long, pubescent above. Fruit campanulate to cylindrical, *ca* 3 mm long and wide, orifice to 2 mm diam., calyx lobes persistent becoming obscure; in a dense spike.

South-eastern Australia from Shoalhaven River, New South Wales to central Victoria.

Specimens examined. Victoria. Tinamba–Glenmaggie Rd, Oct 1973, *Willis* (MEL); Mitchells Ck at road crossing near Mitchellstown, Jun 1963, *Aston* (MEL) Hong Huggets Rd, (37°48'S, 146°51'E), Jun 1978, *Gullan 357 & Turner* (MEL); S side of Glenmaggie Weir, ± 5 km N of Heyfield, *Beaglehole* 43360, *Willis & Chesterfield* (MEL); ± 20 km WNW of Seymour P.O., Aug 1975, *Beaglehole* 50111 (MEL). New South Wales. between Bungonia & Marulan, Nov 1966, *Pullen* 4176 (BRI); Shoalhaven R., Tolwagn, Jan 1956, *Constable* (BRI); Wallagaraugh R., Princess Hwy, Aug 1970, *Beaglehole* 33674 (MEL).

This species differs from *M. ericifolia* in having harder more fibrous bark, narrower and usually longer inflorescences and usually only 3 or 5 filaments attached to each claw. The oil glands are easily seen with a hand-lens as tubercles or black spots on dried material. Willis (1972) noted this as a possibly undescribed taxon though he considered it may have been *M. ternifolia* F. Muell. ex Miq. *M. ternifolia* is a narrow-leaved form of *M. ericifolia*.

55. *M. pustulata* J.D. Hook., *Lond. J. Bot.* 6: 476 (1847); Curtis & Stone, *Endem. Fl. Tas.* 6: 430 (1978). **Type:** Tasmania: Campbelltown & Oyster Bay, R.C. Gunn 1069 (NSW, iso).

Shrub to 5 m high. Bark (not seen). Branchlets shortly villous. Leaves scattered, flat or concave above, narrowly ovate to narrowly obovate, obtuse, attenuate at base, 4–10 mm

long, 1–1.6 mm wide, sparsely villous, soon glabrescent, obscurely 3-veined, oil glands large, commonly visible on lower surface; petioles *ca* 1.5 mm long, glabrous. Inflorescence a few- to many-flowered, short terminal spike; flowers single within each bract; rachis woolly, growing out after anthesis; bracts ovate-acuminate to nearly circular, 2–3 mm long, margins ciliate; bracteoles absent. Calyx tube turbinate to cylindrical, *ca* 2 mm long and wide, glabrous, pustulate; lobes semicircular, *ca* 0.5 mm long, with narrow claw, *ca* 1 mm long. Stamens yellow, glabrous; claw 0.4–1 mm long; filaments 5–7 attached to the margin of each claw, free part to 7 mm long. Style 6–7 mm long, glabrous (absent in male flowers); stigma capitate. Ovary *ca* 1 mm long, pubescent above. Fruit cylindrical to ovoid, to 3 mm long and wide, orifice *ca* 2 mm diam., calyx lobes absent; few in open spike.

Tasmania, endemic in central eastern coastal areas.

Specimens examined. Tasmania. East Coast Highway, 7.2 km N of Cranbrook, Oct 1978, *Gray* 297 (HO); Bluemans Ck, 2 km from Calvert Ck [3 km from Tasman Highway], Sep 1980, *Moscal* 449 (HO); East Coast, Gunn's Herbarium 1069 & Reids R., *Stuart* 405 (NSW); ex Archer Herbarium (NSW).

56. *Melaleuca ericifolia* Smith, Trans. Linn. Soc. Lond. 3: 276 (1797); illustrated Smith & Sowerby, Exot. Bot. 1: 64 (1804); Benth., Fl. Austr. 3: 159 (1867). **Type:** LINN *n.v.*

M. gunniana Schauer in Walpers, Rep. 2: 928 (1843). **Type:** Tasmania: Nile River, *Stuart* (MEL, iso).

M. gunniana var. *capitata* F. Muell. ex Miq., Neder. Kruidk. Arch. 4: 120 (1856). **Type:** van Diemensland, *Stuart* (MEL, iso).

M. heliophila F. Muell. ex Miq., Neder. Kruidk. Arch. 4: 120 (1856). **Type:** Victoria, prope Yarra, *F. Mueller* (MEL, iso).

