

The identity of *Picrella* Baill. (Rutaceae) with a revision of the genus

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ABSTRACT

KEY WORDS
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Picrella Baill., based on the cultivated *P. trifoliata* Baill., is an earlier name for the New Caledonian genus *Zieridium* Baill., and not referable to a Mexican plant as previously assumed. A revision of the genus is presented. Three species are recognised: *P. glandulosa* T.G. Hartley, *sp. nov.*, *P. ignambiensis* (Guillaumin) T.G. Hartley & Mabb., *comb. nov.*, and *P. trifoliata*, comprising three varieties including var. *gracilis* (Baill.) T.G. Hartley & Mabb., *comb. et stat. nov.*, and var. *gracillima* T.G. Hartley, *var. nov.*

RÉSUMÉ

MOTS CLÉS
Ghiesbrecht,
Helietta,
Mexique,
Nouvelle-Calédonie,
Picrella,
Rutaceae,
Simaroubaceae,
Zieridium.

Identité et révision du genre Picrella Baill. (Rutaceae).

Picrella Baill., basé sur l'espèce cultivée *P. trifoliata* Baill., est le plus ancien nom pour le genre néo-calédonien *Zieridium* Baill., et ne s'applique pas à une plante du Mexique. Une révision du genre est présentée. Trois espèces sont reconnues : *P. glandulosa* T.G. Hartley, *sp. nov.*, *P. ignambiensis* (Guillaumin) T.G. Hartley & Mabb., *comb. nov.*, et *P. trifoliata*, composé de trois variétés y compris la var. *gracilis* (Baill.) T.G. Hartley & Mabb., *comb. et stat. nov.*, et la var. *gracillima* T.G. Hartley, *var. nov.*

The genus *Picrella* Baill. was based on a single species, *P. trifoliata* Baill., described from a plant, believed to be from Mexico, cultivated in the

Jardin des Plantes in Paris (BAILLON 1871). Two collections of *P. trifoliata*, probably taken from the same plant, are preserved at P, namely, the

holotype, dated September 1871, housed in BAILLON's own type herbarium, and a topotype, dated October 1871, housed in the General Herbarium. Until the present study these remained the only known specimens referred to the genus.

BAILLON (1871) compared *Picrella* to Rutaceae and Simaroubaceae. ENGLER (1896: 222) referred it to the latter family and was followed in this by SMALL (1911: 234), STANDLEY (1923: 540), and ENGLER (1931: 389). MABBERLEY (1989: 707), who had examined the above-mentioned topotype, recognised it as being truly Rutaceous and, misled by its presumed provenance, transferred *P. trifoliata* to the Neotropical Rutaceous genus *Helietta* Tul., as *H. trifoliata* (Baill.) Mabb. PIRANI (1998: 376), in a revision of *Helietta*, listed *H. trifoliata* as an excluded taxon, stating that "... it is not acceptable because *Picrella* Baill. was based on a specimen found in cultivation in Paris and supposed to be of Mexican origin..." He also noted that *Picrella* is morphologically incongruous with *Helietta*, but did not give his opinion on its familial classification.

In 1999, the second author had the opportunity to examine the holotype of *Picrella trifoliata*, which closely resembles the published plate and is a somewhat better specimen than the topotype. He recognised it (and the topotype, which is currently on loan to CANB) as a New Caledonian species then known as *Zieridium pseudo-obtusifolium* (Guillaumin) Guillaumin, the generic name of which was published by BAILLON (1872: 303). Herein, *Z. pseudo-obtusifolium* is considered to be conspecific with *Z. gracile* Baill., the type of *Zieridium*.

All previous authors appear to have been misled by the supposed provenance of *Picrella*, which BAILLON (1871: 149) gave as "*In horto Musaei parisiensis nuperrime floruit frutex quidam die neglectus, ob folia parva vix conspicuus, quindecim ab annis ibi cultus olimque non sine dubio* [our emphasis], *ut aiunt, ab indefesso viatore Ghiesbregto e Mexico allatus.*" Clearly, as hinted at by BAILLON, there was a confusion in labelling at the Jardin: Auguste Boniface GHIESBRECHT (1810-1893), who collected in Mexico 1842-1854, but is not known to have collected in New Caledonia, was probably not associated with the plant at all.

