



A review of *Stenocarpus* (*Proteaceae*, *Stenocarpinae*) in New Caledonia including a new species, plus new combinations for the Australian species formerly in *Strangea*

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Key words

conservation
island
micro-endemic
nickel mining
Proteaceae
Stenocarpus
Strangea
ultramafic

Abstract The taxonomy of *Stenocarpus* (*Proteaceae*: *Stenocarpinae*) in New Caledonia is reviewed. The name *S. grunowii* is re-instated at specific rank. *Stenocarpus dumbeensis*, *S. gracilis*, *S. intermedius*, and *S. phyllodineus* are treated as synonyms of *S. umbelliferus*. *Stenocarpus* × *heterophyllus* is considered as a hybrid taxon involving parents with multifid and entire leaves. A new species, *S. deweae*, with red rather than white to yellowish flowers, is described, illustrated and assessed as Endangered according to the IUCN Red List criteria. These changes reduce the number of species now recognized in this genus in New Caledonia from twelve to nine, and all are endemic. An identification key is provided and lectotypes are designated for several names. We also propose new combinations for the three Australian species of *Strangea*, which are phylogenetically nested within *Stenocarpus*, with the result that subtribe *Stenocarpinae* now contains a single genus only, *Stenocarpus*. Lectotypes are designated for the two names in *Strangea* based on Drummond's collections from Western Australia.

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INTRODUCTION

In the last complete revision of the *Proteaceae* for New Caledonia, published more than 50 years ago in the 'Flore de la Nouvelle-Calédonie', Viot (1968) recognised nine genera containing 45 species plus some infraspecific taxa. Several changes have been made subsequently, including the description of the endemic genus *Viotia* L.A.S. Johnson & B.G. Briggs to accommodate the species that Viot had placed in *Macadamia* F. Muell. (Johnson & Briggs 1975, Mast et al. 2008) and the description of new species in *Kermadecia* Brongn. & Gris, *Viotia* and *Grevillea* R.Br. (Hopkins & Pillon 2019, 2020, Majourau & Pillon 2020). Other changes to Viot's concepts are the inclusion of *Sleumerodendron* Viot within *Kermadecia* and the synonymising of *Garnieria* Brongn. & Gris with *Persoonia* Sm. (Pillon et al. 2023a) as well as the placement of two species previously in *Knightia* R.Br. into the New Caledonian endemic genus *Eucarpha* (R.Br.) Spach (Mabberley & Moore 2022). Reviews of the genera *Beauprea* Brongn. & Gris and *Beaupreopsis* Viot by the first author resulted in no proposed changes (except a pending synonymy), leaving *Stenocarpus* R.Br. as the last genus in the family whose taxonomy has not yet been updated for this archipelago.

According to the latest classifications of the family, *Stenocarpus* and the small Australian genus *Strangea* Meisn. together comprise subtribe *Stenocarpinae* in the tribe *Embothrieae*, subfamily *Grevilleoideae* (Johnson & Briggs 1975, Weston & Barker 2006, Weston 2007). Plants of the World Online (POWO continuously

updated) currently lists 22 accepted species for *Stenocarpus*. Foreman (1995) recognised nine species from Australia, two of which are also reported from New Guinea (Sleumer 1955) although the taxonomy of one is uncertain (Foreman 1995). Viot (1968) recognised 12 from New Caledonia and included infraspecific taxa in two of them. Besides Australia, New Guinea, and New Caledonia, this genus occurs in the Aru Islands, between western New Guinea and Australia (Foreman 1995), but it is absent from the Solomon archipelago and Vanuatu (Plunkett et al. 2022, POWO continuously updated). *Strangea* contains only three species, all endemic to Australia (Hnatiuk 1995, Weston 2007).

Weston (2007) gave the characters of the subtribe *Stenocarpinae* and its genera as plants bisexual (= flowers bisexual), shrubs or trees, with alternate adult leaves. In *Stenocarpus*, these are simple and entire to variously lobed or compound (see below), and they are simple or rarely trilobed in *Strangea*. In both genera, the confflorescence is terminal or lateral, in the form of a wheel-like umbel of flower-pairs or a panicle of such umbels, which is rarely reduced to a solitary flower-pair or a solitary flower in *Strangea* (Weston & Barker 2006). The flower-pairs are either ebracteate (*Stenocarpus*) or with a scale-like bract (both genera) and the flowers are pedicellate and without floral bracts. The corolla is zygomorphic in both (to almost actinomorphic in *Strangea*) and the tepals are free. The anthers are inapiculate (both genera) or minutely apiculate (*Stenocarpus*) and the pollen is triporate. *Stenocarpus* has a solitary, anterior, hypogynous floral disc or gland, which is oblong to horseshoe-shaped, whereas *Strangea* flowers lack a gland. In both, the single carpel has an antero-posterior orientation and is markedly stipitate with a ventrally curved style whose tip acts as a swollen, oblique pollen presenter, and the stigma is ventral. *Stenocarpus* has numerous ovules per ovary whereas *Strangea*

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has few (1 or 2). In both genera, the fruit is a follicle, containing winged seed(s), with a distinctive inter-seminal layer (Douglas 1995). In *Stenocarpus*, the follicle is described as leathery or cartilaginous and multi-seeded, whereas in *Strangea*, it is 1- or 2-seeded and woody (Weston 1995, 2007). Writing primarily about Australia, Douglas (1995) noted that floral colour in the *Embothriaceae* is usually red; however, this is rarely the case in *Stenocarpus* in New Caledonia, in which the flowers are usually yellowish, whitish or greenish and only sometimes reddish or washed with purple (Viro 1968; and see below).

Notwithstanding the morphological differences between *Strangea* and *Stenocarpus*, Weston & Barker (2006) wrote that “*Stenocarpus* is probably paraphyletic, including *Strangea* as a subclade (Weston, Barker & Downs unpublished analysis)”. This paraphyly has since been confirmed (Pillon et al. 2023b), suggesting that all species of the subtribe *Stenocarpinae* should be treated as a single genus, *Stenocarpus*, and we make the necessary new combinations for these three taxa below. No comments are made regarding the Australian species already placed within *Stenocarpus*.

Identification of the New Caledonian species of *Stenocarpus* is difficult in the field. *Stenocarpus milnei* Hook., although remarkable by its deeply lobed leaves, is also quite polymorphic, suggesting that it could be composed of several species. Three species in the genus have been considered in the past as endangered and *S. dumbeensis* Guillaumin (placed here in synonymy) was even thought to be extinct by Jaffré et al. (1998). Because of these taxonomic uncertainties and because conservation assessments depend on an up-to-date taxonomy, a reappraisal of the entire genus in New Caledonia is provided here, including an updated key. Since a detailed generic description for New Caledonia was given in Viro (1968) along with descriptions of the species, plus illustrations, distribution maps, and citations of specimens, all of which are largely still valid, only brief synopses and notes are provided here, and some names are lectotypified.

