

# Melaleuca (Myrtaceae) from Australia

Lyn A. Craven

Australian National Herbarium, Centre for Plant Biodiversity Research, CSIRO Plant Industry,  
GPO Box 1600, Canberra, ACT 2601, Australia. lyn.craven@csiro.au

**ABSTRACT.** Preparation of an account of *Melaleuca* L. (Myrtaceae) for *Flora of Australia* resulted in the recognition of nine new species and three subspecies of *Melaleuca*. The following are newly described from Australia: from Queensland: *M. hemistiecta* S. T. Blake ex Craven, *M. lazaridis* Craven, *M. montis-zamiae* Craven, *M. phratra* Craven, *M. pyramidalis* Craven, *M. quercina* Craven, *M. viminalis* (Solander ex Gaertner) Byrne subsp. *rhododendron* Craven, *M. williamsii* Craven subsp. *fletcheri* Craven; from New South Wales: *M. megalongensis* Craven & S. M. Douglas, *M. serpentina* Craven, *M. williamsii* subsp. *synoriensis* Craven; and from Queensland and New South Wales: *M. sabrina* Craven. The recently described *Callistemon wimmerensis* Marriott & G. W. Carr is transferred to *Melaleuca* as *M. wimmerensis* (Marriott & G. W. Carr) Craven.

**Key words:** Australia, IUCN Red List, *Melaleuca*, Myrtaceae, New South Wales, Queensland.

During revisionary work directed toward preparation of an account of *Melaleuca* L. and its closer allies for *Flora of Australia*, the delimitation of *Callistemon* R. Brown from *Melaleuca* was considered. The conclusion was reached that *Callistemon* was insufficiently distinct from *Melaleuca* for it to be maintained at generic rank and those species for which there was no valid name yet available in *Melaleuca* were formally transferred to that genus (Craven, 2006). Several undescribed taxa were identified in the course of the work and are newly described below. The recently described *C. wimmerensis* Marriott & G. W. Carr (Marriott & Carr, 2008) is transferred to *Melaleuca*.

The *Callistemon* group of *Melaleuca* is taxonomically challenging. Having studied, and considered at length, much herbarium material over the previous 10 years, supplemented with field observations, it is my belief that morphological studies alone will not permit a satisfactory taxonomy to be established. James (1958) concluded on the basis of detailed investigations into micro- and megasporogenesis that *Callistemon* contained both sexual and apomictic species. The sexual species he studied was *M. citrina* (Curtis) Dumont de Courset (as *Callistemon citrinus* (Curtis) Skeels), which is

diploid with  $2n = 22$  and thus typical of most other species of Myrtaceae, and the apomictic species he considered was *M. linearis* Schrader & J. C. Wendland (as the *C. rigidus*–*C. linearis*–*C. pinifolius* complex). James (1958) noted reports that indicated some populations of *M. linearis* may be diploid, and reported from his own observations  $2n$  counts of 33 and 44 for this species. It seems, therefore, that a single species of this complex may contain populations that are diploid, triploid, or tetraploid. Contemporary molecular techniques permit the rapid screening of large numbers of individuals and will be of benefit in further studies of the breeding systems of this part of the genus. Detailed understanding of these breeding systems, of both the more variable and widespread (e.g., *M. citrina* and *M. pallida* (Bonpland) Craven) and the localized, relatively invariant species (e.g., *M. serpentina* Craven), is an imperative before a lasting, stable taxonomy can be achieved. The inclusion of putative hybrid entities such as *C. forresterae* Molyneux, *C. genofluvialis* Molyneux, *C. kenmorrissonii* Molyneux, and others, together with the putative parental species *M. citrina* and *M. subulata* (Cheel) Craven (utilizing the relevant local populations of the latter two species), in molecular investigations will be necessary before their biological and taxonomic status can be determined. It has been reported that at least some of the putative hybrids produce uniform progeny (Molyneux, 1994, 1997). Genetic mechanisms, perhaps apomixis, may result in stabilization of hybrids that can persist in suitable ecotones.

## TAXONOMIC TREATMENT

- 1. *Melaleuca hemistiecta*** S. T. Blake ex Craven, sp. nov. TYPE: Australia. Queensland: Mt. Wheeler, SE side on trachyte cliff-lines, 7 Aug. 1993, *P. I. Forster, G. W. Wilson & R. F. Wilson 13792* (holotype, CANB; isotype, BRI not seen).

*Callistemon salignus* (Smith) Sweet var. *roseus* C. T. White, Proc. Roy. Soc. Queensland 55: 67. 1944, syn. nov. TYPE: Australia. Queensland: Port Curtis Distr., Forest Reserve 20, Maryvale, Yeppoon, Oct. 1924, *Richter s.n.* (holotype, BRI).

*A Melaleuca citrina* (Curtis) Dumont de Courset ramulis sericeo-lanuginulosus, glandibus laminae foliaris in tertia parte proximali solum praesentibus vel illic numerosioribus et antheris luteis differt.

Shrub 1–6 m tall; bark papery or approaching fibrous, hard, gray; branchlets glabrescent, sericeous-lanuginulous. Leaves alternate,  $42\text{--}102 \times 6\text{--}28$  mm,  $3.5\text{--}11\times$  as long as wide; blade sericeous to sericeous-pubescent, glabrescent, narrowly elliptic, narrowly ovate, elliptic, or rarely narrowly obovate, in transverse section transversely linear or  $\pm$  oblunate, base attenuate to narrowly attenuate, apex acute or shortly acuminate, primary veins pinnate, 15 to 31 on each side of the midrib, the oil glands dense to sparse, glands distinct or obscure, often only in the proximal region or along the midrib, when distributed throughout the blade more numerous in the proximal region. Inflorescences spicate, pseudoterminal and sometimes also upper axillary or interstitial, with 10 to 50 monads, 30–45 mm wide; hypanthium glabrescent, 2.9–3.9 mm; calyx lobes abaxially hairy (usually with cilia on the margin only), 1.2–1.6 mm, scarious in a marginal band 0.4–0.5 mm wide or herbaceous to the margin; petals deciduous, 3.4–5.4 mm; stamens free, 35 to 53 per flower; filaments red or reddish pink, 16–17 mm; anthers yellow; style 17–24 mm; ovules ca. 100 to 200 per locule. Fruit 4–5.2 mm, calyx lobes deciduous; inner distal wall of staminophore without reflexed, free, antesealous, triangular processes; seed with obvolute cotyledons.

*Distribution, ecology, and phenology.* In Australia, this species occurs in the Bowen-Bundaberg District and adjacent islands of Queensland. It has been recorded to occur in shrubland, rainforest margins, shrubby low open forest, the edge of riverine rainforest, *Lophostemon* Schott scrub, cliff tops, a creek bed with small boulders, a rocky hillside beside creek above mangrove, shrub community at base of rock face, windswept heathland, and on rhyolite, granite, trachyte, and brown stony soil. The species flowers from March to September.

