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# Typifications in *Malleostemon*, *Micromyrtus*, *Scholtzia* and *Thryptomene* (Myrtaceae) and a hybrid designation

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## Abstract

Wege, J.A. & Rye, B.L. Typifications in *Malleostemon*, *Micromyrtus*, *Scholtzia* and *Thryptomene* (Myrtaceae) and a hybrid designation. *Nuytsia* 35: 77–81 (2024). As part of revisionary work in Myrtaceae tribe Chamelaucieae, lectotypes are selected for *Malleostemon decipiens* (W.Fitzg.) Trudgen, *M. tuberculatus* (E.Pritz.) J.W.Green, *Micromyrtus imbricata* Benth., *M. sulphurea* W.V.Fitzg., *Scholtzia ciliata* F.Muell., *S. teretifolia* Benth., *S. uberiflora* F.Muell. and *Thryptomene kochii* E.Pritz., and the type of *Micromyrtus erichsenii* Hemsl. is clarified. *Micromyrtus chrysodema* Rye is hypothesised to be a hybrid between *M. flaviflora* (F.Muell.) J.M.Black and a 2-ovulate, white-flowered species of *Micromyrtus* Benth.

## Introduction

Treatments of *Malleostemon* J.W.Green, *Micromyrtus* Benth., *Thryptomene* Endl. and *Scholtzia* Schauer are currently in preparation for the *Flora of Australia* as part of a broader project synthesising current knowledge on Myrtaceae tribe Chamelaucieae. The following updates are published in advance of these treatments.

## Typifications

**Malleostemon decipiens** (W.Fitzg.) Trudgen in B.L. Rye & M.E. Trudgen, *Nuytsia* 22(6): 396 (2012); *Baeckea decipiens* W.Fitzg., *J. Western Austral. Nat. Hist. Soc.* 2(1): 20 (1904). *Type*: 'Minginew [Mingenew], sand plains', Western Australia, September 1903, *W.V. Fitzgerald s.n.* (*lecto*, here designated: PERTH 08245932! [ex Herb. C.A. Gardner]; *isolecto*: K 000821699 image! [comm. W.E. Blackall], NSW 498038!, PERTH 08245657! [ex Herb. C.A. Gardner]).

*Typification*. Four syntypes have been located, of which PERTH 08245932 and NSW 498038 have a pink Herb. W.V. Fitzgerald label and are annotated in Fitzgerald's hand. The former is likely to have been part of the set donated to the Western Australian Department of Agriculture, while the latter was sent to NSW prior to Fitzgerald's publication, as evidenced by the letter sent by Fitzgerald in April 1904 to update the manuscript name '*Baeckea ericoides*' with the published name (see Maslin & Cowan 1994). PERTH 08245932, along with the fragment on PERTH 08245657, were subsequently procured by Charles Gardner for his personal herbarium. It is unclear which collection the fragment was taken from, although the descriptive annotation 'Similar in habit to B. camphorosmae. Flowers white' ties it to either PERTH 08245932 or K 000821699, the latter having been sent to Kew by W.E. Blackall. The designated lectotype is the only specimen that bears the published species name in Fitzgerald's hand.


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**Malleostemon tuberculatus** (E.Pritz.) J.W.Green, *Nuytsia* 4(3): 308–310 (1983); *Thryptomene tuberculata* E.Pritz. in F.L.E. Diels & E.G. Pritzel, *Bot. Jahrb. Syst.* 35(2–3): 411–412 (1904). *Type*: 'in distr. Coolgardie pr. Coolgardie in fruticetis arenosis [Western Australia], flor. m. Nov.', *L. Diels* 5231 (*lecto*, here designated: PERTH 01622498! [ex B; collection date given as 31 Oct. 1901]; *isolecto*: PERTH 01622501! [ex B, ex Herb. C.A. Gardner; collection date given as Nov. 1901]).

*Typification*. The holotype at B was destroyed in WWII, although not before Charles Gardner had obtained fragments (isotypes) for PERTH during his term as Australian Botanical Liaison Officer (see Green 1990). The designated lectotype is the best quality material; the isolectotype comprises smaller fragments retained in Gardner's personal herbarium. There is a date discrepancy on their labels; however, we believe they are from the same gathering.