MATERIAL AND METHODS

In reviewing the taxonomy of *Stenocarpus*, morphological characters (measurements, shapes and colours) were taken primarily from herbarium specimens and their labels plus some material preserved in spirit, supplemented by field observations. All herbarium specimens of *Stenocarpus* present at BM, K, NOU (Bruy et al. 2023), NY and P (Le Bras et al. 2017) were examined, with additional material (mostly types) in other herbaria, including MEL, NSW, and PERTH viewed online via the Australasian Virtual Herbarium (AVH continuously updated), JSTOR (continuously updated) or the websites of individual herbaria (herbarium acronyms follow Thiers continuously updated). A specimen seen as a digital image is indicated by an asterisk (*) and those seen in the herbarium by '!'. The phenological state of specimens (flowers or fruits) is mentioned only for *S. deweae* Pillon. When describing inflorescences, terminal is used to indicate a position near the apex of the shoot, distal to the leaves, and does not imply that the inflorescence develops from an apical bud, terminating the growth of the shoot. The leaves of *Proteaceae* are diverse and difficult to describe (Johnson & Briggs 1975). In New Caledonian *Stenocarpus*, leaves are generally simple and entire or deeply lobed (pinnately, bipinnately, or tripinnately) or sometimes compound, with a very variable number of lobes, these latter forms all referred to here for convenience as multifid.

For *Stenocarpus deweae*, which is described here as new (see below), all the material that we have seen is cited. For *S. grunowii* Zahlbr., which is re-instated from synonymy under

S. milnei, we cite only a few representative collections. For those species recognised by Viro (1968), the reader can refer to the P database (<https://science.mnhn.fr/institution/mnhn/collection/p/item/search/>).

Typification

Most of the nine new species of *Stenocarpus* published by Brongniart & Gris (1865) were based on single collections and for these, a sheet at P annotated by these authors has generally been designated as the lectotype and only occasionally have we found duplicates in other herbaria. Where Brongniart & Gris cited more than one collection, residual syntypes are mentioned briefly. Many of the types of their names were collected by Vieillard and have labels with the date 1855–1860. Any sheets at P or elsewhere with the same number, which is a species number rather than a collection number, but which give either a different date and/or a different locality, are not part of the original material and so are not isolectotypes, although many have been labelled as types (Pillon et al. 2023a). Later collections by Vieillard, mostly dated 1861–1867, were often more widely distributed. Occasionally labels for both 1855–1860 and 1861–1867 are present on the same sheet.

Two names referable to *Stenocarpus* were published by Montrouzier (1860) in his ‘Flore de L’île Art’, but he did not cite specimens nor mentioned types. For *Lomatia trinervis* Montrouz., the basionym of *Stenocarpus trinervis* (Montrouz.) Guillaumin, a sheet at P was cited as the holotype by Viro (1968), but for *S. latifolius* Montrouz., no material has yet been located. The history of Montrouzier’s specimens was discussed by Guillaumin & Beauvisage (1913) and Hopkins & Bradford (2009) and it is known that a large part of his material from Île Art was destroyed in Lyon.

Three species of *Strangea* are given new combinations in *Stenocarpus* here. Their names were not lectotypified in the account for ‘Flora of Australia’ (Hnatiuk 1995) because it was not considered necessary in order to fix their application (A. George, pers. comm. 2023). However, the two names based on collections by Drummond are lectotypified below and their authors and Drummond’s collections are discussed. In contrast, the material and people associated with the remaining names in *Strangea* and the taxa from New Caledonia are not treated at length.

RESULTS AND DISCUSSION

Our observations largely confirmed Viro’s (1968) species concepts but with some alterations. Within the widespread and variable *Stenocarpus milnei*, which has multifid leaves, two groups differ from the remainder of the material by having smaller leaves with shorter petioles. One group, with white-yellowish flowers from the region of Thio, equates to the description and original illustration of *S. grunowii*, which is therefore re-instated. In addition to their leaves, the plants from Kopeto, Boulinda, and Paéoua differ further from *S. milnei* s.str. by their reddish flowers, which are unique within New Caledonian *Stenocarpus*, and so they are placed in a new species, *S. deweae*. Thus *S. milnei* sensu Viro is now divided into three: *S. milnei* s.str., *S. grunowii*, and *S. deweae*, with the latter two both having restricted distributions as micro-endemics.

In contrast, several taxa with simple, entire leaves do not seem to be distinguishable from one another and four names recognised as distinct taxa by Viro (1968), *Stenocarpus dumbeensis*, *S. gracilis* Brongn. & Gris, *S. intermedius* Brongn. & Gris, and *S. phyllodineus* S.Moore, are therefore reduced to synonymy under *S. umbelliferus* (J.R.Forst. & G.Forst.) Druce.

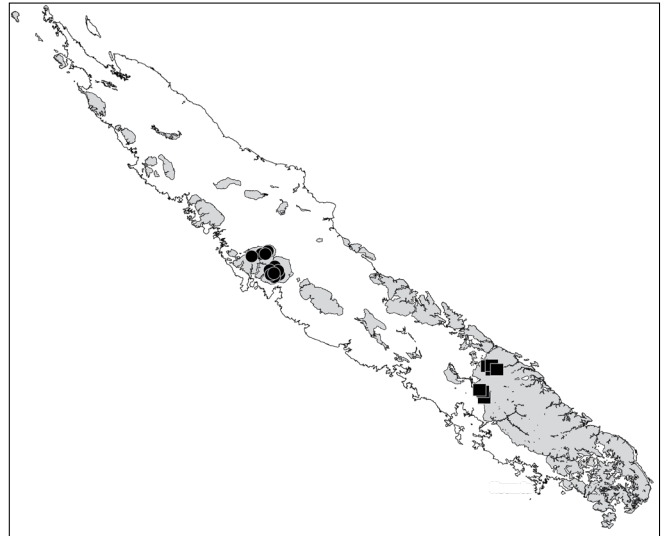
TAXONOMY

***Stenocarpus deweae* Pillon, sp. nov.** — Fig. 1; Map 1

This species is unique in the genus in combining an adult foliage of multifid leaves and red flowers. It is mostly similar to *Stenocarpus grunowii* Zahlbr., from which it also differs by its longer petioles (5–8(–12) vs 2–5 mm) and its longer pedicels (10–18 vs 6–7 mm). — Type: *MacKee 17000* (holo P [P02301303]!; iso K [K000961867]!, NOU [NOU036113]!, P [P02301301, P02301302]!), New Caledonia, Mont Paéoua, contrefort nord-est, 600–900 m, 4 July 1967 (fl., fr.).

Etymology. This species is named after the New Caledonian writer Déwé Gorodey (1949–2022).