*IUCN Red List category.* *Melaleuca hemisticta* can be regarded as of Least Concern (LC) according to the IUCN Red List categories and criteria (IUCN, 2001) as it is a widespread species.

*Etymology.* The specific epithet is derived from the Greek, “hemi-,” meaning “half,” and “stictos,” meaning “spotted,” in reference to the distribution of the oil glands within the leaf lamina.

*Notes.* The species is given the unpublished specific epithet coined by S. T. Blake and described as new in preference to raising *Callistemon salignus* var. *roseus* to specific rank, because the epithet *roseus*

is not diagnostic for the *Callistemon* group. The relative distribution of leaf oil glands, i.e., being only or more numerous in the proximal third of the blade, is diagnostic for this species and the epithet *hemisticta* reflects this.

*Melaleuca hemisticta* resembles *M. citrina*, but *M. citrina* differs in having papery bark on the main stems (vs. fissured and hard in *M. hemisticta*), branchlet indumentum that is velutinulous or sericeous-pubescent (vs. sericeous-lanuginulous in *M. hemisticta*), uniformly distributed oil glands in the leaf blades (vs. oil glands often only in the proximal region or along midrib in *M. hemisticta*), and purple to dark reddish anthers (vs. yellow anthers in *M. hemisticta*).

*Paratypes.* AUSTRALIA. **Queensland:** Whitsunday Island, *C. Warrian* 228 (BRI); Blackwood Natl. Park, *P. Thompson* 41 (BRI); near Mangrove Beach, Shaw Island, *G. N. Batianoff* & *C. Dallison* 3124 (BRI); 300 m S of Mt. Bertha, Gloucester Island, *G. N. Batianoff*, *H. A. Dillewaard* & *J. Lind* 9403307 (AD, BRI, CANB, DNA); Shoalwater Bay (Passage 3), strait S of Townshend Island, 26 Aug. 1802, *R. Brown* s.n. (CANB, NSW); summit area of Mt. Stanley, Mt. Stanley Natl. Park, Many Peaks Range, *P. I. Forster* 16273 (CANB); Ropers Peak, Peak Range, *P. I. Forster* 7208 (CANB, MEL, NSW, PERTH); E slopes, Mt. Castletower Natl. Park, Many Peaks Range, *P. I. Forster* 16335 (CANB); Mt. Walsh, near Biggenden, *L. A. Craven* & *J. A. Matarczyk* 9963 (CANB).

**2. *Melaleuca lazaridis*** Craven, sp. nov. TYPE: Australia. Queensland: Rockland Springs, 34 km SSE of Blackwater township, 6 Sep. 1961, *M. Lazarides* & *R. Story* 48 (holotype, CANB; isotypes, A, AD, ASU, BRI, DNA, MEL, PERTH).

*A Melaleuca citrina* (Curtis) Dumont de Courset cortice fibrosa, staminibus numerosioribus (48 ad 59) et antheris luteis differt.

Shrub 1–4 m tall; bark fibrous, hard; branchlets glabrescent, lanuginulous to sericeous-pubescent. Leaves alternate,  $43\text{--}119 \times 4.5\text{--}17$  mm,  $7\text{--}17\times$  as long as wide; blade sericeous, glabrescent, narrowly elliptic, narrowly ovate, very narrowly ovate, or very narrowly elliptic, in transverse section transversely linear, sublunate, or  $\pm$  oblunate, base narrowly attenuate or narrowly cuneate, apex acute, primary veins pinnate, 9 to 29 on each side of the midrib, oil glands dense or moderately dense, distinct. Inflorescences spicate, pseudoterminal or interstitial, with 25 to 60 monads, 35–60 mm wide; hypanthium glabrescent or hairy, 3.8–4.7 mm; calyx lobes abaxially hairy or glabrescent, 1.4–2 mm, scarious in a marginal band 0.4–0.9 mm wide; petals deciduous, 4.5–6.5 mm; stamens free, 48 to 59 per flower; filaments red, pink,

or mauve, 17–23 mm; anthers yellow; style 24–29 mm; ovules ca. 150 to 300 per locule. Fruit 4.5–5.7 mm, calyx lobes deciduous; inner distal wall of staminophore without reflexed, free, antesealous, triangular processes; seed with obvolvate cotyledons.

*Distribution, ecology, and phenology.* Within Australia, *Melaleuca lazaridis* occurs only in the Blackdown Tableland District of Queensland. Here, it has been reported to occur in open forest, on the top edge of an escarpment, along creek beds, on pale brown sandy loam, on skeletal sand over sandstone, on weathered sandstone, and on gravelly orange-brown sandy loam. The species has been collected in flower in June, August, and September.

*IUCN Red List category.* According to IUCN Red List criteria (IUCN, 2001), the category Vulnerable (VU) is appropriate for *Melaleuca lazaridis*, because it is restricted to the Blackdown Tableland region of Queensland. However, because much of the Blackdown Tableland region is incorporated in a national park, its continued survival is not likely to be threatened.

*Etymology.* The specific epithet honors Michael Lazarides (1928–), whose collections of plants made over four decades during CSIRO's northern Australian land resources surveys have contributed significantly to our knowledge of the flora of the region.

*Notes.* *Melaleuca lazaridis* apparently is related to *M. citrina* and *M. hemisticta* and is distinguished from them by the following combinations of character states: *M. lazaridis*: bark of main stems fibrous, branchlet indumentum lanuginulous or sericeous-pubescent, oil glands equally distributed across the leaf blade and equally distinguishable on each surface of the leaf, inflorescence up to 60 mm wide, hypanthium sericeous, calyx lobes free, anthers yellow, and cotyledons about half as long as the embryo. The corresponding states in *M. citrina* are: bark papery, branchlet indumentum velutinulous or sericeous-pubescent, oil glands equally distributed across the leaf blade and equally distinguishable on each surface of the leaf, inflorescence up to 70 mm wide, hypanthium sericeous-pubescent, calyx lobes free or connate at the base, anthers purple to dark red, and cotyledons about one third as long as the embryo; and in *M. hemisticta*: bark fissured and hard, branchlet indumentum sericeous-lanuginulous, oil glands not equally distributed across the leaf blade (see above) and more visible on the abaxial surface of the blade than on the adaxial surface, inflorescence up to 45 mm wide, hypanthium sericeous-pubescent, calyx lobes connate at the base, anthers yellow, and cotyledons about half to one third as long as the embryo.