**Micromyrtus imbricata** Benth., *Fl. Austral.* 3: 64 (1867); *Thryptomeme imbricata* (Benth.) F.Muell., *Fragm.* 8(59): 13 (1873). *Type*: 'Sandy places, Termination Granite' [*c.* 53 km NE of Israelite Bay], Western Australia, *G. Maxwell s.n.* (*lecto*, here designated: MEL 71347 image!; *isolecto*: K 000821751 image!, PERTH 06491928! [ex K]).

*Typification*. Bentham viewed and annotated specimens at both K and MEL. The PERTH material, which is mounted on the same sheet as a collection by H. Steedman, is a fragment taken from the K duplicate by Gardner. The MEL specimen, which we have selected as the lectotype, bears an annotation that reads 'quite different in structure and leaves from T. saxicola. M. imbricata', which was written by Bentham in response to Mueller's original identification.

**Micromyrtus erichsenii** Hemsl., *Hooker's Icon. Pl.* 28, t. 2780 (1905). *Type*: Dedari, 24 miles [39 km] west of Coolgardie, Western Australia, September 1903, *G.H. Thistleton-Dyer* 43 (*holo*: K 000821776 image!; *iso*: PERTH 01630784! [ex K, ex Herb. C.A. Gardner]).

*Typification*. The type fragment at PERTH, which was once part of Gardner's personal herbarium, bears an 'ex Museo botanico Berolinensi' label, with the collection details provided in Gardner's hand. This in itself is unsurprising since Gardner was permitted to take fragments of many key Western Australian collections at B during his term as Australian Botanical Liaison Officer, notably those of Ludwig Diels and Ernst Pritzel (e.g. see *Malleostemon tuberculatus* above). As a result, Rye (2002) interpreted the holotype of *M. erichsenii* as being at B and potentially destroyed in WWII; however, it appears that Gardner procured the PERTH fragment from a specimen at K. William Hemsley was Keeper of the Herbarium and Library at K when he described *M. erichsenii* (Stafleu & Cowan 1979) and K 000821776, which we regard as the holotype, is annotated with the species name and publication details in addition to bearing floral sketches comparable to those in the protologue. Gardner is known to have taken other type fragments from K for his personal herbarium (e.g. see under *Micromyrtus imbricata*). There also appear to be instances where he has written annotations on 'ex Museo botanico Berolinensi' labels for fragments that are unlikely to have been acquired from B (e.g. see under *Micromyrtus sulphurea* W.V.Fitzg.).

**Micromyrtus sulphurea** W.V.Fitzg., *J. Western Austral. Nat. Hist. Soc.* 2(1): 19 (1904). *Type*: 'On rocky hillside, 1/2 mile [0.8 km] west of Mount Magnet', Western Australia, September 1903, *W.V. Fitzgerald s.n.* (*lecto*, here designated: NSW 136239 image!; *isolecto*: NSW 7063 image!, PERTH 01631357! [comm. W.E. Blackall], PERTH 01631365! [ex Herb. C.A. Gardner]).

*Typification*. Four syntypes of *M. sulphurea* are known, of which PERTH 01631357 and NSW 136239 bear a pink Herb. W.V. Fitzgerald label with annotations in Fitzgerald's hand, including descriptive information on the former. As per *Malleostemon decipiens*, the former is likely to have been part of the set donated to the Western Australian Department of Agriculture, while the latter was sent to NSW prior to Fitzgerald's publication; however, in this instance the PERTH sheet is annotated 'comm. W.E. Blackall 10/X/1939' and bears illustrations, presumably those of Blackall who worked on an illustrated key to the Western Australian flora in the 1930s. Although a flower has been drawn on PERTH 01631357, there are no open flowers on the specimen, suggesting some material has been removed. PERTH 01631365 is

a poor-quality fragment Gardner took for his personal herbarium, presumably from PERTH 01631357, although curiously he made annotations on an 'ex Museo botanico Berolinensi' label.

NSW 7063 has a National Herbarium of New South Wales label with an annotation by a herbarium technician that indicates the material is from Fitzgerald's herbarium; a small label above this, written by Barbara Briggs, indicates it is a 'duplicate of sheet marked "Type"' (presumably NSW 136239). There is another plain slip of paper with Fitzgerald's annotations in pencil (including the species' name, location and date) that possibly represents his original field notes (with later change of the generic name). It is unclear if this material was part of Fitzgerald's personal collection, purchased by NSW in 1909 (see Maslin & Cowan 1994).

We have designated NSW 136239 as the lectotype since it is the most intact material, with open flowers as well as buds.