In light of the discovery that *Picrella* is an earlier name for the genus *Zieridium* we take the opportunity to present a revision of the genus as a precursor to the account being prepared by the first author for the Flore de la Nouvelle-Calédonie.

PICRELLA Baill.

Adansonia 10: 150 (1871) & Hist. Pl. 4: 410, 497 (1873) & Dict. Bot. 3: 593 + tt. (1891); Engler, Nat. Pflanzenfam. III, 4: 222 (1896) & ed. 2, 19a: 389 (1931). — Type: *P. trifoliata* Baill.

Zieridium Baill., Adansonia 10: 303 (1872) & Hist. Pl. 4: 462 (1873); Engler, Nat. Pflanzenfam. III, 4: 138 (1896) & ed. 2, 19a: 256 (1931); Guillaumin, Bull. Soc. Bot. France 85: 299 (1938). — Type: *Z. gracile* Baill. (= *P. trifoliata* Baill. var. *gracilis* (Baill.) T.G. Hartley & Mabb.); *syn. nov.* It is curious, and raises some obvious questions, that BAILLON did not mention *Zieridium* in his Dictionnaire de Botanique. His only references to the genus, which predate the Dictionnaire, appear to be those in Adansonia and Histoire des Plantes cited herein.

Shrubs or small trees with conspicuous to inconspicuous punctate oil glands, particularly in the leaves and pericarp; trichomes simple. Leaves opposite, trifoliolate, unifoliolate, or simple; blades pinnately veined. Inflorescences axillary or occasionally axillary and infrafoliar, cymulose to thyrsiform or reduced to compound or simple racemes or solitary flowers. Flowers functionally unisexual or rarely bisexual; sepals 4, connate at base, rounded to ovate, persistent in fruit; petals 4, distinct, valvate in bud, ovate-elliptic, hooked adaxially at apex, often becoming recurved, persistent or deciduous in fruit; stamens 4 or 8 (antisealous ones rudimentary in ♀ flowers; antipetalous ones consistently rudimentary), distinct or the antipetalous ones basally adherent to petals, filaments lanceolate to sublinear, anthers ellipsoid or broadly so (without pollen and usually flattened or obsolete in rudimentary stamens), dorsifixed, introrse; disc intrastaminal, glabrous or nearly so, pulvinate to annular, 4- or 8-lobed or undulate; gynoecium (rudimentary in ♂ flowers) 4-loculed and -carpelled, carpels joined laterally in the style, otherwise like the fruiting carpels distinct or very shortly connate at base, placentation axile, ovules 1 or rarely 2 per

locule, style straight, stigma 4-branched or ± peltate and 4-lobed (capitate and inconspicuously lobed in rudimentary gynoecium), the branches and lobes often emarginate. Fruit of 1-4 drupes (abortive carpels, if any, often persistent), these ± compressed and ± asymmetrically subglobose to ellipsoid or obovoid, rounded to cuneate at base, often with short stylar beak; pericarp in fully mature drupes with fleshy exocarp, chartaceous mesocarp, and thinly cartilaginous endocarp. Seeds solitary or rarely in pairs, ± compressed-subglobose to -ellipsoid, ± hemispherical when in pairs; testa in fully mature seeds black or reddish black, ± shiny, smooth to irregularly roughened, with thick inner layer of black, bony sclerenchyma (the sclerotesta); endosperm copious; embryo straight, hypocotyl superior, cotyledons flattened, elliptic.

Picrella, recognised herein to comprise three species, one with three varieties, is endemic to New Caledonia, occurring throughout the Grande-Terre, on the Île des Pins, and in the Loyalty Islands (including Île Walpole, which lies about 140 km SSE of Maré). It appears to be most nearly related to the New Caledonian genus *Comptonella* Baker f. (see HARTLEY 1983), differing mainly in

its simple trichomes (vs. trichomes stellate to lepidote except in *C. glabra* T.G. Hartley, which is glabrous throughout), its possession (vs. apparent lack) of a floral disc, and its style, which joins the carpels laterally (vs. apically or subapically). Also, it tends to differ from *Comptonella* in its carpels, which in flower and fruit are distinct or very shortly connate at base (vs. carpels connate at base or up to nearly their full length).