*Paratypes.* AUSTRALIA. **Queensland:** Blackdown Tableland, 3.4 km SW of Horseshoe Lookout turnoff on main rd., B. J. Lepschi & A. V. Slee 1193 (BRI, CANB); a few hundred meters from Stony Creek Falls lookout along walking track, L. A. Craven & J. A. Matarczyk 9990 (BRI, CANB); ca. 6 km W from Forestry camp area on Mimosa Creek, K. A. W. Williams 74033 (BRI).

**3. *Melaleuca megalongensis*** Craven & S. M. Douglas, sp. nov. TYPE: Australia. New South Wales: just inside gate of Warri Warri Farm on Nellies Glen Rd., E edge of Megalong Valley, ca. 5 km SW of Katoomba, 3 Dec. 2002, L. A. Craven, D. Mallinson & S. M. Douglas 10442 (holotype, CANB; isotypes, A, AD, AK, ASU, BRI, CHR, E, G, HO, K, L, MEL, MO, NE, NSW, NY, P, PRE, RSA, UC).

A *Melaleuca citrina* (Curtis) Dumont de Courset ramulis sericeis, hypanthio brevior (3.3–3.5 mm longo), staminibus brevioribus (9.5–14 mm longis) et cotyledonibus concavo-convexis differt.

Shrub to 5 m tall; bark subpapery, medium soft, flaking or peeling; branchlets glabrescent, sericeous. Leaves alternate, 35–55 × 3.5–5 mm, 8.8–12.5× as long as wide; blade sericeous, glabrescent, narrowly elliptic to narrowly obovate, in transverse section transversely linear (and usually thickened at the margin and midrib), base narrowly cuneate, apex narrowly acute to narrowly acuminate, primary veins pinnate, ca. 15 to 24 on each side of the midrib, oil glands moderately dense, distributed throughout the lamina, distinct or obscure. Inflorescences spicate, pseudoterminal, with 25 to 60 monads, 30–40 mm wide; hypanthium hairy, 3.3–3.5 mm; calyx lobes abaxially glabrescent, 1.7–2 mm, scarious in a marginal band ca. 0.5–0.7 mm wide; petals deciduous, 3.3–3.7 mm; stamens free, ca. 45 to 50 per flower; filaments magenta-pink, 9.5–14 mm; anthers dark red; style 17–19 mm; ovules numerous. Fruit ca. 6 mm, calyx lobes deciduous; inner distal wall of staminophore without reflexed, free antesealous triangular processes; seed with concavo-convex cotyledons.

*Distribution, ecology, and phenology.* *Melaleuca megalongensis* is known to occur only in Megalong Valley in New South Wales, Australia. Here, it occurs on a spring-fed (and winter wet) flat with *Lomandra* Labillardière, surrounded by open eucalyptus forest with *Leptospermum* J. R. Forster & G. Forster, *Hakea* Schrader, and *Acacia* Miller growing mainly in the interzone between the flat and the forest. It flowers in November and December.

*IUCN Red List category.* According to IUCN Red List criteria (IUCN, 2001), the category Vulnerable

(VU) is appropriate for *Melaleuca megalongensis* because it is restricted to Megalong Valley in New South Wales, where it occurs in small, scattered populations.

**Etymology.** The specific epithet is derived from the locality, Megalong Valley.

**Notes.** *Melaleuca megalongensis* is apparently closely related to *M. citrina*. The two species differ in the following features: branchlet indumentum (sericeous in *M. megalongensis* vs. velutinous or sericeous-pubescent with sparse over-topping velutinous hairs in *M. citrina*), inflorescence width (30–40 mm in *M. megalongensis* vs. 45–70 mm in *M. citrina*), hypanthium length (3.3–3.5 mm in *M. megalongensis* vs. 3.8–5.4 mm in *M. citrina*), petal length (3.3–3.7 mm in *M. megalongensis* vs. 3.9–5.8 mm in *M. citrina*), stamen length (9.5–14 mm in *M. megalongensis* vs. 17–25 mm in *M. citrina*), style length (17–19 mm in *M. megalongensis* vs. 23–31 mm in *M. citrina*), and cotyledon orientation (concavo-convex in *M. megalongensis* vs. obvolute in *M. citrina*).

**4. *Melaleuca montis-zamiae* Craven, sp. nov.**

TYPE: Australia. Queensland: upstream from Freds Gorge, Mt. Zamia Environ. Park, ca. 3.5 km NW of Springsure, 16 Oct. 1993, *B. J. Lepschi & A. V. Slee 1186* (holotype, CANB; isotypes, A, BRI, L, MEL, NSW).

A *Melaleuca citrina* (Curtis) Dumont de Courset cortice fibrosa, ramulis sericeis, hypanthio brevior (3–3.4 mm longo) et antheris luteis differt.

Shrub or tree 2.5–4 m tall; bark fibrous; branchlets glabrescent, sericeous. Leaves alternate, 37–92 × 2.5–9 mm, 9.5–15 × as long as wide, petiolate; blade sericeous, glabrescent, very narrowly elliptic, to narrowly ovate or narrowly elliptic, in transverse section transversely linear or sublunate, base very narrowly attenuate or narrowly cuneate, apex acute or shortly acuminate, primary veins pinnate, 18 to 27 on each side of the midrib, oil glands dense or moderately scattered, distinct. Inflorescences spicate, pseudoterminal or interstitial, with 10 to 40 monads, 30–45 mm wide; hypanthium glabrous or hairy, 3–3.4 mm; calyx lobes abaxially hairy or glabrescent, 1–1.3 mm, scarious in a marginal band ca. 0.3 mm wide or herbaceous to the margin; petals deciduous, 3.1–4.7 mm; stamens free, 40 to 58 per flower; filaments red, 14–17 mm; anthers yellow; style 12–20 mm; ovules ca. 200 per locule. Fruit 3.4–4.9 mm, calyx lobes deciduous; inner distal wall of staminophore without reflexed, free antesealous triangular processes; seed with obvolute cotyledons.

**Distribution, ecology, and phenology.** In Australia, *Melaleuca montis-zamiae* occurs in the Springsure District of Queensland, where it has been collected in riparian scrub, on a cliff top, and along an ephemeral watercourse. It flowers in August and September.

**IUCN Red List category.** According to IUCN Red List criteria (IUCN, 2001), the category Vulnerable (VU) is appropriate for *Melaleuca montis-zamiae*, because it is restricted to the Mt. Zamia region of Queensland. Further research is required to determine if the species occurs elsewhere in the Springsure area.

**Etymology.** The specific epithet is derived from the locality Mt. Zamia (from the Latin “mons,” meaning “mountain,” and *Zamia*, a genus of plant).