M. ternifolia F. Muell. ex Miq., Neder. Kruidk. Arch. 4: 123 (1856). **Type:** Argyle country NSW, *F. Mueller* (MEL, iso).

Shrub or small tree to 8 m high. Bark layered, corky. Branchlets glabrous. Leaves scattered, or sometimes ternate or few opposite pairs, linear, shallowly concave above, acute, sometimes apiculate, narrowly attenuate at base, 7–15 (–18) mm long, *ca* 1 mm wide, glabrous, 1–3-veined, obscure, oil glands mostly obscure; petioles to 1 mm long. Inflorescence a dense, rarely open, terminal spike; flowers single within each bract; rachis shortly tomentose, growing out about anthesis; bracts ovate, to 1 mm long, deciduous; bracteoles absent. Calyx tube turbinate to campanulate, *ca* 1 mm long, glabrous; lobes ovate, to 0.8 mm long, herbaceous with narrow margin, glabrous. Petals white, circular with short claw, *ca* 1 mm long. Stamens white, glabrous; claw to 2 mm long; filaments 7–13 attached to margin near apex of each claw, free part to 6 mm long. Style to 8 mm long, glabrous (absent in male flowers); stigma capitate. Ovary *ca* 0.8 mm long, pubescent above. Fruit campanulate to cylindrical, 2.5–4 mm long and wide, orifice 1.5–3 mm diam., calyx lobes persistent, becoming obscure with age; usually in dense spike.

South-eastern Australia from Hastings River, N.S.W. to central Victoria and south to Tasmania.

Selected specimens. New South Wales. Chullora, Sep 1952, *King* (BRI); Victoria: 2 miles [3 km] S of Lang Lang, Oct 1959, *Aston* 389 (BRI); Phillip Island, Oct 1971, *Phillips* 140 (BRI). Tasmania: Georges Bay, near Launceston, *Simson* 13 (BRI).

57. *Melaleuca squamea* Labill., Nov. Holl. Pl. Spec. 2: 28, t. 168 (1806); Benth., Fl. Austr. 3: 155 (1867); Carrick & Chorney, J. Adelaide Bot. Gard. 1(5): 309 (1979). **Type:** Tasmania: “in capite Van-Diemen”, Labillardiere (MEL, iso).

M. ottonis Otto & Dietr., Allg. Gartenz. 3: 167 (1835). **Type:** Cult. Berlin Bot. Gard. (MEL, iso).

M. squamea var. *glabra* Cheel, J. Roy. Soc. N.S.W. 58: 193 (1924). **Type:** about 15 syntypes (all NSW), no lectotype has been chosen.

Shrub to 3 m high, rarely to 6 m high. Bark corky. Branchlets villous, glabrescent. Leaves scattered, flat or concave above, often incurved towards apex, acute or acuminate, cuneate or narrowly attenuated at base, 4–10 mm long, 1–3 mm wide, usually villous, sometimes nearly glabrous, 3- sometimes 5-veined, visible with lens, oil glands usually obscure;

petioles to 1.5 mm long. Inflorescence a few-flowered terminal head or short spike; flowers single within each bract; rachis villous, growing out after anthesis; bracts broadly ovate, apiculate, to 5 mm long, sometimes with 3–5 distinct veins, glabrous or villous towards apex, usually persistent to anthesis; bracteoles absent. Calyx tube turbinate to campanulate, sometimes angular, 2–3 mm long, glabrous to thinly villous, glabrescent; lobes semicircular to triangular with narrow margins, 0.1–1 mm long, glabrous to puberulous. Petals pink-purple, rarely nearly circular with a short claw, 2–3 mm long. Stamens purple, pink or rarely white, glabrous; claw 0.5–1 mm long; filaments 4–9 attached to margin of each claw, free part to 6 mm long. Style 4–10 mm long (absent in male flowers); stigma small to capitate. Ovary *ca* 1.5 mm long, pubescent above. Fruit urceolate to ovoid, 5–7 mm long and wide, orifice 2–4 mm diam., calyx lobes absent, rim undulate; in dense clusters or few.

South-eastern Australia from northern coastal New South Wales to eastern South Australia and Tasmania.

Selected specimens. New South Wales. *ca* 3 miles [5 km] N of Evans Head on Broadwater Rd, Sep 1973, *Coveny* 5107 (NSW, BRI); Botany, Aug 1895, *Baker* (BRI). Victoria. near Mt Rosea, Nov 1920, *Audas* (BRI). Tasmania. Mt Field National Park, Feb 1932, *White* 8270 (white-flowered form) (BRI).