From genera of Simaroubaceae s.l. (including Irvingiaceae, Kirkiaceae, Picramniaceae, and Surianaceae), judging from the literature and the study of specimens at hand, *Picrella* differs mainly in its possession (vs. usual lack) of punctate oil glands, its opposite (vs. alternate) leaves, and its albuminous (vs. exalbuminous or nearly so) seeds with bony, sclerenchymatous (vs. fleshy to pergamentaceous) testa.

Authors placed some taxa now referable to *Picrella* in *Euodia* J.R. Forst. & G. Forst., for which they used the variant spelling *Evodia*. Because quoting in each instance the misspelling used would make the literature citations complicated and cumbersome, we have used the original spelling *Euodia* in the relevant synonymies presented below.

Key to the species of *Picrella*

1. Leaves trifoliolate and/or 1-bladed (unifoliolate and/or simple), 1.5-14 cm long, blades glabrous or nearly so, 0.15-6 cm wide, secondary veins (sometimes obscure in small-leaved plants) 4-12 on each side of midrib; stamens 4 3. *P. trifoliata*
- 1'. Leaves, or most of them, trifoliolate, 9-57 cm long, blades glabrous to pubescent, 2.2-20 cm wide, secondary veins 10-22 on each side of midrib; stamens 8 or 4 2.
2. Leaflet blades 6-23 × 2.2-9 cm, glabrous or nearly so, secondary veins prominulous above; stamens 8 1. *P. glandulosa*
- 2'. Leaflet blades 5.5-39 × 3-20 cm, usually puberulent or pubescent, at least below, secondary veins plane or impressed above; stamens 4 2. *P. ignambiensis*

1. *Picrella glandulosa* T.G. Hartley, *sp. nov.*

Euodia triphylla auct. non DC. (1824): Guillaumin, Ann. Inst. Bot.-Géol. Colon. Marseille, sér. 2, 9: 111 (1911) & Bull. Mus. Natl. Hist. Nat. 26: 366 (1920); Däniker, Vierteljahrsschr. Naturf. Ges. Zürich 77, Beibl. 19: 197 (1932). — *Euodia lamarckiana* auct. non Benth. (1861), *nom. illeg.*, based

on *Fagara triphylla* Lam.: Schlechter, Bot. Jahrb. Syst. 39: 139 (1906). — *Melicope triphylla* auct. non Merr. (1913): Guillaumin, Bull. Soc. Bot. France 85: 302 (1938).

Frutex vel arbor dioecia 1-10 m alta; glandibus oleaceis saepe comparate conspicuis; foliis trifoliolatis (foliis infrequentibus unifoliolatis), 9-32 cm longis; petiolo 1.5-

10 cm longo; laminis glabris vel fere glabris, ellipticis vel anguste ellipticis usque obovatis vel oblanceolatis, 6-23 × 2.2-9 cm, venis secundariis supra prominulis, utrinsecus (12-)14-22; inflorescentiis multifloris, 1.5-10 × 1-6 cm; floribus ♂ vel ♀; sepalis abaxialiter fere glabris usque puberulis, 0.5-0.8 mm longis; petalis abaxialiter glabris usque sparse puberulis, adaxialiter glabris, 1.5-2 mm longis; staminibus 8, staminibus antipetalis in floribus ♂ et ♀ 0.25-0.5 mm longis, staminibus antisepalis in floribus ♂ c. 1.5 mm longis, in floribus ♀ 0.5-0.75 mm longis; gynoeccio in floribus ♀ c. 1 mm longo (in floribus ♂ 0.2-0.4 mm longo), ovariis circum stylum pilosulosis, aliter glabris, 1- vel raro 2-ovulatis, stylo pilosuloso, cum stigmatate 0.5-0.65 mm longo; drupis maturis luteis, 3-4.5 mm longis, interdum rostratis, ut carpellis abortivis glabris; seminibus solitariis vel raro binatis, 2-3 mm longis.

TYPUS. — *MacKee* 2660, New Caledonia, Yaté road, valley after Col des Dalmates, 26 June 1955, fl. ♀ (holo-, Pl; iso-, L!, UC!, US!).