**Notes.** This species is distinguished from *Melaleuca citrina* in the following character states: bark texture (fibrous in *M. montis-zamiae* vs. papery in *M. citrina*), branchlet indumentum (sericeous in *M. montis-zamiae* vs. velutinous or sericeous-pubescent with sparse over-topping velutinous hairs in *M. citrina*), inflorescence rachis indumentum (sericeous or sericeous-pubescent in *M. montis-zamiae* vs. pubescent or lanuginulous-pubescent in *M. citrina*), inflorescence width (30–45 mm in *M. montis-zamiae* vs. 45–70 mm in *M. citrina*), hypanthium length (3–3.4 mm in *M. montis-zamiae* vs. 3.8–5.4 mm in *M. citrina*), anther color (yellow in *M. montis-zamiae* vs. purple to dark red in *M. citrina*), style length (12–20 mm in *M. megalongensis* vs. 23–31 mm in *M. citrina*).

**Paratypes.** AUSTRALIA. **Queensland:** Mt. Zamia, near Springsure, *B. O’Keefe 795* (BRI), *D. F. Blaxell & J. Armstrong 1501* (CANB, NSW), *A. R. Bean 2076* (BRI).

**5. *Melaleuca phratra* Craven, sp. nov. TYPE:**

Australia. Queensland: Wilgavale, S headwaters of Little Plain Creek, 1.5 km S of State Forest 176, near Texas, 9 Jan. 1993, *P. I. Forster & D. Halford 12693* (holotype, BRI; isotype, CANB).

A *Melaleuca paludicola* Craven ramulis pubescentibus vel lanuginoso-pubescentibus, et lamina foliari trichomatibus semper sericeis et antheris luteis differt.

Shrub or tree 2–10 m tall; bark fissured, grayish brown or black; branchlets glabrescent, pubescent to lanuginous-pubescent. Leaves alternate, 22–57 × 1.2–5 mm, 10–30 × as long as wide; blade sericeous, glabrescent, narrowly elliptic, in transverse section transversely linear or sublunate, base narrowly attenuate or narrowly cuneate, apex acute or shortly acuminate, primary veins pinnate, 13 to 24 on each side of the midrib, oil glands not seen. Inflorescences spicate, pseudoterminal or interstitial, with 10 to 30



Table 1. Morphological characters distinguishing *Melaleuca paludicola*, *M. phratra*, *M. quercina*, and *M. sabrina*.

Character	<i>M. paludicola</i>	<i>M. phratra</i>	<i>M. quercina</i>	<i>M. sabrina</i>
Branchlet indumentum	hispidulous or strigose	pubescent or lanuginous-pubescent	lanuginous	pubescent
Leaf blade indumentum	lanuginous or sericeous	sericeous	sericeous	pubescent to sericeous-pubescent
Calyx lobe indumentum	sericeous-pubescent	sericeous-pubescent	sericeous-pubescent	lanuginulous
Stamen length (mm)	7–11	7–11	10–14	17–24
Staminal filament color	cream, yellow, or pink	cream, yellow, or pink	cream, yellow, or pink	red
Anther color	pink	yellow	yellow	yellow
Style length (mm)	10–15	12–15	12–13	20–26
Cotyledons (times as long as the embryo)	ca. 1/2	ca. 1/3	ca. 1/2	ca. 1/3

monads, 25–30 mm wide; hypanthium hairy or glabrescent, 1.7–2.8 mm; calyx lobes abaxially hairy or glabrescent (sometimes with cilia on the margin only), 0.5–1.2 mm, herbaceous to the margin; petals deciduous, 2–3.8 mm; stamens free, 47 to 72 per flower; filaments pinkish red, pink, or creamy pale pink, 7–11 mm; anthers yellow; style 12–15 mm; ovules ca. 100 to 150 per locule. Fruit 3.1–3.7 mm, calyx lobes deciduous; inner distal wall of staminophore without reflexed, free antesepalous triangular processes; seed with obvolute cotyledons.

*Distribution, ecology, and phenology.* In Australia, *Melaleuca phratra* occurs in the Injune and Texas districts of Queensland, where it has been recorded as occurring in shrubland on creek banks and on limestone. The species flowers from November to February.

*IUCN Red List category.* According to IUCN Red List criteria (IUCN, 2001), the category Data Deficient (DD) is appropriate for *Melaleuca phratra*, because, despite its occurrence across a relatively wide area, the size and conservation status of the several populations are unknown. It may be that the category Vulnerable (VU) would be more appropriate.

*Etymology.* The specific epithet refers to the group of species in southeastern Queensland and northeastern New South Wales that putatively are closely related to *Melaleuca paludicola* Craven, i.e., *M. phratra*, *M. quercina* Craven, and *M. sabrina* Craven (from the Greek, “phratra,” meaning “clan” or “brotherhood”).

*Notes.* *Melaleuca phratra*, *M. quercina*, and *M. sabrina* appear to be very closely related to *M. paludicola*, a widespread species that occurs in South Australia, Victoria, New South Wales, and the extreme south of Queensland. The four species can be distinguished by the respective combinations of character states listed in Table 1.

*Paratypes.* AUSTRALIA. **Queensland:** Injune, in creek at rd. crossing to Taroom, *R. D. Spencer* 95 (BRI, MEL); Little Plains Creek, 25 km SE of Texas, *L. Pedley* A7402 (BRI, CANB, NSW); Western Creek Forestry, W of Millmerran, Mar. 1978, *H. Horton* s.n. (BRI, NSW); jct. of Dogwood Creek & Condamine River, ca. 48 km WSW of Condamine, 18 Jan. 1970, *K. Emmerson* s.n. (BRI); Charleys Creek, Chinchilla, 16 Mar. 1963, *K. Emmerson* s.n. (BRI).

**6. *Melaleuca pyramidalis*** Craven, sp. nov. TYPE: Australia. Queensland: top of Walshs Pyramid, near Gordonvale, 29 July 1993, *P. I. Forster* 13767 (holotype, BRI; isotypes, CANB, MEL, QRS).

A *Melaleuca citrina* (Curtis) Dumont de Courset glandibus laminae foliaris obscuris, hypanthio sericeo brevior (2.2–3.6 mm longo) et antheris luteis differt.

Shrub or tree 1.5–3.5 m tall; bark papery, compact, dark gray; branchlets glabrescent, sericeous or sericeous-pubescent (and then with a sparse layer of long hairs overlying a dense layer of shorter hairs). Leaves alternate, 29–84 × 8–24 mm, 3–4.5× as long as wide; blade sericeous or sericeous-pubescent, glabrescent, narrowly elliptic, narrowly obovate, or elliptic, in transverse section transversely linear, base attenuate to narrowly attenuate, apex obtusely shortly acuminate, shortly acuminate, or acute, primary veins pinnate, 15 to 28 on each side of the midrib, oil glands sparse, obscure. Inflorescences spicate, interstitial, with 20 to 50 monads, 40–60 mm wide; hypanthium hairy or rarely glabrous, 2.2–3.6 mm; calyx lobes abaxially hairy (sometimes with cilia on the margin only), 1–2.3 mm, scarious in a marginal band 0.2–0.4 mm wide or herbaceous to the margin; petals deciduous, 2.8–6.3 mm; stamens free, 35 to 42 per flower; filaments red or pink, 15–24 mm; anthers yellow; style 16–32 mm; ovules ca. 120 to 160 per locule. Fruit 3.8–5 mm, calyx lobes weathering away; inner distal wall of staminophore with reflexed, free

antesepalous  $\pm$  square processes; seed with obvolute cotyledons.