There is a continuous range of variation within this species from almost glabrous to villous, and *M. squamea* var. *glabra*, described as being 'almost glabrous', cannot be maintained.

58. *Melaleuca capitata* Cheel, Proc. Roy. Soc. N.S.W. 58: 194 (1924). **Type:** New South Wales: Jervis Bay, Dec 1916, *Cambage* 4258 (NSW, lectotype—chosen here).

Shrub to 2 m high. Bark rough, scaly. Branchlets thinly villous, glabrescent. Leaves scattered, flat or concave above, linear, acute, often apiculate, cuneate at base, 10–25 mm long, 1–3 mm wide, villous, glabrescent, 3-veined, usually only midvein visible, oil glands obscure; petioles 1.5–3 mm long, thinly pubescent above. Inflorescence a few-flowered, dense, terminal head or short spike; flowers single within each bract; rachis villous, growing out after anthesis; bracts obovate acuminate to 5 mm long, villous; bracteoles absent or very small. Calyx tube turbinate to campanulate, 2.5–3.5 mm long, villous; lobes triangular, 1–2 mm long, villous, without hyaline margins. Petals white, rhomboidal to nearly circular with claw, 2.5–3.5 mm long. Stamens pale yellow, glabrous; claw 1–2 mm long; filaments 14–22 attached to margin near apex of each claw, free part to 8 mm long. Style 10–12 mm long, glabrous; stigma small. Ovary 1.5–2 mm long, pubescent above. Fruit nearly globose, ovoid or urceolate, 5–6 mm long, 4–7 mm wide, orifice 2–3 mm diam., calyx lobes deciduous; in short spikes or heads or few together.

South-eastern Australia, catchment areas of Shoalhaven and Clyde Rivers, New South Wales.

Selected specimens. New South Wales. Jervis, Jul 1899, *Maiden* (NSW); Nowra to Nerriga, Feb 1910, *Boorman* (NSW); Nowra Rd., *ca* 3 miles [5 km] NE of Nerriga, Nov 1965, *Adams* 1519 (BRI, CANB); Eastern scarp, Budawong Ra., Nov 1979, *Byrnes* 3941 (BRI).

Of the syntypes, the specimen from Jervis Bay collected by R.H. Cambage on 25 Dec, 1916 and held at NSW is representative of the species, matches the description and here is nominated as the lectotype.

59. *Melaleuca dissitiflora* F. Muell., Fragm. 3: 153 (1863); Benth., Fl. Austr. 3: 144 (1867); Carrick & Chorney, J. Adelaide Bot. Gard. 1290 (1979). **Type:** Northern Territory: "Inter flumen Bonney et montem Morphett", *J. Macd. Stuart* (MEL).

Shrub to 3 m high. Bark layered, papery. Branchlets glabrous or puberulous, soon glabrescent. Leaves scattered, flat, linear-elliptical or linear-obovate, apiculate, narrowly cuneate at base, 10–40 mm long, 1–2 mm wide, puberulous, glabrescent early, 3-veined, veins usually obscure, oil glands usually obscure; petioles to 2 mm long, poorly defined. Inflorescence a many-flowered, open or dense, terminal or upper-axillary spike; flowers solitary within each bract; rachis glabrous, growing out before anthesis; bracts linear-ovate, to 8 mm long, glabrous, caducous; bracteoles triangular, caducous (rarely seen). Calyx tube urceolate or cylindrical, 2–3 mm long, glabrous; lobes triangular to 1 mm long, glabrous. Petals white or partly pink, broadly ovate with short narrow claw, 1–3 mm long. Stamens white, glabrous; claw 3–4 mm long; filaments 15–30 attached to margin and inner surface of each claw; free part to 4 mm long. Style 4–6 mm long,

glabrous; stigma peltate. Ovary 1–2 mm long, pubescent above. Fruit urceolate, 3–4 mm long and wide, orifice 1–2 mm diam., calyx lobes semipersistent; in an open or dense spike.

Central Australia in drier areas of Northern Territory, western Queensland and central and northern South Australia.

Selected specimens. Northern Territory. Crown Ck, 5 miles [8 km] W of Conniston H.S., May 1956, *Chippendale* (BRI); Harts Ra., 6 miles [10 km] S of Police Station, Jul 1957, *Chippendale* (BRI); 30 miles [48 km] W of Elkedra H.S., Mar 1957, *Forde 744* (BRI). Queensland. BURKE DISTRICT: Lake Moondarra, ca 5 km N of Dam, Jul 1974, *Ollerenshaw 1211* (BRI).