Shrub or tree 1-10 m high, dioecious; oil glands often comparatively conspicuous. Young branchlets glabrous to puberulent or rarely pubescent; terminal bud pubescent. Leaves trifoliolate (occasional leaves unifoliolate), 9-32 cm long; petiole glabrous to puberulent or rarely pubescent, exalate, 1.5-10 cm long; petiolule in lateral leaflets obsolete or up to 8 mm long, in terminal leaflet obsolete or up to 15 mm long; blades glabrous or nearly so, elliptic or narrowly so to obovate or oblanceolate, 6-23 × 2.2-9 cm, base acute to cuneate or attenuate, margin entire, apex acuminate or sometimes rounded to acute, secondary veins prominulous above, (12-)14-22 per side.

Inflorescences nearly glabrous to puberulent, many-flowered, 1.5-10 × 1-6 cm; pedicels 0.3-2 mm long (1-4 mm long in fruit). Flowers ♂ or ♀; sepals nearly glabrous to puberulent abaxially, 0.5-0.8 mm long; petals white to yellow, sparsely puberulent abaxially or glabrous, 1.5-2 mm long, deciduous or subpersistent in fruit; stamens 8; antipetalous stamens in ♂ and ♀ flowers 0.25-0.5 mm long, anthers obsolete or up to 0.25 mm long; antisepalous stamens in ♂ flowers c. 1.5 mm long, 0.5-0.75 mm long in ♀ flowers, filaments glabrous or nearly so, anthers 0.25-0.4 mm long; gynoeccio in ♀ flowers c. 1 mm long (0.2-0.4 mm long in ♂ flowers), ovaries pilosulose around style, otherwise glabrous, 1- or rarely 2-ovuled, style pilosulose, including stigma 0.5-

0.65 mm long. Drupes at maturity yellow, 3-4.5 mm long, sometimes beaked, like the abortive carpels glabrous. Seeds solitary or rarely in pairs, 2-3 mm long.

Picrella glandulosa, so named for its tendency to have comparatively conspicuous oil glands, stands well apart from its congeners in having an eight- (vs. four-) stamened androeccium. Several authors have misidentified it as a plant now known as *Melicope triphylla* (Lam.) Merr., which differs mainly in having dehiscent fruit and a range that extends from Taiwan and the Ryukyu Islands southward to Borneo and thence eastward to New Guinea and New Britain (see HARTLEY 2001: 149).

DISTRIBUTION AND ECOLOGY. — *Picrella glandulosa* occurs throughout the Grande-Terre, on the Île des Pins, and in the Loyalty Islands (Lifou). Recorded mostly from forests (mainly rain forest and gallery forest), rarely from maquis; usually on schistose terrains, rarely on grauwackes; 5-800 m altitude.

PARATYPES (84 collections examined). — NEW CALEDONIA: *Balansa* 1796, E du Pont des Français, près de Nouméa, June 1869, fl. ♂ (A, L, NY, P, UC); *Bernardi* 9587, Mé Maoya (Mine Emma), 200 m, 11 July 1965, fr. (B, L, P); *Bernardi* 10111, Forêt Plate, 500-550 m, 12 Aug. 1965, fr. (B, L, P); *Däniker* 1753, Ignambi, 2 June 1925, fl. ♂ (P); *Godefroy* (*Herb. d'Alleizette* 202 NC), Prony, 1910, fl. ♂ (P); *Le Rat* 2202, route de Bourail à Houailou, July 1904, fr. (A, L, P); *Le Rat* 2816, route du Col d'Amieu à Pa Mégrapo, Feb. 1907, fl. ♀ (P); *MacKee* 13017, Farino, forêt du Pic Noir, 250 m, 13 July 1965, fr. (P); *MacKee* 17617, Col Toma, 500 m, 6 Oct. 1967, fr. (P); *MacKee* 23940, basse Tipindjé, 10 m, 17 July 1971, fl. ♀, fr. (P); *MacKee* 25589, Col d'Arama (versant W), 60 m, 22 June 1972, fr. (P); *MacKee* 31665, Koné, Mt. Tanji, 800 m, 30 July 1976, fr. (CANB); *MacKee* 35136, Koumac, ruisseau profond, 100 m, 12 May 1978, fl. ♂ (CANB); *McPherson* 1630, Thy River valley, 150 m, 13 May 1979, fl. ♂ (P); *Morat* 7750, La Tchamba, 400 m, 16 May 1984, fl. ♀ (CANB); *Nothis* 443, Ouéholle, 17 Aug. 1967, fr. (P); *Schlechter* 14888, Païta [S Grande-Terre], 300 m, 3 Oct. 1902, fr. (GH, L, NSW, P, PR, W); *Schmid* 2152 *pro parte*, Île des Pins, baie de Koumo, 10 June 1967, fl. ♂ (NOU); *Schmid* 5285, Mt. Ningua, 18 June 1975, fl. ♂ (NOU); *Thorne* 28151, below Col d'Amos [= Col d'Amoss], 22 Oct. 1959, fr. (P); *Veillon* 186, Col des Roussettes, 500 m, 1 June 1965, fr. (P); *Veillon* 4161, Lifou, N de Mutchaweng, Oct. 1979, fr. (CANB).