*Distribution, ecology, and phenology.* In Australia, *Melaleuca pyramidalis* occurs in the Gordonvale–Ingham region of Queensland, where it has been recorded as growing in open forest, along a creek, on rocky slopes and hilltops, rarely in [?freshwater] mangrove swamp, on granite, and in sandy humus soil. The species has been collected in flower in July and August.

*IUCN Red List category.* According to IUCN Red List criteria (IUCN, 2001), the category Vulnerable (VU) is appropriate for *Melaleuca pyramidalis*, because presently it is known from few localities and some of these are elevated sites that in the future could be subject to changed land use (e.g., building developments), whereas at present they effectively are undisturbed.

*Etymology.* The specific epithet is derived from the locality, Walshs Pyramid.

*Notes.* *Melaleuca pyramidalis* putatively is closely related to *M. citrina*, and the two species can be distinguished by the following character states: leaf oil glands (obscure in *M. pyramidalis* vs. distinctly visible in *M. citrina*), hypanthium indumentum (sericeous in *M. pyramidalis* vs. sericeous-pubescent in *M. citrina*), hypanthium length (2.2–3.6 mm in *M. pyramidalis* vs. 3.8–5.4 in *M. citrina*), anther color (yellow in *M. pyramidalis* vs. purple to dark red in *M. citrina*), and cotyledon length (ca. 1/2 as long as the embryo in *M. pyramidalis* vs. ca. 1/3 as long as the embryo in *M. citrina*).

*Paratypes.* AUSTRALIA. **Queensland:** summit of Walshs Pyramid, *H. Flecker s.n. NQNC 5056* (BRI, QRS); ca. 16 km N of Ingham, *R. Smith 1* (BRI); Hinchinbrook Island, NE slope of Mt. Diamantina, *S. T. Blake 18858* (BRI).

**7. *Melaleuca quercina*** Craven, sp. nov. TYPE: Australia. Queensland: Oakey Creek on W side of Brookvale Park Rd., 10 km W of Oakey, 7 Mar. 1991, *M. E. Ballingall 2720* (holotype, CANB; isotypes, A, BRI, L).

A *Melaleuca paludicola* Craven ramulis lanuginosis et antheris luteis differt.

Tree 6–10 m tall; bark corky, dark; branchlets glabrescent, lanuginous. Leaves alternate, 23–74  $\times$  3.5–12 mm, 4.7–9  $\times$  as long as wide; blade sericeous, glabrescent, narrowly elliptic or elliptic, in transverse section transversely linear, sublunate, or obsubulate, base narrowly attenuate, apex shortly acuminate or acute, primary veins pinnate, 11 to 20 on each side of the midrib. Inflorescences spicate, interstitial or

pseudoterminal, with 15 to 40 monads, 25–30 mm wide; hypanthium glabrescent or glabrous, 2.5–3.2 mm; calyx lobes abaxially hairy (sometimes with cilia on the margin only), 1–1.3 mm, herbaceous to the margin; petals deciduous, 3.1–4.4 mm; stamens free, 70 to 94 per flower; filaments pink, cream, or pale yellow, 10–14 mm; anthers yellow; style 12–13 mm; ovules ca. 110 to 150 per locule. Fruit 3–5.3 mm, calyx lobes deciduous; inner distal wall of staminophore without reflexed, free antesepalous triangular processes; seed with obvolute cotyledons.

*Distribution, ecology, and phenology.* *Melaleuca quercina* occurs in the Dalby–Oakey District of Queensland, Australia. There, it grows along the flats and banks of creeks and rivers, on blackish brown clay. It has been collected in flower in October, December, and February.

*IUCN Red List category.* According to IUCN Red List criteria (IUCN, 2001), the category Data Deficient (DD) is applicable to *Melaleuca quercina*. Presently it is known only from the Oakey Creek and Clifton areas of Queensland, and both of these are in agricultural country. With further field investigations, the category Near Threatened (NT) may be more appropriate.

*Etymology.* The specific epithet is derived from *Quercus* L. (oak) in reference to the locality Oakey Creek. It is noted that the term “oak” in Australia commonly, but not exclusively, is applied to plants of the genus *Casuarina* L. (In the common names of *Casuarina* species, the term apparently is to be spelled “-oke” as in buloke.)

*Notes.* The differences between this species and its putative relatives, *Melaleuca paludicola*, *M. phratra*, and *M. sabrina*, are given in Table 1.

*Paratypes.* AUSTRALIA. **Queensland:** Oakey Creek crossing on rd. to Brookvale Park, ca. 7 km W of Oakey, *B. J. Lepschi & A. V. Slee 1330* (BRI, CANB); Oakey Creek, near Brookvale Park, also where rd. from Jondaryan crosses Oakey Creek, *P. F. Lumley 1132* (CANB, MEL); Aides Bridge, Kings Creek, 4 km W of Clifton, *B. J. Lepschi & A. V. Slee 1332* (BRI, CANB).

**8. *Melaleuca sabrina*** Craven, sp. nov. TYPE: Australia. Queensland: Severn River, where crossed 8 km W of Fletcher by rd. W from New England Hwy., S of Stanthorpe, 19 Nov. 1983, *P. F. Lumley 1118* (holotype, MEL; isotypes, BRI, CANB).

A *Melaleuca paludicola* Craven lamina foliari pubescente vel sericeo-pubescente, lobis calycinis lanuginulosus, staminibus longioribus (17–24 mm longis) filamentis rubris antheris luteis et stylo longiore differt.

Shrub or tree 1–4 m tall; bark fibrous; branchlets glabrescent, pubescent. Leaves alternate, 10–59 × 1–3.5 mm, 8–27× as long as wide; blade pubescent to sericeous-pubescent, glabrescent, narrowly elliptic, narrowly obovate, linear-elliptic, or linear-obovate, in transverse section transversely linear, sublunate, or suboblunate, base narrowly attenuate, narrowly cuneate, or parallel (blade width equals petiole width), apex shortly acuminate or acute, primary veins pinnate, 9 to 17 on each side of the midrib. Inflorescences spicate, interstitial or pseudoterminal, with 5 to 25 monads, 30–50 mm wide; hypanthium hairy, 2.6–3.5 mm; calyx lobes abaxially hairy, 1–1.9 mm, herbaceous to the margin or scarious in a marginal band 0.2–0.3 mm wide; petals deciduous, 3.2–5.3 mm; stamens free, 49 to 73 per flower; filaments red, 17–24 mm; anthers yellow; style 20–26 mm; ovules ca. 100 to 200 per locule. Fruit 3.5–3.8 mm, calyx lobes deciduous; inner distal wall of staminophore without reflexed, free antesealous triangular processes; seed with obvolute cotyledons.