**Scholtzia ciliata** F.Muell., *Fragm.* 4(26): 76 (1864); *Baeckea ciliata* (F.Muell.) F.Muell., *Syst. Census Austral. Pl.*: 54 (1882). *Type*: 'In vicinia rivi Murchison River. Oldfield' [White Peak, Western Australia] (*lecto*, here designated: MEL 2192077!; *isolecto*: K 000357126 image!, K 000357127 image!, MEL 2192078!).

*Typification*. We designate MEL 2192077 as the lectotype since it was retained at MEL, is annotated by Mueller with the species name, and bears Oldfield's field slip, which provides the additional locality information of White Peak. Malcolm Trudgen annotated this sheet as the lectotype in 2006 but failed to publish this choice.

**Scholtzia teretifolia** Benth., *Fl. Austral.* 3: 70 (1867); *Baeckea teretifolia* (Benth.) F.Muell., *Syst. Census Austral. Pl.*: 54 (1882). *Type*: 'W. Australia, Drummond, n. 136' (*lecto*, here designated: K 000357116 image!; *isolecto*: G 00227678 image!, K 000357117 image!, K 000357118 image!, MEL 2194015 image!).

*Typification*. Five syntypes have been located, of which K 000357116 (from Herbarium Hookerianum) and K 000357117 (from Herbarium Benthamianum) were available to Bentham. We have designated the former as the lectotype since it is the best quality material and is annotated with both the species name and publication details.

**Scholtzia uberiflora** F.Muell. *Baeckea uberiflora* (F.Muell.) F.Muell., *Syst. Census Austral. Pl.*: 53 (1882). *Type*: 'In planitiebus ad flumen Murchison. Oldfield' [Western Australia] (*lecto*, here designated: MEL 2194018!; *isolecto*: K 000357129 image!, K 000357130 image!, MEL 2194016!, MEL 2194017!, MEL 2194019!, MEL 2194020!, W 0009011 image!).

*Typification*. We select MEL 2194018 as the lectotype from amongst the numerous syntypes available to Mueller, since it is the best quality specimen retained by him at MEL. Although Malcolm Trudgen annotated this sheet as the lectotype in 2010, he never formalised this choice.

**Thryptomene kochii** E.Pritz., *Repert. Spec. Nov. Regni. Veg.* 10: 133 (1911). *Type*: 'In districtu Coolgardie prope Cowcowing', Western Australia, September 1904, *M. Koch 1230a* (*lecto*, here designated: NSW 532163 image!; *isolecto*: PERTH 01621505!, PERTH 01621912!, PERTH 01621920!, PERTH 01621939!; ?*isolecto*: NSW 532164 image!).

*Typification*. NSW 532163 is selected as the lectotype since, unlike the remaining specimens, it is annotated by Pritzel with the species' name. It also bears a separate label by Koch that reads 'when I can lay my hand on I will send you a better specimen'. This material is likely to have been sent to NSW from B by Pritzel, who is known to have distributed specimens widely. It is unclear whether there was additional material at B that was subsequently destroyed in WWII (we consider this a likely scenario), or whether Koch did indeed send Pritzel a better specimen.

Koch is known to have applied the same number to specimens of the same species collected on different occasions (e.g. Short 1992; Maslin & Cowan 1994). The material cited above is dated September 1904 so we assume that is part of the same gathering; the exception is NSW 532164, which bears only the year of collection and is therefore treated as a possible duplicate. MEL 0070702, a specimen of *T. kochii* with the same collecting number as the type but dated August 1923, is not considered type material.

## On the likely hybrid status of *Micromyrtus chrysodema* Rye

*Micromyrtus chrysodema* was described from a single gathering collected south-east of Leinster (*P.G. Armstrong* POA 33: NSW, PERTH), apparently from a population of *c.* 30 plants spread sparsely within a 1 km radius (Rye 2006). It is one of six Western Australian taxa with five stamens, with molecular data indicating it has close affinities with one of the other 5-staminate species, the widespread *M. flaviflora* (F.Muell.) J.M.Black (Peter G. Wilson pers. comm.). *Micromyrtus chrysodema* differs from *M. flaviflora* in having two (rather than 7–10) ovules, slightly rather than prominently rugose patterning on the hypanthium, and smaller leaves, sepals and petals (Table 1).