Slender *shrub*, 0.5–2.5 m high, sparsely branched, with long thick twigs clothed with leaves; bark dark grey (sometimes dark brown or lighter grey), smooth or generally longitudinally streaked; plant almost entirely glabrous; young foliage bright red. *Leaves* deeply lobed, bipinnatisect, 2–6(–8) cm long, petiole 5–8(–12) by 1–1.5 mm, leaf lobes linear with a round apex, c. 1 mm wide, the longest 1.5–2.5(–3.5) mm long, venation indistinct. *Inflorescences* generally protruding laterally from the foliage (sometimes on naked parts of the branches), on slender peduncles, these not obviously articulate and always simple, 1.5–5 cm long, c. 0.8 mm diam when in flower, thickening during fructification (up to c. 1.2 mm), ± horizontal or pendent. *Umbel* of 8–10 flowers. *Bract* at base of peduncle triangular, 1–1.5 by c. 1 mm, associated with a few hairs, occasionally one bract midway on the peduncle. *Pedicel* 10–18 by c. 0.5 mm (thickening up to 1 mm during fructification). *Flowers* pink to red, glabrous, zygomorphic, bisexual; tube opening abaxially. *Tepals* 4, c. 1 cm long by 1.5 mm wide at the base, gradually narrowing to 1 mm, then widening into a recurved limb where sessile anthers of c. 1 mm long are attached; tepals initially



Map 1 Distribution of *Stenocarpus deweae* Pillon (●) and *Stenocarpus grunowii* Zahlbr. (■). Shaded areas indicate ultramafic substrates.

cohesive in their basal part for c. 5 mm, diverging distally, free at anthesis. *Gynoecium* c. 1.5 cm by 0.8 mm at the base, gradually narrowing to 0.3 mm. *Pollen presenter* elliptic, c. 2 by 1.5 mm. *Hypogynous gland* cup-shaped. Mature *follicles* cylindrical, 4.5–11 cm by c. 5 mm, with a pointed apex and decurrent base. *Seeds* unknown.

Distribution — This species is endemic in New Caledonia and restricted to the north-west of Grande Terre and is known from three massifs: Boulinda, Kopeto, and Paéoua.

Habitat & Ecology — It is found in maquis, often degraded, with one collection from humid forest (according to the label

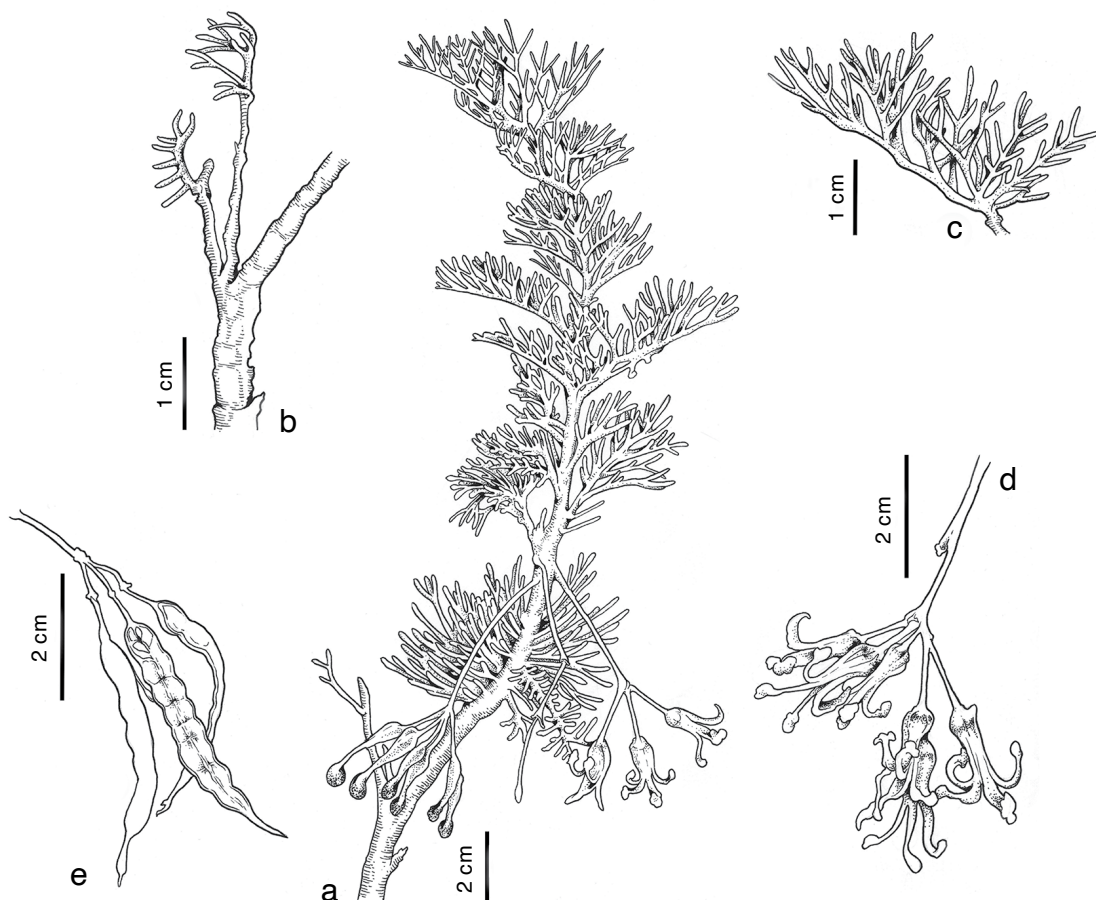


Fig. 1 *Stenocarpus deweae* Pillon. a. Flowering branch; b. detail of a branch; c. detail of a leaf; d. inflorescence; e. infructescence (from *MacKee 1700* and *Pillon, Bruy & Oedin 1498*). — Drawn by Mathilde Cathelain.

on *MacKee* 22232), always on ultramafic substrates, at 450–1150 m elevation. Flowering: March, April, July to September; fruiting: April, July to September.

Conservation status — *Stenocarpus deweae* has an Extent of Occurrence (EOO) of c. 165 km², and an Area of Occupancy (AOO) of c. 56 km². All three locations where it is known occur outside of protected areas and are heavily mined for nickel (particularly Mount Kopeto) and are also subject to the likelihood of fire. *Stenocarpus deweae* was evaluated by the New Caledonia Plant Red List Authority (Meyer et al. 2022) on 15 March 2023 and has been assigned a preliminary status of Endangered based on the IUCN Red List Categories and Criteria (IUCN 2001): EN B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v).