*Distribution, ecology, and phenology.* *Melaleuca sabrina* occurs in Australia in the Stanthorpe District of Queensland and the Tenterfield District of New South Wales. The species has been recorded as occurring on a floodplain in granite sand among boulders, and on alluvial stream banks. It flowers from October to January and in March.

*IUCN Red List category.* According to IUCN Red List criteria (IUCN, 2001), the category Data Deficient (DD) is applicable to *Melaleuca sabrina*. The species does occur in agricultural country, but the present pattern of land use is unlikely to lead to severe degradation of its riverine habitat to the extent that its continued survival is of concern. However, with further field investigations the category Near Threatened (NT) or Vulnerable (VU) may be more appropriate.

*Etymology.* The specific epithet refers to the Latin name of the river nymph, Sabrina, who according to Celtic mythology was believed to dwell in, and be one with, the Severn River in the United Kingdom. It seems appropriate to me that this riverine species of *Melaleuca* is given an epithet so strongly associated with the river that presumably prompted the naming of the Australian stream.

*Notes.* *Melaleuca sabrina* is an attractive plant in flower. In its morphology it seems to be very closely related to *M. paludicola*, but it is strikingly distinct in its longer stamens with red filaments. The differences between the two species are given in Table 1.

*Paratypes.* AUSTRALIA. **Queensland:** Granite Creek betw. Warwick & Stanthorpe, Oct. 1967, W. T. Jones s.n. (CANB); Pikes Crossing, Goldfields, Stanthorpe, 9 Mar. 1968, G. Trapnell s.n. (BRI, CANB); Coochy Creek, Coochy Station on Warwick–Stanthorpe Rd., 9 Mar. 1968, G. Trapnell s.n. (BRI). **New South Wales:** on the side of a small creek, ca. 16 km past the Summit Border Gate, on rd. to Maryvale, J. C. Morrow 45 (BRI); Maryland River crossing on the Wylie Creek Rd., P. G. Wilson & R. Rowe 1310 (CANB, NSW).

**9. *Melaleuca serpentina* Craven, sp. nov. TYPE:** Australia. New South Wales: 2.8 km along Crow Mountain Rd. from Woodsreef, E of Barraba, 31 Oct. 1997, L. A. Craven & J. A. Matarczyk 10023 (holotype, CANB; isotypes, A, AD, ASU, BRI, G, L, MEL, MO, NE, NSW, P, RSA).

A *Melaleuca citrina* (Curtis) Dumont de Courset filamentis staminalibus pallidis (luteis vel cremeoviridibus), antheris luteis, et stylo brevior (11–18 mm longo) differt.

Shrub 2.5–4 m tall; bark hard and papery, flaking; branchlets glabrescent, sericeous. Leaves alternate, 21–53 × 2–5 mm, 7.5–15× as long as wide; blade sericeous to pubescent, glabrescent, linear-obovate, narrowly obovate, or narrowly elliptic, in transverse section suboblunate or transversely linear, base narrowly cuneate, apex acute or shortly acuminate, primary veins longitudinal-pinnate, oil glands moderately dense or dense, distinct. Inflorescences spicate, pseudoterminal and sometimes also upper axillary, with 15 to 35 monads, 30–40 mm wide; hypanthium hairy, 3–4 mm; calyx lobes abaxially hairy or glabrescent, 0.9–1.8 mm, scarious in a marginal band 0.4–0.7 mm wide; petals deciduous, 2.2–4 mm; stamens free, 37 to 51 per flower; filaments yellow or cream-green, 9–17 mm; anthers yellow; style 11–18 mm; ovules ca. 200 to 300 per locule. Fruit 4.2–4.6 mm, calyx lobes abaxially deciduous; inner distal wall of staminophore without reflexed, free antesealous triangular processes; seed with obvolute cotyledons.

*Distribution, ecology, and phenology.* This species occurs in Australia in the Barraba District of New South Wales. Here, it grows in grassy, gully woodlands on serpentine soils. *Melaleuca serpentina* has been collected in flower in April, October, and December.

*IUCN Red List category.* According to IUCN Red List criteria (IUCN, 2001), the category Vulnerable (VU) is applicable to *Melaleuca serpentina*, as its populations are believed to be small and there is a possibility that pasture improvement or renewed mining-associated activities could seriously reduce the size of, or even eliminate, some of its populations.

*Etymology.* The specific epithet refers to the apparent restriction of this plant to serpentine soils.

*Notes.* *Melaleuca serpentina* putatively is closely related to *M. citrina*, and the two species may be distinguished by the following character states: branchlet indumentum (sericeous in *M. serpentina* vs. velutinous or sericeous-pubescent in *M. citrina*), orientation of primary veins relative to the midrib (longitudinal-pinnate in *M. serpentina* vs. pinnate in *M. citrina*), length of staminal filaments (9–17 mm in *M. serpentina* vs. 17–25 mm in *M. citrina*), color of staminal filaments (yellow or cream-green in *M. serpentina* vs. red or mauve in *M. citrina*), anther color (yellow in *M. serpentina* vs. purple to dark red in *M. citrina*), and style length (11–18 mm in *M. serpentina* vs. 23–31 mm in *M. citrina*).

*Paratypes.* AUSTRALIA. **New South Wales:** 1 km S of Woodsreef mine tailings, *J. R. Hosking 494* (CANB, NE); gully below King Solomons Mine, W of Woodsreef, *J. R., T. L. & G. R. Hosking 1580* (CANB); 8 km S of Upper Bingara, alongside Upper Bingara Rd., *J. R. Hosking 1621* (CANB); Ironbark Creek, Barraba, Sep. 1929, *H. M. Rupp s.n.* (NSW).

**10. *Melaleuca viminalis*** (Solander ex Gaertner) Byrnes, *Austrobaileya* 2: 75. 1984. Basionym: *Metrosideros viminalis* Solander ex Gaertner, *Fruct. Sem. Pl.* 1: 171, t. 34, fig. 4. 1788. *Callistemon viminalis* (Solander ex Gaertner) G. Don, in Loudon, *Hort. Brit.* 197. 1830. TYPE: Australia. Queensland: Endeavour River, s.d., *J. Banks & D. Solander s.n.* (holotype, BM).