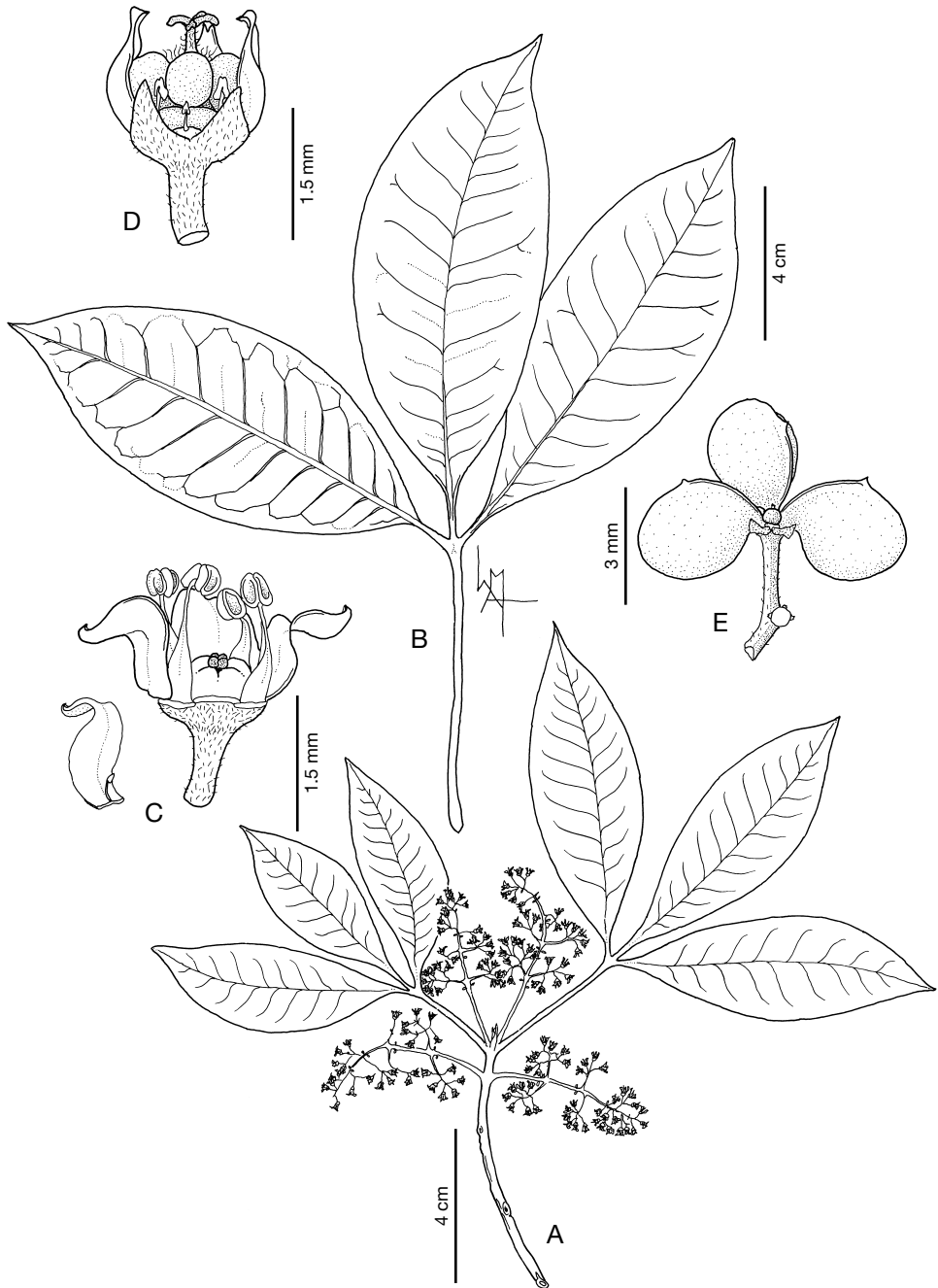


Fig. 1. — *Picrella glandulosa* T.G. Hartley: **A**, flowering branchlet; **B**, leaf variant; **C**, staminate flower (two sepals and one petal removed) showing stigma of rudimentary gynoecium surrounded by disc; separate petal with adherent rudimentary stamen; **D**, carpellate flower (one petal removed); **E**, fruit. A, D, E, *McPherson 1766*; B, C, *MacKee 35235*.

2. *Picrella ignambiensis* (Guillaumin) T.G. Hartley & Mabb., **comb. nov.**

Euodia ignambiensis Guillaumin in Sarasin & Roux, Nova Caledonia, Bot. 1: 161 (1920) & Bull. Soc. Bot. France 85: 299, "*ignambiense*" (1938); Hartley, Allertonia 8: 278, "... to be transferred to *Zieridium*." (2001). — Type: Sarasin 186, New Caledonia, Mt. Ignambi, 650 m, 4 Oct. 1911, fl. ♀ (holo-, P!; iso-, BAS, n.v., photo CANB!, Z, n.v., photo CANB!).

Shrub or tree 2-10 m high, dioecious; oil glands comparatively inconspicuous. Young branchlets sparsely puberulent to pubescent or velutinous or rarely nearly glabrous; terminal bud pubescent or velutinous. Leaves trifoliolate (occasional leaves unifoliolate), 12-57 cm long; petiole sparsely puberulent to pubescent, exalate, 4-18 cm long; petiolules obsolete or in terminal leaflet up to 10 mm long; blades puberulent to pubescent at least on midrib and secondary veins below or rarely glabrous or nearly so, elliptic to obovate, or in lateral leaflets