60. *Melaleuca lanceolata* Otto, Pl. Rar. Hort. Berol. in Nees Hor. Phys. Berol 36 (1820); Blake, Cont. Qd Herb. 1: 61 (1968); Carrick & Chorney, J. Adelaide Bot. Gard., 1(5): 295 (1979). **Type:** from plant cultivated in Berlin Botanic Gardens (G-DC, *n.v.*).

Synonyms: See Blake (*loc. cit.*).

Shrub or small tree to 10 m high. Bark black, rough, fissured. Branchlets pubescent, glabrescent. Leaves scattered, concave above or flat, linear-oblong to linear-ovate, acute, narrowly attenuate at base, 5–15 mm long, 1–3 mm wide, pubescent at first, soon glabrescent, 3-veined, veins usually obscure, oil glands obscure; petioles ca 1 mm long, usually pubescent above. Inflorescence a many-flowered, usually open, leafy, terminal-spike; flowers usually in triads; rachis pubescent, growing out before anthesis; bracts usually leaf-like; bracteoles present or absent, variously shaped. Calyx tube turbinate to subcylindrical, sometimes urceolate, 2–3 mm long, glabrous or sometimes puberulous towards base; lobes triangular, ca 1 mm long, without distinct margins. Petals white, ovate with short narrow claw, 1.5–2.5 mm long. Stamens white, glabrous; claw 1–1.5 mm long; filaments 8–14 attached to margin of each claw, free part 4–5 mm long. Style 5–7 mm long, glabrous, absent in male flowers; stigma small to capitate. Ovary 1–2 mm long, pubescent above. Fruit ovoid to urceolate, 4–5 mm long and wide, orifice ca 1 mm diam., calyx lobes semipersistent; in an open spike.

Southern Australia from Darling Downs, Queensland to south-western Western Australia.

Selected specimens. Queensland. DARLING DOWNS DISTRICT: Rocky Ck, near Millmerran, Jan 1958, *Roff* (BRI); Meandarra Rd, Feb 1975, *Williams 75001* (BRI). New South Wales. near Wyalong, Feb 1963, *Gauba* (BRI); Woolcunda Stn, 65 miles [104 km] S of Broken Hill, Jul 1955, *Constable* (BRI).

61. *Melaleuca howeana* Cheel, Proc. Roy. Soc. N.S.W. 58: 192 (1924). **Type:** New South Wales. Lord Howe Island, in 1898, *E. King & J. Maiden* (NSW).