Paratypes. *Achille* 782 (P [P02786300]!), sentier du Pic Poya au col de Nekoro, 550 m, 1 Mar. 2000 (fl.); *Bernardi* 10145 (P [P02301294]!), Forêt Plate, in vicinioribus praedii (A), vel ad montem Paéoua metalliferum, S21°08'–21°10' E165°03'–165°07', 850–950 m, 13 Aug. 1965 (fl.); *Bernardi* 12690 (K [K004215979]!, P [P02301293]!), Mont Boulinda, 450–900 m, 12–15 Apr. 1968 (fl.); *Fleuret* & *Barrabé* 354 (NOU [NOU088680]!, P [P00932578]!), Boulinda, S21°12'34" E165°09'18.8", 764 m, 16 Apr. 2017 (fl., fr.); *MacKee* 17127 (P [P2301464, P02301468]!), Mt Kopéto, plateau sommital, 900–1000 m, 6 July 1967 (fl., fr.); *MacKee* 17159 (P [P02301465, P02301466, P02301467]!), Mont Boulinda, pente au-dessus de la Oua Nepoua, 950 m, 25 July 1967 (fl., fr.); *MacKee* 17384 (P [P02301461, P02301462, P02301463]!), Plateau au nord du Mont Boulinda, 1000–1150 m, 28 Aug. 1967 (fl.); *MacKee* 22232 (NOU [NOU036114]!, P [P02301458, P02301459]!), Haute Népoui, Oué Péoué, pente ouest du Paéoua, 900 m, 9 July 1970 (fr.); *Morat* 5039 (NOU [NOU036124]!), Massif du Boulinda, 6 July 1976 (fl.); *Pillon*, *Bruy* & *Oedin* 1496 (NOU [NOU090558]!, P [P00971505]!), Mont Paéoua, S21°09'37.8" E165°05'23.6", 928 m, 18 Sept. 2019 (fr.); *Pillon*, *Bruy* & *Oedin* 1498 (NOU [NOU090560]!), Mont Paéoua, S21°08'44" E166°04'38.1", 734 m, 18 Sept. 2019 (fl., fr.); *Schmid* 5314 (NOU [NOU036121]!), Mont Boulinda, 900 m, 9 July 1967 (fl.); *Veillon* 134 ([NOU036120]!, P [P02301420]!), Mont Boulinda, 700 m, 26 Apr. 1965 (fl.); *Veillon* 1292 (NOU [NOU036115]!, P [P02301421]!), Massif du Boulinda, 800–950 m, 26 July 1967 (fl., fr.).

A SYNOPSIS OF THE REMAINING SPECIES OF STENOCARPUS IN NEW CALEDONIA

Stenocarpus R.Br.

Stenocarpus R.Br. (1810) 201, nom. cons. — Type: *Stenocarpus forsteri* R.Br. (= *Stenocarpus umbelliferus* (J.R.Forst. & G.Forst.) Druce). *Cybele* Salisb. in Knight (1809) 123, nom. rej. — Type: *Cybele umbellifera* (J.R.Forst. & G.Forst.) Salisb. [*Agnostus* A.Cunn. ex Loudon (1832) 580, nom. inval., nom. nud.]. — *Agnostus* Otto & A.Dietr. (1846) 376. — Type: *Agnostus sinuatus* Lindl. *Strangea* Meisn. (1855a) 66. — Type: *Strangea linearis* Meisn., syn. nov. *Fitchia* Meisn. (1855a) 75, nom. illeg., non *Fitchia* Hook.f. (1845) 640. *Molloya* Meisn. (1855b) 382. — Type: *Molloya cynanchicarpa* (Meisn.) Meisn., syn. nov. *Diploptera* C.A.Gardner (1934) 79. — Type: *Diploptera stenocarpoides* (F.Muell. ex Benth.) C.A.Gardner, syn. nov.

The names *Diploptera* and *Molloya* are synonyms of *Strangea* (Hnatiuk 1995). Kuntze (1891) made several combinations under the rejected generic name *Cybele*. From a nomenclatural point of view, they can be ignored, but are included below for completeness. No specific combination has ever been published under *Fitchia* Meisn., but according to the original publication the type would be *Grevillea ?cynanchicarpa*.

1. *Stenocarpus comptonii* S.Moore

Stenocarpus comptonii S.Moore in Rendle et al. (1921) 390. — Lectotype (designated here, cited as holotype by Viot 1968): *Compton* 688 (lecto BM [BM000915708]!), (New Caledonia,) Mont Dore, 2000 ft., 4 Apr. 1914.

This species is characterised by its somewhat round, simple, glabrous and coriaceous leaves with rather obscure venation and its many-flowered (15–35) terminal inflorescences. It is found on ultramafic substrates in the south of Grande Terre, particularly on Montagne des Sources and Plaine des Lacs.

2. *Stenocarpus grunowii* Zahlbr.

Stenocarpus grunowii Zahlbr. (1888) 286. — Type: *Grunow* s.n. (holo W, specimen destroyed, Christian Bräuchler, pers. comm. 2020), (New Caledonia,) in montibus ad Thio, Sept. 1884. Lectotype (designated here): Zahlbruckner (1888) pl. 13: f. 2 (g–j).

This species is characterised by its multifid adult leaves and pale (white-yellow) flowers. It is here re-instated as distinct from *S. milnei* from which it is distinguished by its sparse ramification and its shorter leaves with shorter petioles. It is restricted to ultramafic substrates of the eastern and central parts of Grande Terre, mostly around Thio, but also known from Koungouhaou and Ouenghi.

Selected specimens. *MacKee* 15439 (P [P02301310, P02301313, P02301314, P02301315]!), Basse vallée de Thio, 10–100 m, 6 Aug. 1966; *MacKee* 15457 (P [P02301307, P02301308]!), Montagnes au sud de la basse vallée de Thio, 7 Aug. 1966; *MacKee* 16475 (P [P02301304, P02301305]!), Thio, vallée de la Nembrou, 20–100 m, 4 Mar. 1967; *MacKee* 45598 (P [P02301444]!), Vallée de la Ouenghi, 70 m, 23 July 1991; *Veillon* 1402 (P [P02301422]!), Forêt de Saille, 12 Oct. 1867.

3. *Stenocarpus* × *heterophyllus* Brongn. & Gris

Stenocarpus × *heterophyllus* Brongn. & Gris (1865) 44. — *Cybele heterophylla* (Brongn. & Gris) Kuntze (1891) 578, nom. illeg. — Lectotype (designated here): *Vieillard* 1099 (lecto P [P00647524]!; isolecto P [P00646525]!), (New Caledonia,) Mont Dore, 1855–1860.

This taxon is most likely a collection of hybrids involving one parent with multifid leaves (probably *S. milnei* in most cases), and another species with simple leaves, but more than one species may have been involved in the hybridisation. The adult foliage is variable including a mixture of simple and multifid leaves, and the leaves have a very variable number of lobes. Further investigation is required to determine how many and which species are involved, and for the present, this material is grouped together under a single name. Its distribution is scattered across Grande Terre.

4. *Stenocarpus milnei* Hook.

Stenocarpus milnei Hook. (1854) 359. — *Lomatia milnei* (Hook.) Hook. (1855) t. 2. — *Cybele milnei* (Hook.) Kuntze (1891) 578, nom. illeg. — Lectotype (designated here): *Milne* 118 (lecto K [K00796038]!), (New Caledonia,) Isle of Pines, near to summit of main peak, Oct. 1853. — Residual syntype: *MacGillivray*, Voyage of H.M.S. Herald, Bot. no. 855 (K [K000796039]!), (New Caledonia,) Isle of Pines, near to summit of main peak, 8 Oct. 1953. [A sheet at BM with the same locality has the date Oct. 1854.] *Stenocarpus dareoides* Brongn. & Gris (1865) 45. — *Cybele dareoides* (Brongn. & Gris) Kuntze (1891) 578, nom. illeg. ('dareodes'). — Lectotype (designated here): *Vieillard* 1102 (P [P00647536]!), (New Caledonia,) Montagne de Kanala, 1855–1860. *Stenocarpus elegans* Brongn. & Gris (1865) 44. — *Cybele elegans* (Brongn. & Gris) Kuntze (1891) 578, nom. illeg. — Lectotype (designated here): *Vieillard* 1101 (lecto P [P00647531]!; isolecto BM [BM014605676, s.dat.]!, P [P00647534, P00647535]!), (New Caledonia,) Mont Dore, 1855–1860. — Residual syntype: *Deplanche* 215 (P [P02301281, P02301282]!), s.loc., 1861.