ovate, 5.5-39 × 3-20 cm, base in lateral leaflets cordate to rounded or acute, inequilateral, in terminal leaflet cuneate to attenuate, margin entire, apex rounded to acute or ± abruptly short-acuminate, sometimes apiculate or emarginate, secondary veins plane or impressed above, 10-18 per side.

Inflorescences puberulent to pubescent or velutinous, many-flowered, 3.5-19 × 1-10 cm; pedicels 0.3-1 mm long (0.3-2.5 mm long in fruit). Flowers ♂ or ♀ sepals puberulent to pubescent abaxially, 0.5-1 mm long; petals white or pale yellow, sparsely puberulent to pubescent abaxially, glabrous adaxially, 1-2 mm long, persistent or subsistent in fruit; stamens 4, in ♂ flowers 0.7-1.5 mm long, 0.6-0.7 mm long in ♀ flowers, filaments glabrous, anthers 0.3-0.4 mm long; gynoecium in ♀ flowers 0.7-1.5 mm long (0.3-0.4 mm long in ♂ flowers), ovaries pubescent, 1-ovuled, style glabrous to pubescent, including stigma 0.5-1 mm long. Drupes at maturity white, glabrous or nearly so (abortive carpels pubescent), 2.5-3 mm long, often beaked. Seeds solitary, 2-2.5 mm long.

DISTRIBUTION AND ECOLOGY. — *Picrella ignambiensis* is restricted to the Grande-Terre, where it ranges from Col d'Amoss southeast to

Mt. Aoupinié and also occurs on Plateau de Dogny. Recorded mostly from forests (usually rain forest), rarely from degraded maquis; usually on schistose terrains, rarely on grauwackes; 20-1530 m altitude.