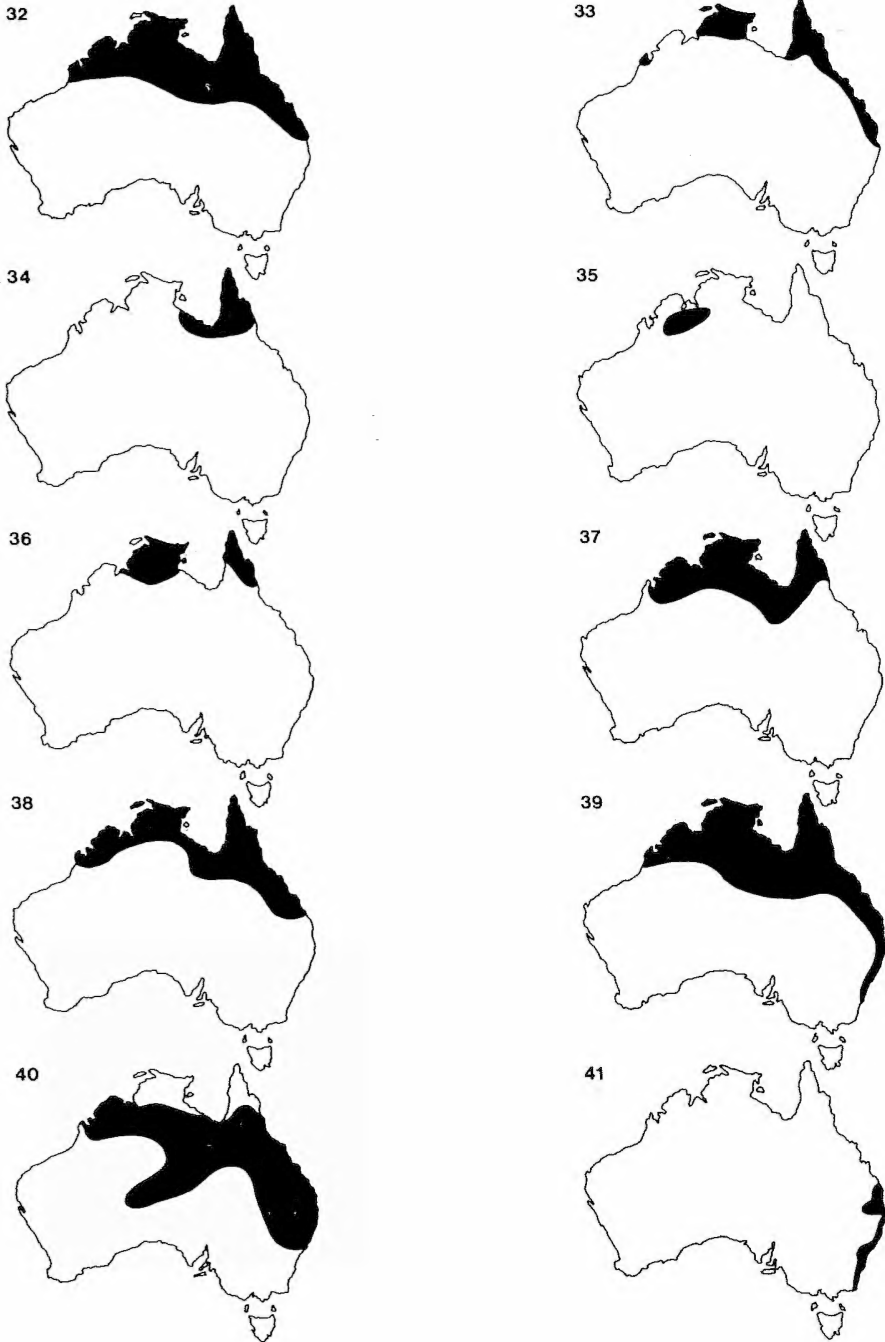
Shrub to 1 m high. Bark layered and hard. Branchlets glabrous. Leaves scattered, linear-oblong, flat, obtuse, attenuate at base, 4–8 mm long, 1–1.5 mm wide (juvenile leaves ovate to 15 mm long, and 5 mm wide), glabrous, 1–3-veined, veins obscure, oil glands obscure. Inflorescence usually a few-flowered, open terminal spike; flowers single within each bract; rachis tomentose, growing out after anthesis; bracts variously shaped, to 3 mm long; bracteoles broadly ovate, to 1 mm long. Calyx tube cylindrical to campanulate, 2–2.5 mm long, glabrous; lobes triangular to ovate with narrow ciliate margins, to 1 mm long, glabrous. Petals white, nearly circular, truncate or with short claw, 1–2 mm long. Stamens white, glabrous; claw ca 1 mm long; filaments 8–10 attached to margin of each claw, free part to 5 mm long. Style 5–6 mm long, glabrous; stigma small. Ovary ca 1.5 mm long, pubescent above. Fruit cylindrical to campanulate, to 5 mm long, 3–4 mm wide, orifice 2–2.5 mm diam., calyx lobes persistent; in an open spike.

Eastern Australia: Lord Howe Island.

Selected specimens. Lord Howe Island, Oct 1963, *Hoogland 2624* (NSW, BRI) & May 1920, *Boorman* (NSW).