This taxon is characterised by its adult multifid leaves. It is distinguished from both *S. grunowii* and *S. deweae* by its denser ramification and its larger leaves with longer petioles. It is widespread on ultramafic substrates on Grande Terre and Isle of Pines. The type material of *S. dareoides* is composed of sterile juvenile multifid foliage and is tentatively placed in synonymy here based on its relatively long petiole.

5. *Stenocarpus rubiginosus* Brongn. & Gris

Stenocarpus rubiginosus Brongn. & Gris (1865) 43. — *Cybele rubiginosa* (Brongn. & Gris) Kuntze (1891) 578, nom. illeg. — Lectotype (designated here, cited as holotype by Viot 1968): *Vieillard* 1095 (lecto P [P00647542]!), (New Caledonia,) Montagne de Poila, 1855–1860.

This species has lanceolate, somewhat leathery leaves with pointed apices, terminal inflorescences with > 9 white flowers, and large fruits. As the epithet suggests, the young parts (leaves, inflorescence) are generally covered with \pm sparse and caducous reddish indumentum, but this is not unique to this species. It occurs on several ultramafic massifs on the western side of Grande Terre (Mé Ori, Mé Maoya, Boulinda, Paéoua).

6. *Stenocarpus tremuloides* Brongn. & Gris

Stenocarpus tremuloides Brongn. & Gris (1865) 44. — Lectotype (designated here): *Vieillard 1091* (lecto P [P00647544]!; isolecto P [P00647545, P00647546, P00647547]!), (New Caledonia,) M'bée, 1855–1860.

Stenocarpus balansae Guillaumin in Guillaumin & Viot (1953) 280. — Type: *Balansa 3649* (holo P [P00647543]!), (New Caledonia,) Thio, Jan. 1872.

This species is easily distinguished by the dense and persistent red pubescence on the lower surface of the leaves and also on the inflorescences, flowers, and fruits, and the leaf bases are obtuse to cordate. It is found on ultramafic substrates, mostly on the eastern side of Grande Terre, from Thio to Poro, also in the Tontouta, Dumbea, and Ouenghi basins.

7. *Stenocarpus trinervis* (Montrouz.) Guillaumin

Stenocarpus trinervis (Montrouz.) Guillaumin (1911) 217. — *Lomatia trinervis* Montrouz. (1860) 248. — Lectotype (designated here, cited as holotype by Viot 1968): *Montrouzier 195* (lecto P [P00647556]!), (New Caledonia,) Ile Art.

Stenocarpus latifolius Montrouz. (1860) 249, *syn. nov.* — Type: not indicated, presumed destroyed.

Stenocarpus laurinus Brongn. & Gris [var. alpha] (1865) 43; Pancher & Sebert (in Sebert & Pancher 1874) 568 ('*laurifolius*'). — *Cybele laurinus* (Brongn. & Gris) Kuntze (1891) 578, nom. illeg. — *Stenocarpus trinervis* (Montrouz.) Guillaumin var. *paradoxus* Viot (1968) 217. — Lectotype (designated here): *Vieillard 1092* (lecto P [P00647548]!; isolecto L [L0039685]*, P [P00647549, P00647550, P00647551]!), (New Caledonia,) Montagnes de Balade, 1855–1860.

Stenocarpus laurinus Brongn. & Gris var. beta (1865) 43, nom. inval. — Based on *Vieillard 1093* (K [K000796041]!, P [P00647552, P00647553, P00647554]!), (New Caledonia,) Montagnes à Balade, 1855–1860.

Stenocarpus laurinus Brongn. & Gris var. gamma (1865) 43, nom. inval. — Based on *Pancher 417* (P [P02362818, P02362820]!), (New Caledonia,) Ile des Pins.

Stenocarpus aemulans Schltr. (1906) 101. — Lectotype (designated here): *Schlechter 15536* (B [B100295557]*; isolecto BM [BM014605674]!, BR [BR000000529719]*, E [E00346990]*, HBG [HBG508517]*, K [K000796035]!, L [L0039686]*, P [P02363562]!, S [S07-11589]*), (New Caledonia,) auf den Bergen bei Oubatche, 700 m, 22 Dec. 1902.

Stenocarpus dielsianus Schltr. (1906) 102. — Lectotype (designated here): *Schlechter 15344* (lecto B [B100295558]*; isolecto BM [BM014605675]!, BR [BR000000529722]*, HBG [HBG508518]*, K [K000796034]!, P [P02363565]!), (New Caledonia,) auf den Abhängen des Mont Humboldt, 1000 m, 16 Nov. 1902.

Stenocarpus acaciifolius Guillaumin (in Guillaumin & Viot 1953) 279 ('*acaciæ-folius*'). — Lectotype (designated here): *Balansa 3291* (P [P02363116]!; isolecto K [K000961868]!, P [P02363117, P02363118]!), (New Caledonia,) Houailou, 15 Mar. 1871.

This species typically has compound inflorescences, ramifying close to their insertion, usually well within the foliage (i.e., not terminal) and the leaves are generally relatively large, often with a wavy margin. It is ecologically variable, found on both ultramafic substrates and non-ultramafic ones, and its habitats include dry forest. It is present throughout Grande Terre, Belep, and Isles of Pines.

Brongniart & Gris (1865) divided *Stenocarpus laurinus* into three varieties which they designated with the Greek letters alpha, beta, and gamma. As they did not give names to these varieties, they are not validly published. Assuming their intention was that var. alpha was the nominative variety, we have proposed a lectotype for it. *Stenocarpus latifolius*, which Viot (1968) treated as insufficiently known, is placed in the synonymy of *S. trinervis* on the basis of its protologue.

8a. *Stenocarpus umbelliferus* (J.R.Forst. & G.Forst.) Druce var. *umbelliferus*

Stenocarpus umbelliferus (J.R.Forst. & G.Forst.) Druce (1917) 648; St. John (1956) 230, as comb. nov. — *Embothrium umbelliferum* J.R.Forst. & G.Forst. (1776) 16. — *Embothrium umbellatum* L.f. (1782) 128, nom. illeg., superfl. — *Embothrium umbellatum* G.Forst. (1786) 11, nom. superfl. — *Cybele umbellata* (L.f.) Kuntze (1891) 578, nom. illeg. — *Stenocarpus umbellatus* (L.f.) Schltr. (1906) 102, nom. superfl. — *Stenocarpus forsteri* R.Br. (1810) 201, nom. illeg., superfl. — *Stenocarpus forsteri* R.Br. var. *forsteri*, nom. illeg. — *Stenocarpus umbellatus* (L.f.) Schltr. var. *forsteri* (R.Br.) Guillaumin (1935) 279, nom. illeg. — Lectotype (first step, designated by Viot (1968) 228, cited as 'holo'; second step, designated here: *J. Forster & G. Forster s.n.* (lecto BM [BM000915712]!; isolectotypes and/or residual syntypes BM [BM000915711, BM000915713]!, K [K000799936, K000799937]!, LINN [LINN_HS161-16]*, P-Forst. [no barcode]!, S [S07-11696]*, New Caledonia, Balade, Sept. 1774; for further material see Nicolson & Fosberg 2003: 567–568).