**10a. *Melaleuca viminalis* subsp. *viminalis*.**

**10b. *Melaleuca viminalis* subsp. *rhododendron*** Craven, subsp. nov. TYPE: Australia. Queensland: Mt. Hutton, W of Injune, early Oct. 1996, *Stanford s.n.* (holotype, CANB; isotypes, A, BRI, L, MEL, MO, NSW).

A *Melaleuca viminalis* (Solander ex Gaertner) Byrnes subsp. *viminalis* habitu arboris unicaulis usque ad 35 m altae et hypanthio breviori (1.8–2.8 mm longo) differt.

Tree to 35 m tall, single-stemmed; bark hard, persistent; branchlets glabrescent, long pubescent. Leaves alternate, 25–60 × 2–6 mm, 8–12× as long as wide; blade pubescent, glabrescent, narrowly elliptic, in transverse section transversely linear, base attenuate, apex acuminate to narrowly acute, primary veins pinnate, numerous, oil glands moderately dense. Inflorescence spicate, pseudoterminal or with a leafy axis distal to the inflorescence, with 10 to 30 monads, 30–47 mm wide; hypanthium hairy, 1.8–2.8 mm; calyx lobes abaxially hairy, 1.1–1.8 mm, scarious in a narrow marginal band 0.3–0.8 mm wide; petals deciduous, 4–5 mm; stamens connate proximally into

5 bundles and falling as a single unit, 9 to 12 per bundle, red, 12–21 mm, the bundle claw 1.1–2 mm, 0.05–0.07× as long as the filaments; anthers purple to maroon; style 15–21 mm; ovules ca. 100 to 125 per locule. Fruit 3–5.4 mm, calyx lobes weathering away; seed not seen.

*Distribution and ecology.* This subspecies occurs in the Injune District of Queensland, Australia. The only population known occurs along a creek bank in basalt soil.

*IUCN Red List category.* According to IUCN Red List criteria (IUCN, 2001), the category Vulnerable (VU) is applicable to *Melaleuca viminalis* subsp. *rhododendron*, as it is known from a single population of unknown size. Further field investigations are needed to determine if any other populations or subpopulations exist.

*Etymology.* The subspecific epithet is a compound noun in apposition derived from the Greek “rhodon,” meaning “rose” or “rose-colored,” and “dendron,” meaning “tree,” in reference to the staminal filament color and habit of the plant.

*Note.* This species is distinguished from the more common, multi-stemmed form of *Melaleuca viminalis* on the basis of its habit. Forming a single-stemmed, large tree, it is a remarkable plant, and it is speculated that this may represent an ancestral morph of the species, i.e., the common, multi-stemmed rheophyte, *M. viminalis* subsp. *viminalis*. It is anticipated that this plant may be useful as a tree for urban parks and street plantings in suitable climates, and its potential as a plantation tree for timber needs consideration also.

*Paratype.* AUSTRALIA. **Queensland:** Mt. Hutton, W of Injune, *J. Larmour 2170* (CANB).

**11. *Melaleuca williamsii*** Craven, *Novon* 16: 474. 2006. Replaced name: *Callistemon pungens* Lumley & R. D. Spencer, *Muelleria* 7: 253, f. 1. 1990. TYPE: Australia. New South Wales: ca. 0.3 km along rd. to Armidale from jct. with rd. from Armidale–Dorrigo Rd. to Hillgrove (ca. 4 km from hwy.), 21 Nov. 1983, *P. F. Lumley 1150* (holotype, MEL; isotypes, CANB, K not seen, NE, NSW not seen).

**11a. *Melaleuca williamsii* subsp. *williamsii*.**

**11b. *Melaleuca williamsii* subsp. *fletcheri*** Craven, subsp. nov. TYPE: Australia. Queensland: Broadwater Creek, where crossed by rd. from The Summit, 5 km beyond turnoff to Jollys Falls, ca. 10 km N of Stanthorpe, 19 Nov. 1983, *P. F. Lumley 1120* (holotype, MEL; isotypes, BRI, CANB).



Table 2. Morphological characters distinguishing *Melaleuca williamsii* subsp. *williamsii*, *M. williamsii* subsp. *fletcheri*, and *M. williamsii* subsp. *synoriensis*.

Character	subsp. <i>williamsii</i>	subsp. <i>fletcheri</i>	subsp. <i>synoriensis</i>
Bark texture	papery	fibrous	—
Leaf blade indumentum	lanuginulous	sericeous	sericeous or velutinous
Hypanthium indumentum	sericeous	sericeous	sericeous-pubescent
Staminal filament color	red or purple	white, pink, or mauve	pink, red, or purple
Cotyledons (appearance in transverse section)	obvolute	plano-convex or concavo-convex	concavo-convex

A *Melaleuca williamsii* Craven subsp. *williamsii* cortice fibrosa, lamina foliari sericea, filamentis albis roseis vel malvinis et cotyledonibus planoconvexis vel concavoconvexis differt.

Shrub to 4 m tall; bark flaking or persistent, fibrous, hard; branchlets hairy to glabrous, sericeous with some longer spreading or spreading-ascending, sericeous-pubescent hairs, or lanuginous with some spreading-ascending or ascending sericeous-pubescent hairs, or pubescent with spreading hairs of variable lengths. Leaves alternate, 20–68 × 4–14 mm, 3.1–8.8× as long as wide; blade sericeous or glabrous, occasionally with a few spreading-ascending or ascending hairs, narrowly obovate, narrowly elliptic, elliptic, or obovate, in transverse section transversely linear or sublunate, base narrowly attenuate or narrowly cuneate, apex shortly acuminate, acuminate, or acute, primary veins pinnate or longitudinal-pinnate, when pinnate 8 to 14 on each side of the midrib, oil glands dense or moderately dense, distinct. Inflorescences spicate, pseudoterminal, with 15 to 45 monads, 30–45 mm wide; hypanthium hairy or glabrescent, 3.1–4.3 mm; calyx lobes abaxially hairy or glabrescent, 1.6–2.1 mm, scarious in a marginal band 0.8–0.9 mm wide or scarious throughout; petals deciduous, 2.1–5.8 mm, margin ciliate; oil glands circular or subcircular; stamens free, 35 to 48 per flower; filaments white or mauve-pink, 9–19 mm; anthers purple or maroon; style 13–23 mm; ovules ca. 100 to 150 per locule. Fruit 4.4–6.6 mm, calyx lobes deciduous; inner distal wall of staminophore without reflexed, free antesealous triangular processes; seed with plano-convex or concavo-convex cotyledons.

*Distribution, ecology, and phenology.* *Melaleuca williamsii* subsp. *fletcheri* occurs in the Stanthorpe District of Queensland, Australia. It has been recorded as growing in riparian woodland/shrubland and in crevices of small granite outcrops, and as flowering in November.