References

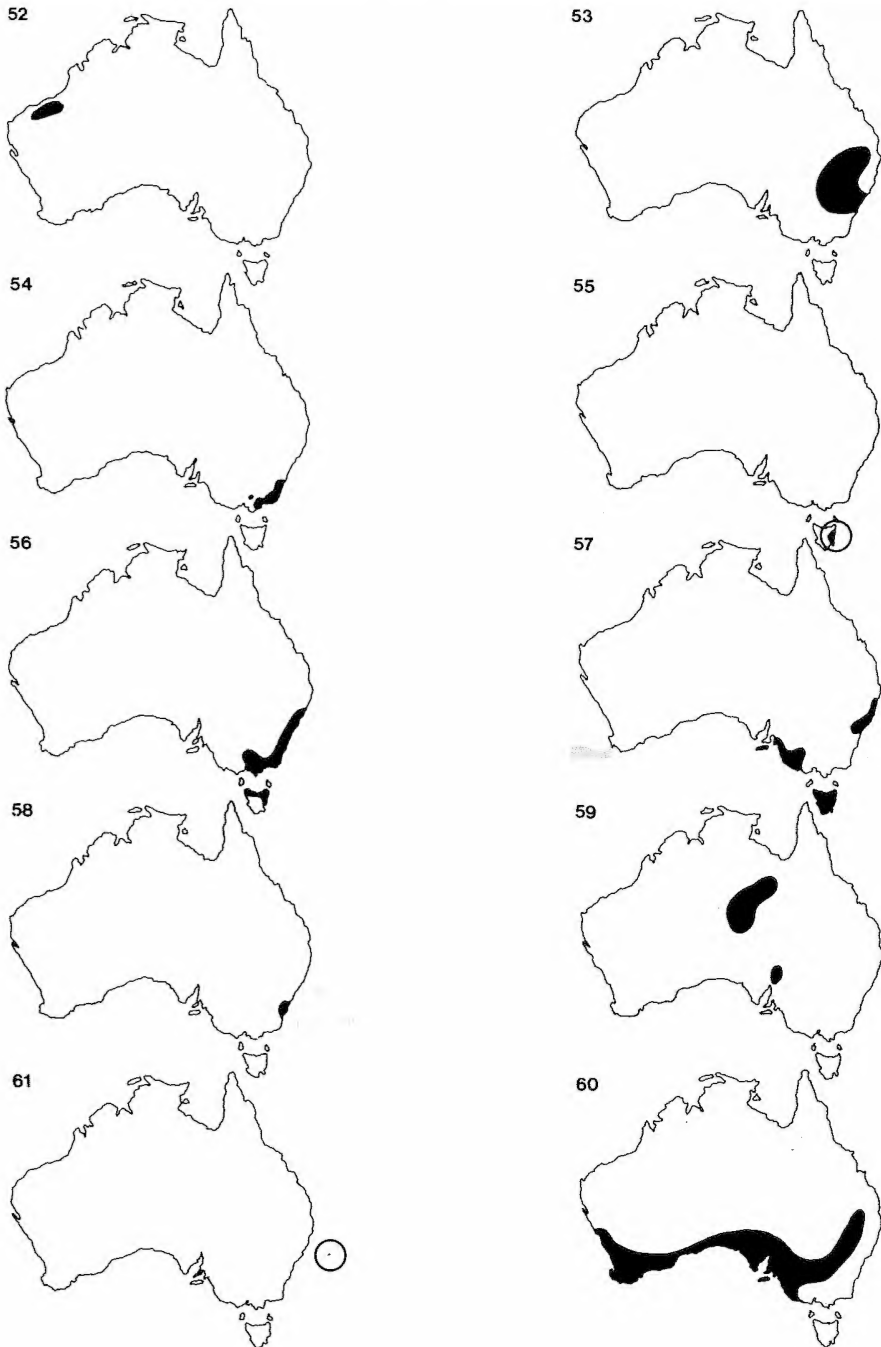
- BAILEY, F.M. (1883). A Synopsis of the Queensland Flora. Brisbane: Government Printer.
- BLAKE, S.T. (1968). A revision of *Melaleuca leucadendron* and its allies (Myrtaceae). *Contributions from the Queensland Herbarium* No. 1. 114 pp.
- WILLIS, J.H. (1972). A Handbook to Plants in Victoria. Melbourne: Melbourne University Press.



Maps 32. *Melaleuca nervosa*. **33.** *M. dealbata*. **34.** *M. stenostachya*. **35.** *M. sericea*. **36.** *M. cajuputi*. **37.** *M. argentea*. **38.** *M. leucadendra*. **39.** *M. viridiflora*. **40.** *M. bracteata*. **41.** *M. styphelioides*.



Maps 42. *Melaleuca viminalis*. 43. *M. arcana*. 44. *M. saligna*. 45. *M. groveana*. 46. *M. deanei*. 47. *M. sieberi*. 48. *M. kunzeoides*. 49. *M. armillaris*. 50. *M. alternifolia*. 51. *M. decora*.



Maps 52. *Melaleuca linophylla*. 53. *M. diosmatifolia*. 54. *M. parvistaminea*. 55. *M. pustulata*. 56. *M. ericifolia*. 57. *M. squamea*. 58. *M. capitata*. 59. *M. dissitiflora*. 60. *M. lanceolata*. 61. *M. howeana*.