Stenocarpus intermedius Brongn. & Gris (1865) 42. — *Cybele intermedia* (Brongn. & Gris) Kuntze (1891) 578, nom. illeg. — Lectotype (designated here): *Vieillard 1096* (lecto P [P00647528]!; isolecto A [A00035530]*, K [K000799935]!, MEL [MEL1538199 (s.dat.)]*, P [P00647529, P00647530]!), (New Caledonia,) Montagnes de Balade, 1855–1860, *syn. nov.*

Stenocarpus gracilis Brongn. & Gris (1865) 43. — *Cybele gracilis* (Brongn. & Gris) Kuntze (1891) 578, nom. illeg. — Lectotype (designated here): *Vieillard 1100* (lecto P [P00647521]!; isolecto P [P00647522, P00647523]!), (New Caledonia,) Montagnes de Yaté, 1855–1860, *syn. nov.*

Stenocarpus phyllodineus S.Moore (in Rendle et al. 1921) 390. — Lectotype (designated here): *Compton 2314* (lecto BM [BM000915709]!; isolecto P [P00647538, P00647539]!), (New Caledonia,) Taom, 500–1000 ft., 2 Dec. 1914, *syn. nov.*

Stenocarpus septentrionalis Guillaumin & Viot (1953) 68. — Lectotype (designated here): *Viot 1290* (P [P00647540]!; iso P [P00647541]!), (New Caledonia,) Gomen-sentier menant au sommet Sud du Mont Kaala, 300 m, 1 Nov. 1943. Residual syntypes: *Viot 1238, 1247, 1349, 1356.*

Stenocarpus dumbeensis Guillaumin (in Guillaumin & Viot 1953) 280. — Lectotype (designated here): *Balansa 178* (lecto P [P00647518]!; isolecto P [P00647519, P00647520]!), (New Caledonia,) alluvions de la Dumbéa, au-dessus de Koé, 21 Nov. 1868, *syn. nov.*

Stenocarpus francii Bonati & Petitm. (1907) 650. — Lectotype (designated here): *Franc 410* (lecto UC [UC390618]*), Prony, Oct. 1906.

Stenocarpus deltoidifolius Viot (in Guillaumin & Viot 1953) 65. — Lectotype (designated here): *Viot 515* (lecto P [P02301478]!; isolecto A [A00035527]*, P [P02301480]!), (New Caledonia,) Montagne des Sources, 700 m, 7 Mar. 1941.

Stenocarpus varians Guillaumin (1959) 176. — Type: *MacKee 2459* (holo P [P02301503]!), (New Caledonia,) Mont Dore, 400 m, 1 May 1955.

This species is widespread across Grande Terre and is relatively variable, both ecologically and morphologically. It has few-flowered inflorescences (≤ 10 flowers) with slender to very slender axes. The foliage is variable: in the south, leaves tend to be much broader in their lower half (*S. gracilis*), whereas on the eastern coast, they tend to be relatively long and narrow (*S. intermedius*). The presence of slender inflorescence axes does not always correlate well with other characters. Reflecting its variability, several varieties were recognised by Viot (1968), one of which (var. *billardierei*) is accepted here.

The taxonomy of this species has been confused by the publication of two similar names, *Embothrium umbelliferum* J.R.Forst. & G.Forst. (1776) and *E. umbellatum* L.f. (1782). The latter name is illegitimate since Linnaeus filius referred it to '*Embothrium umbelliferum* Forst. gen. n.'. Remarkably, a combination in *Stenocarpus* with the epithet *umbelliferus* was not made until 1917 and it was then repeated by St. John (1956), who was unaware of Druce's (1917) paper but provided a summary of the nomenclatural problems surrounding these names.

Brown (1810) published the name *Stenocarpus forsteri*, but it is superfluous because it included '*Embothrium umbellatum*. Forst. Gen. 16 t. 8 f. a. – f.' in synonymy. Brown also cited '*Forst. Aust. n. 60*' and '*Linn. Suppl. 228*' [sic, presumably in error for 128] in the protologue. He therefore clearly considered that both *E. umbelliferum* and *E. umbellatum* referred to the same

plant for which he was providing a new epithet because he was placing it in his new genus, *Stenocarpus*. As pointed out by Druce (1917), Brown did not follow the continental style of the time which was to transfer the original epithet when placing a species in a different genus.

Viro (1968) stated that the holotype of *Stenocarpus umbelliferus* was 'Forster 29, Sans localit  (BM)'. Nicolson & Fosberg (2003), however, made it clear that this typification included two erroneous assumptions: 1) that the Forsters based their description only on material at BM; and 2) that a sheet with the number 29 (i.e., the same as that on the specimen at P) was present there. Nicolson & Fosberg's list of Forsters' materials (2003: 568) mentions three herbarium sheets at BM (now with the barcodes cited above), none with the number 29, plus an illustration (n.v.) with drawing and engraving numbers, neither of which is 29. According to their list, among the many specimens that exists, the number 29 appears only on the sheet at P, which Viro annotated as an isotype of *E. umbelliferum* in 1962. Mabberley & Moore (2022) therefore rightly considered BM000915712 as the lectotype of the Forsters' name but they did not include the phrase 'designated here' or its equivalent, making their typification ineffective under Art. 7.11 (Turland et al. 2018). Honouring this selection, as well as Viro's initial typification attempt, we are explicitly choosing here BM000915712 as the lectotype of *E. umbelliferum* through a second-step process under the terms of Art. 9.17 (Turland et al. 2018).

Although both masculine endings of the epithet are correct ('umbellifer' vs 'umbelliferus'), we retain the original spelling from the protologue.

8b. *Stenocarpus umbelliferus* (J.R.Forst. & G.Forst.) Druce var. *billardierei* (Brongn. & Gris) Guillaumin ex Viro

Stenocarpus umbelliferus (J.R.Forst. & G.Forst.) Druce var. *billardierei* (Brongn. & Gris) Guillaumin ex Viro (1968) 228 ('billardieri'). — *Stenocarpus forsteri* R.Br. var. *billardierei* Brongn. & Gris (1865) 42 ('billardieri'). — *Stenocarpus umbellatus* (G.Forst.) Schltr. var. *billardierei* (Brongn. & Gris) Guillaumin (1935) 279 ('billardieri'). — Lectotype (designated here): *Labillardiere s.n.* (lecto FI [F1076892]*; isolecto BM [BM015176227]!). *Stenocarpus forsteri* auct. non R.Br.: Labill. (1824) 21.