**Table 1**. Morphological comparison of the putative hybrid *Micromyrtus chrysodema* with its likely parent species, *M. flaviflora* and *M. clavata*, and other 2-ovulate species known from the eastern Murchison bioregion.

| **Feature** (L = length, W = width) | **M. chrysodema** | **M. flaviflora** | **M. clavata** | **M. serrulata** | **M. stenocalyx** | **M. sulphurea** |
|---|---|---|---|---|---|---|
| **Leaf blade L (mm)** | *c.* 1.6 | 2–3.5 | 1.3–2 | 1.8–3.3 | 1.3–3 | 2–4 |
| **Leaf blade W (mm)** | 0.6–0.7 | 0.8–1.5 | 0.6–1 | 0.7–1.5 | 0.8–1.3 | 0.5–0.8 |
| **Leaf blade thickness (mm)** | 0.3–0.35 | 0.2–0.5 | 0.35–0.5 | 0.1–0.3 | 0.4–0.9 | 0.3–0.5 |
| **Leaf blade margin** | entire or with minute teeth around apex | entire to laciniate | entire | minutely serrulate to ciliolate | entire | entire |
| **Peduncle L (mm)** | 1.2–1.6 | 1.5–2.5 | 0.5–1.1 | 0.2–0.5 | 0.6–1.4 | (0.6–)0.8–1.5(–2) |
| **Bracteole L (mm)** | *c.* 1.3 | 1.2–2.2 | 0.6–1.5 | 2–3 | 1–1.5 | 1–1.8 |
| **Hypanthium** | slightly rugose, 5-ribbed basally, 10-ribbed at summit | prominently rugose, 5-angled to partly 10-ribbed | not rugose, usually 10-ribbed | not rugose, 10-ribbed | not rugose, 5- or 10-ribbed or with ribs absent | not rugose, markedly 10-ribbed |
| **Hypanthium L (mm)** | *c.* 2.5 | 2.3–3.6 | 1.4–2.2 | 1.7–2.2 | 2.5–3.5 | (1.5–)2–3 |
| **Sepal L (mm)** | *c.* 0.35 | 0.7–1.3 | 0.25–0.5 | 0.7–1.3 | 0.1–0.2 | 0.2–0.6 |
| **Petal L (mm)** | *c.* 1.5 | 2–3 | 1.3–1.5 | 1.5–2.4 | 0.9–1.3 | 1.2–2 |
| **Petal colour** | white | yellow, white or blushed pink | white | white | white | sulphur-yellow |
| **Stamen number** | 5 | 5 | 10 | 10 | 10 | 10 |
| **Filament L (mm)** | *c.* 0.4 | 0.4–0.8 | 0.4–0.5 | 0.6–0.9 | 0.4–0.6 | 0.6–0.9 |
| **Ovule number** | 2 | 7–10 | 2 | 2 | 2 | 2 |

Following its publication, *M. chrysodema* was listed as Priority One under Conservation Codes for Western Australian Flora (Western Australian Herbarium 1998–), indicating that further survey was needed to better understand its conservation status; however, attempts to relocate this species have failed, with only *M. flaviflora* found. Based on this information, we think it likely that the population of 30 plants originally recorded at the type location of *M. chrysodema* was comprised primarily of *M. flaviflora*, and that the collection of *M. chrysodema* represents a hybrid between *M. flaviflora* and a 2-ovulate species of *Micromyrtus*. Potential 2-ovulate candidates are *M. clavata* Rye, *M. serrulata* J.W.Green, and *M. sulphurea*, all of which occur in the Murchison bioregion and have been recorded within 125 km of the type location of *M. chrysodema*, although none has been recorded at this specific locality. *Micromyrtus stenocalyx* (F.Muell.) J.W.Green is another potential candidate although this species is known from further away, with its distribution centred on the Great Victoria Desert bioregion.

On morphological grounds, *M. clavata* appears to be the most likely second parent (Table 1), with all characters of *T. chrysodema* being intermediate between it and *T. flaviflora* or matching one or the other putative parent. Each of the other 2-ovulate species listed seems to conflict in some characters, such as the combination of *M. flaviflora* and *M. serrulata* both having longer sepals than the putative hybrid. They also each have some features more noticeably different from the putative hybrid: sulphur-yellow petals and a markedly 10-ribbed hypanthium in *M. sulphurea,* distinctly serrulate/ciliolate leaves, long bracteoles and short peduncles in *M. serrulata*, and very reduced, rim-like sepals in *M. stenocalyx*.

On the basis of the available evidence, we infer *M. chrysodema* to be an uncommon hybrid without the ability to self-perpetuate, and as such recommend that it be removed from Western Australia's vascular plant census and Priority Flora list.

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