SELECTED SPECIMENS (54 collections examined). — NEW CALEDONIA: *Bernardi* 9994, Plateau et Mt. Dogny, 900 m, 4 Aug. 1965, bud (B, L, P); *MacKee* 13175, haute vallée de la Tchamba, forêt de Thalweg, 150 m, 10 Aug. 1965, fl. ♂ (P); *MacKee* 13824, vallée de Pouaï (entre Tao et la tribu de Panié), 20-50 m, 10 Nov. 1965, fl. ♀ (P); *MacKee* 15667, haute vallée de l'Amoa, 300-500 m, 23 Sep. 1966, y.fr. (P); *MacKee* 17732, haute Pouembout, pente W du Mt. Katepouenda, 600-700 m, 15 May 1967, fl. ♂ (P); *MacKee* 19629, haute Diahot, forêt de Tendé, 500-600 m, 30 Sep. 1968, fl. ♀ (P); *MacKee* 23326, Col d'Amoss [= Col d'Amoss], Nakaoun, 450 m, 16 Feb. 1971, fr. (P); *MacKee* 23767, Pouébo, Ouangati, 800-900 m, 26 May 1971, fr. (P); *MacKee* 26741, Ponérihouen, Mt. Aoupinié, 900-1020 m, 16 May 1973, fr. (P); *MacKee* 34116, leg. *Cherrier*, Tiwaka, Moindip, 750 m, 25 Oct. 1977, fl. ♀ (P); *MacKee* 35177, leg. *Cherrier*, Hienghène, crête Tindo-Coulna, 500 m, 25 May 1978, fr. (CANB); *MacKee* 39984, leg. *Nasi*, Mt. Colnett (pente E), 1000 m, Nov. 1981, fl. ♀ (P); *McPherson & van der Werff* 17852, Mt. Panié above Haut Coulna, 1250-1530 m, 1 Nov. 1999, fl. ♀ (CANB); *Morat* 7817, Mandjéla, 650 m, 10 Sep. 1984, fl. ♀ (CANB); *Schlechter* 15566, Oubatche, 600 m, 26 Dec. 1902, fr. (P, WRS!); *Veillon* 3767, haute Néounin, 400 m, 6 Aug. 1978, fl. ♀ (P).

3. *Picrella trifoliata* Baill.

Adansonia 10: 150, t. 10 (1871) & Hist. Pl. 4: 410, 497, fig. 474-477 (1873). — *Helietta trifoliata* (Baill.) Mabb., Plant-book, corr. repr: 707 (1989), *excl. syn.* — Type: *Anon. s.n.*, France, cult. Jardin des Plantes, Paris, 22 Sep. 1871, fl. ♂, said to be from Mexico (holo-, P-Baillon!).

Shrub or tree 0.5-10 m high, dioecious, monoecious, or rarely polygamous (with ♂, ♀, and ♂ flowers about equal in number); oil glands comparatively inconspicuous. Young branchlets glabrous to puberulent; terminal bud nearly glabrous to pubescent. Leaves trifoliolate and/or 1-bladed (unifoliolate and/or simple), 1.5-14 cm long; petiole glabrous to puberulent, exalate or alate (wings up to 0.5 mm wide on each side), 0.1-5 cm long; petiolules obsolete or up to 6 mm

long; blades glabrous or nearly so, suborbicular to ovate, elliptic or narrowly so, obovate, oblanceolate, spatulate, or linear, 0.4-11 × 0.15-6 cm, base rounded to obtuse, acute, cuneate, or attenuate, margin irregularly crenulate or entire, apex rounded to obtuse or acuminate, usually retuse, secondary veins prominulous to obscure above, 4-12 per side.