This taxon is very similar to *Stenocarpus umbelliferus* var. *umbelliferus* but is distinguished by having both the younger branches and inflorescences axes flattened.

Brongniart & Gris (1865) first published this variety as 'var. β *Billardieri* [sic]' and cited '*Stenocarpus Forsteri* Labill. *Sert. austr.-cal.* p. 21, tab. 26' after their diagnosis. However, Labillardiere (1824) published *S. forsteri* 14 years after Brown had done so and he referred to Brown under this name, as well as to *Embothrium umbellatum* [sic] of the Forsters, Linnaeus, Lamarck, and Willdenow. Although Brongniart & Gris (1865) considered Labillardiere's name was distinct from Brown's, it is misapplied.

With their diagnosis, Brongniart & Gris (1865) stated that Labillardiere's specimen conformed to their variety *billardierei*. In a later paragraph, they mentioned two other collections that also belonged to this taxon, *Vieillard 1094* from near Balade and *Deplanche 95*. According to Stafleu & Cowan (1979), Labillardiere's herbarium was acquired by Webb and is now at FI, with a nearly complete set of duplicates also at FI, acquired via Desfontaines's general herbarium, with an important set of duplicates acquired by Delessert and now at G. The lectotype designated here, F1076892, has extensive notes attached, presumably in Labillardiere's hand, and the sheets at BM and P have similar material and labels but lack notes.

9. *Stenocarpus villosus* Brongn. & Gris

Stenocarpus villosus Brongn. & Gris (1865) 44. — *Cybele villosa* (Brongn. & Gris) Kuntze (1891) 578, nom. illeg. — Lectotype (designated here): *Vieillard 1110* (lecto P [P04023810]!), Balade, 1855–1860.

This species is easily distinguished by its pendent inflorescences with the flowers pointing downward, and as the epithet suggests, by the dense pale indumentum that covers the curved inflorescence axes. It is restricted to ultramafic substrates on the eastern side of Grande Terre.

KEY TO THE SPECIES OF STENOCARPUS FROM NEW CALEDONIA

1. Adult foliage variable, including a mixture of simple and multifid leaves, these with a very variable number of lobes *S. x heterophyllus*
1. Adult foliage composed of either multifid or entire leaves but not both 2
2. Leaves multifid 3
2. Adult foliage composed only of entire leaves, the margins sometimes wavy but neither lobed or toothed 5
3. Shrub or small tree, usually branched, with thin branchlets and diffuse foliage; petiole thin (c. 1 mm diam), generally > 1 cm long, and leaf lobes generally > 1.5 cm long; inflorescences not protruding outside the foliage. — Widespread *S. milnei*
3. Sparsely branched shrub, with long, thick twigs clothed with leaves; petiole often thicker (1–1.5 mm diam), generally < 1 cm long, and leaf lobes generally < 1.5 cm long; inflorescences protruding laterally from the foliage on long, slender peduncles 4
4. Petiole 5–10 mm long; pedicel 10–18 mm; corolla reddish. — Kopeto, Boulinda, Paeoua *S. deweae*
4. Petiole 2–5 mm long; pedicel 6–7 mm; corolla pale (whitish to yellowish). — Thio-Ouenghi region *S. grunowii*
5. Adult and juvenile leaves covered with a persistent reddish indumentum underneath, leaf bases broadly obtuse to cordate; inflorescences, pedicels, flowers, and fruits pubescent *S. tremuloides*
5. Adult leaves glabrous or almost so (young parts sometimes pubescent), leaf bases \pm acute; inflorescences glabrous or pubescent 6
6. Plant glabrous or pubescent on the young parts; inflorescences conspicuous, mostly terminal or within the foliage, flowers generally \geq 10 per inflorescence, not clearly arranged in a single circle but forming a cone, or dome-shape . . . 7
6. Plant glabrous or almost so, inflorescence somewhat inconspicuous, terminal or commonly lateral on the branches, flowers generally \leq 10 per inflorescence, arranged in a single circle (wheel-like inflorescence) that is sometimes \pm flat 10
7. Inflorescences and flowers covered with a persistent pale pubescence; peduncle bent, so that the flowers point downwards. — Eastern coast only *S. villosus*
7. Inflorescences and flowers glabrous or with a sparse and caducous indumentum (this sometimes also present on the young leaves); peduncle straight, flowers pointing upwards or outwards 8
8. Leaves sub-coriaceous, often with a wavy margin and venation somewhat visible; some or most inflorescences compound (groups of umbels), shorter than the leaves and generally amongst the foliage. — Widespread . *S. trinervis*
8. Leaves coriaceous, margin straight, venation generally hardly distinct; inflorescences simple, mostly terminal, longer than the leaves, protruding above the leafy branches . . . 9

9. Plant glabrous; flowers 15–35 per umbel. — South *S. comptonii*
9. Young parts (leaves, inflorescences, and flowers) generally with a sparse reddish indumentum; flowers 9–14 per umbel. — North-west *S. rubiginosus*
10. Twigs and peduncles circular in cross section *S. umbelliferus* var. *umbelliferus*
10. Inflorescence axes laterally flattened in cross section, young twigs also commonly flattened *S. umbelliferus* var. *billiardierei*

TRANSFER OF NAMES IN STRANGEA TO STENOCARPUS

1. *Stenocarpus linearis* (Meisn.) Pillon & H.C.Hopkins, *comb. nov.*

Strangea linearis Meisn., Hooker's J. Bot. Kew Gard. Misc. 7 (1855) 67. — Type: *Strange s.n.* (holo? NY [NY00284829!]), Australia, Moreton Bay, 24 Dec. 1854 [sic], see below.

Grevillea strangea Benth. (1870) 453. — Syntypes: *Bidwill 49* (K [K000799967!]), Australia, Wide Bay; *Leichhardt s.n.* (MEL [MEL2177962A] n.v.), Australia, Durval; *C. Moore 116* (BM [BM013767154!], K [K000961869!], MEL [MEL2177963A] n.v.), Australia, Sandy ridge, Cape Byron.

NY acquired the personal herbarium of the Swiss botanist Carl Friedrich Meisner (1800–1874) after his death (Stafleu & Cowan 1981) and the former Australian expert on *Grevillea*, Don McGillivray, annotated the *Strangea* specimen at NY as an isotype of *Strangea linearis* in 1970. It is a poor specimen with only three leaves. AVH (continuously updated) does not list any collections by Strange under this name so it is possible that the 'single specimen' mentioned by Meisner (1855a) refers to the sheet at NY, in which case it would be the holotype. However, without an exhaustive search, we cannot be certain.

Frederick Strange (1826–1854), for whom the genus *Strangea* was named, was a professional collector of natural history specimens who was killed, aged 28, by aborigines on 'Sth' (or Second) Percy Island, Queensland, on 15th Oct. 1854 (Whittell 1947, Comben 2017, Council of Heads of Australasian Herbaria 2023) and so the date on the type of *S. linearis* (24 Dec. 1854) can not be the date of collection and might refer to when Meisner prepared his description.