*IUCN Red List category.* According to IUCN Red List criteria (IUCN, 2001), the category Vulnerable (VU) is applicable to this plant, as it is known only from

the Stanthorpe region of Queensland. As with *Melaleuca sabrina*, *M. williamsii* subsp. *fletcheri* does occur in agricultural country, but the present pattern of land use is unlikely to lead to severe degradation of its habitat to the extent that its continued survival is of concern. However, further field investigations are required.

*Etymology.* This taxon is named in honor of Mervyn P. Fletcher (1901–1982), who collected many interesting and unusual plants in the Ballandean District, including *Homoranthus montanus* Craven & S. R. Jones. Fletcher lived from 1950 until his death in his 1948 Commer Utility, mainly on the banks of the Severn River, and was an advocate in the Stanthorpe District for the conservation of nature.

*Notes.* The differences between this taxon and subspecies *williamsii* and *synoriensis* are given in Table 2.

*Paratypes.* AUSTRALIA. **Queensland:** Happy Valley, roadside on Stanthorpe–Amiens Rd. ca. 3 km from Stanthorpe, K. A. W. Williams 75163 (BRI); Glen Alpin, ca. 6 km SW of Stanthorpe, 29 Dec. 1967, G. Trapnell s.n. (BRI); Jollys Falls, 1.6 km W of The Summit, 8 km N of Stanthorpe, D. Hoskings s.n. (BRI); Severn River crossing, Fletcher Rd., near jct. with Emu Swamp Rd., Fletcher, P. Grimshaw 441 (BRI); rd. crossing of Severn River, 2.9 km along Bent Rd. from Ballandean township, L. A. Craven & J. A. Matarczyk 9950 (BRI, CANB); Ballandean, 6 Nov. 1976, M. P. Fletcher s.n. (BRI).

**11c. *Melaleuca williamsii* subsp. *synoriensis*** Craven, subsp. nov. TYPE: Australia. New South Wales: ca. 200 m NE of Toms Cabin, NE part of New England Natl. Park, ca. 12 km SE of Ebor, 4 Dec. 1993, B. J. Lepschi & J. Mowatt 1411 (holotype, CANB; isotypes, BRI, MEL, NE, NSW).

A *Melaleuca williamsii* Craven subsp. *williamsii* lamina foliari sericea vel velutina et cotyledonibus concavoconvexis differt.

Shrub to 3.5 m tall; bark flaking or peeling away; branchlets hairy or glabrous, pubescent. Leaves alternate, 18–51 × 4–9 mm, 4.2–7.8× as long as wide; blade sericeous to velutinous or glabrous, narrowly elliptic, elliptic, or narrowly obovate, in

transverse section transversely linear or shallowly bird-winged, base narrowly attenuate or attenuate, apex shortly acuminate or acute, primary veins pinnate, 9 to 12 on each side of the midrib, oil glands dense or moderately dense, distinct. Inflorescences spicate, pseudoterminal and sometimes additional inflorescences occur in distal leaf axils, with 10 to 40 monads, 25–30 mm wide; hypanthium hairy or glabrescent, 3.2–4 mm; calyx lobes abaxially hairy or glabrescent, 1–1.8 mm, scarious throughout; petals deciduous, 3–3.8 mm; stamens free or rarely some are fused to one another at the very base, 50 to 66 per flower; filaments red or pink-purple, 6.5–11 mm; anthers dark; style 12–15 mm; ovules ca. 200 per locule. Fruit 3.9–5.2 mm, calyx lobes deciduous; inner distal wall of staminophore without reflexed, free antesealous triangular processes; seed with concavo-convex cotyledons.

*Distribution, ecology, and phenology.* This taxon occurs in the Gibraltar Range–Point Lookout District of New South Wales, Australia. It has been recorded to occur in scrub and heath on extensive trachyte outcrops, in a creek bed in dry sclerophyll forest, and on wet heathy flats on granite. *Melaleuca williamsii* subsp. *synoriensis* flowers in November and December.

*IUCN Red List category.* According to IUCN Red List criteria (IUCN, 2001), the category Vulnerable (VU) is applicable to this plant, as it is known only from the Gibraltar Range–Point Lookout District of New South Wales. As with many similarly localized species, further field investigations are required to assess population size and other factors.

*Etymology.* The subspecific epithet refers to the distribution of this taxon on the edge of the Northern Tablelands (from the Greek “synoria,” meaning “borderland”).

*Notes.* The differences between this taxon and subspecies *williamsii* and *fletcheri* are given in Table 2.

*Paratypes.* AUSTRALIA. New South Wales: Gibraltar Range Natl. Park, 4 km past Ranger’s Hut on Gwydir Hwy. toward Grafton, near Waratah Trig. *P. F. Lumley 1142* (CANB, MEL); 1.6 km WSW of Point Lookout, New England Natl. Park, 8 Feb. 1970, *J. B. Williams s.n.* (NE).

**12. *Melaleuca wimmerensis*** (Marriott & G. W. Carr) Craven, comb. nov. Basionym: *Callistemon wimmerensis* Marriott & G. W. Carr, *Muelleria* 26: 57–63. 2008. TYPE: Australia. Victoria:

Wimmera, Wonwondah East, ca. 18 km S of Horsham on W bank of MacKenzie River, 142°12’1”E, 36°54’29”S, 28 Sep. 2004, *G. W. Carr & V. Stajsic 0411-343* (holotype, MEL not seen; isotypes, AD, BRI, CANB, HO, K, MELU, NE, NSW, NY all not seen).

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#### Literature Cited

- Craven, L. A. 2006. New combinations in *Melaleuca* for Australian species of *Callistemon* (Myrtaceae). *Novon* 16: 468–475.
- IUCN. 2001. IUCN Red List Categories and Criteria, Version 3.1. Prepared by the IUCN Species Survival Commission. IUCN, Gland, Switzerland, and Cambridge, United Kingdom.
- James, S. H. 1958. Apomixis in the genus *Callistemon* R. Br. M.Sc. thesis, University of Sydney, Sydney. [Copy in CSIRO library, Canberra.]
- Marriott, N. R. & G. W. Carr. 2008. A new species of *Callistemon* (Myrtaceae, Melaleuceae) from Victoria, Australia. *Muelleria* 26: 57–63.
- Molyneux, W. 1994. *Callistemon kenmorrissonii* (Myrtaceae), a new species from east Gippsland. *Muelleria* 8: 379–383.
- . 1997. Notes on *Callistemon* in east Gippsland, including the description of *C. genoflualis* sp. nov. *Muelleria* 10: 57–61.



Craven, Lyndley Alan. 2009. "Melaleuca (Myrtaceae) from Australia." *Novon a journal of botanical nomenclature from the Missouri Botanical Garden* 19, 444–453.

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