2. *Stenocarpus cynanchicarpus* (Meisn.) Pillon & H.C.Hopkins, *comb. nov.*

Grevillea? cynanchicarpa Meisn., Hooker's J. Bot. Kew Gard. Misc. 7 (1855) 75. — *Molloya cynanchicarpa* (Meisn.) Meisn. (in De Candolle 1856) 348. — *Strangea cynanchicarpa* (Meisn.) F.Muell. (1871) 32 ('*cynanchocarpa*'). — Lectotype (designated here): *Drummond coll. VI, 190* (lecto NY [NY00284599!], dated 1850–1851; islecto BM [BM014605684!], dated 1854, NSW [NSW106234]*, dated 1854, PERTH [PERTH01544349]*, dated 1854, ex BM), Australia, Interior north of Swan River, on the great sand plain to the north of the Diamond Spring. — Material that is possibly part of the type collection: *Drummond 190* (K [K000799966!], between Moore and Murchison River, W. Australia, dated 1853, series not indicated, with a stamp for Herb. Hookerianum; K [K000961870!], Swan River, ser. 6; LD [LD1746516]*, Swan River, ser. 3rd [? writing not clear], s.dat.); *Drummond 19* (PERTH [PERTH01544357]*, W. Australia).

The Scottish-born botanist James Drummond (1786–1863), who collected the type material, settled in the Swan River colony, now Perth in Western Australia, in 1829 and later became a plant collector (Erickson 1966, Council of Heads of Australasian Herbaria 2023). Between 1840 and 1851 he collected sets of specimens that were sent to William Jackson Hooker at K, who assigned most of them to six 'collections' (better referred to as series) and facilitated the distribution of duplicates to subscribers, so that Drummond specimens are now held in numerous herbaria (B.R. Maslin, pers. comm. 2023). After Drummond's

death, his son transferred his personal herbarium to Ferdinand von Mueller, the founding director of MEL (Council of Heads of Australasian Herbaria 2023).

McGillivray annotated the specimen at NY as the holotype of *Grevillea cynanchicarpa* in 1970 but did not publish this typification. However, we select this as the lectotype and it has a blue label in the lower right-hand corner with Meisner's morphological notes on the fruits. The protologue described the leaves, flowers and fruits and all these structures are present on the lectotype, although the flowers are sparse.

Three dates are mentioned on the blue label. '1850-51' corresponds to the dates of the collections that William Hooker assigned to Drummond's 6th series (B.R. Maslin, pers. comm. 2023, based on Erickson 1966). On the top line is '*Grevillea? cynanchicarpa* nob. (1. Nov. 1854.)', which is presumably the date on which Meisner described the plant; his paper on new *Proteaceae* was read at the Linnean Society of London on 16 January 1855 before publication in Hooker's *Journal* shortly afterwards. On the bottom line is 'D.am.Shuttleworth. 5. Nov. 1854.', which probably means 'from my friend Mr Shuttleworth' (A. Wilson & A. George, pers. comms, 2023).

Meisner was not listed by Barker (2005) as one of the subscribers to the sets of Drummond's collections but is known to have received Drummond material from his friend and correspondent Robert J. Shuttleworth (1810–1874), who had subscribed. Shuttleworth was an English-born botanist and malacologist but he spent much of his life in Switzerland. He accumulated a large private herbarium (c. 170 000 sheets) containing his own and other collectors' material, and after his death, it was acquired by BM (Carruthers 1978, JSTOR continuously updated). Although Meisner received the material he named *Grevillea cynanchicarpa* from Shuttleworth, it is not clear why the date at the top of the label is different from, and earlier than, the one at the bottom. Similar blue labels are present on other material from Meisner's herbarium at NY, where various Drummond specimens of *Proteaceae* and *Acacia* Mill. that are types of Meisner names indicate they were received from Shuttleworth.

The material on sheets K000799966 and LD1746516 with number 190 is similar to that on those labelled as 'col. VI' at BM, NSW, NY, and PERTH01544349 and could well be from the same gathering, although the information on the K and LD sheets is not definitive. PERTH01544357 is numbered *Drummond 19*, perhaps in error for 190 (see annotation by Paul G. Wilson in 1990) but gives no precise locality nor series number. It has a small printed isotype label (likely added by herbarium staff rather than the author) and has been stamped as a type but the material is not closely similar to the lectotype and islectotypes.

3. *Stenocarpus stenocarpoides* (F.Muell. ex Benth.) Pillon & H.C.Hopkins., *comb. nov.*

Hakea? stenocarpoides F.Muell. ex Benth., Fl. Austral. V (1870) 511. — *Diplloptera stenocarpoides* (F.Muell. ex Benth.) C.A.Gardner (1934) 80. — *Strangea stenocarpoides* (F.Muell. ex Benth.) C.A.Gardner (1942) 171. — Lectotype (designated here): *Drummond 15* ('J. Dr. 15, W.A.') (lecto MEL [MEL-2278925]*; islecto K [K000799965!], *'Drummond 15'*, Swan River; PERTH [PERTH01544365]*, 'J. Dr. 15' W. Australia). — Other possible original material: *Drummond s.n.* (K [K000799963!], Swan River, [K000799964!], W. Australia, mounted together on a single sheet).

Strangea steedmanii Blakely (1938) 133. — Syntypes: *Steedman s.n.* (MEL [MEL0239715A]*, NSW [NSW538781, NSW538782, NSW538783]*), Western Australia, Nornalup, Jan. 1938. — Other possible type material: PERTH [PERTH1708805, PERTH1708813, PERTH1708848] n.v.), all from Walpole River and dated Feb. 1931, may also be part of the original material in view of their date of collection. Walpole River is close to Nornalup in the south-western corner of Western Australia.

None of the sheets listed above as types of Bentham's *Hakea stenocarpoides* mentions the 5th series of Drummond's collections, nor the supplement to it, which were collected between mid-1847 and early 1849 (B.R. Maslin, pers. comm. 2023, based on Erickson 1966).

When Bentham was preparing his 'Flora Australiensis', Mueller assisted him by sending MEL collections on loan to London. The MEL specimens that Bentham saw are today indicated by having the corner of the label turned down and annotated with the letter 'B' on the reverse (B.R. Maslin, pers. comm. 2023). The lectotype of *Hakea stenocarpoides* has a printed label for 'Ferd. Mueller PH. & M.D.' with this 'B' inscribed on the folded corner (C. Gallagher, pers. comm. 2023). This sheet was labelled as the holotype by Jim Willis (handwriting identified by B.R. Maslin) and has also been stamped as an isotype.

Two fragments at K, mounted on a single sheet, both *Drummond s.n.*, may also be part of the original material. Both have 'H. stenocarpoides F.M. v. 511' written on them, most probably by Daniel Oliver, who worked at Kew in various capacities, starting as an assistant and finally becoming librarian and keeper of the herbarium (Anonymous 1916). K000799964 has loose buds in a packet, similar to those on the lectotype and isolectotypes, whereas the fragment labelled K000799963 is sterile. However, the sheet is not stamped 'Herbarium Hookerianum', so how this material arrived at K is unknown.

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