Inflorescences glabrous to puberulent 1- to many-flowered, 0.24-8 cm long, up to 3 cm wide; pedicels 0.5-4 mm long (1.5-4.5 mm long in fruit). Flowers ♂, ♀, or rarely ♂; sepals glabrous to sparsely puberulent abaxially, 0.4-1 mm long; petals green to white or yellow or pink, glabrous or nearly so, 1.5-2 mm long, usually deciduous in fruit; stamens 4, in ♂ and ♀ flowers 0.6-1.5 mm long, 0.3-1 mm long in

♀ flowers, filaments pilosulose or sparsely so adaxially or glabrous, anthers 0.15-0.4 mm long; gynoecium in ♀ and ♂ flowers 0.7-1.5 mm long (0.3-0.75 mm long in ♂ flowers), ovaries glabrous to pubescent, 1-ovuled, style glabrous, including stigma 0.4-1 mm long. Drupes at maturity white to yellow or pinkish white, glabrous or nearly so (abortive carpels glabrous to pubescent), 3-5 mm long, rarely beaked. Seeds solitary, 2.5-4 mm long.

Picrella trifoliata is widely and ± continuously variable, particularly in the distribution of indumentum, the complexity, size, and shape of leaves, and the complexity and size of inflorescences. Three variants seem to warrant formal recognition.

Key to the varieties

1. Ovaries in functional gynoecium and abortive carpels in fruit pubescent; leaves, or most of them, trifoliolate, blades 0.5-1 cm wide **3b. var. gracilis**
- 1'. Ovaries in functional gynoecium and abortive carpels in fruit glabrous to sparsely puberulent; leaves trifoliolate and/or 1-bladed (unifoliolate and/or simple), blades 0.15-6 cm wide 2.
2. Leaves trifoliolate and/or 1-bladed, blades 0.7-6 cm wide **3a. var. trifoliata**
- 2'. Leaves, or most of them, trifoliolate, blades 0.15-0.6 cm wide **3c. var. gracillima**

3a. var. trifoliata

Euodia pseudo-obtusifolia Guillaumin, Bull. Mus. Natl. Hist. Nat. 26: 176 (1920); *ibid.*, 366. — *Zieridium pseudo-obtusifolium* (Guillaumin) Guillaumin, Bull. Soc. Bot. France 85: 299 (1938). — Type: *Le Rat 732*, New Caledonia, s.loc., fl. ♂ (holo-, P!); **syn. nov.**

Zieridium melicopifolium Guillaumin, Bull. Soc. Bot. France 85: 299, "*melicopaefolium*" (1938). — Type: *Balansa 1799*, New Caledonia, Baie du Prony, Île Montravel, 26 June 1869, fl. ♀ (holo-, P!; iso-, K!, P!); **syn. nov.**

Shrub or tree 0.5-10 m high, dioecious or rarely monoecious. Leaves trifoliolate and/or 1-bladed (unifoliolate and/or simple). Trifoliolate leaves 3-12 cm long; petiole 1-5 cm long; petiolule in lateral leaflets obsolete or up to 3 mm long, in terminal leaflet obsolete or up to 6 mm long; blades elliptic or narrowly so to obovate or

oblanceolate, or sometimes ovate, 2-9 × 0.7-4 cm, base acute to cuneate or attenuate, apex rounded to obtuse or acuminate, usually retuse, secondary veins prominulous to obscure above, 4-12 per side. One-bladed leaves 3-14 cm long; petiole 0.1-3 cm long; petiolule obsolete or up to 3 mm long; blade suborbicular to ovate, elliptic, or obovate, 2-11 × 0.9-6 cm, base rounded to obtuse, acute, or attenuate, secondary veins prominulous above; otherwise as in trifoliolate leaves.

Inflorescences few- to many-flowered, 0.8-8 × 0.8-3 cm. Flowers ♂ or ♀; ovaries in functional gynoecium and abortive carpels in fruit glabrous to sparsely puberulent.

DISTRIBUTION AND ECOLOGY. — This variety occurs throughout the Grande-Terre, on the Île des Pins, and in the Loyalty Islands (Ouvéa,

Lifou, Tiga, Maré, and Walpole). Recorded from forests (including coastal forest, rain forest, and sclerophyllous forest), thickets, maquis, and open places; mainly on calcareous or ultramafic terrains, rarely on phthanites; 10-1000 m altitude. Cultivated in France and possibly also on Île Walpole (see *MacKee 25856*, cited below).

SELECTED SPECIMENS (128 collections examined). — FRANCE: *Anon. s.n.*, cult. Jardin des Plantes, Paris, Oct. 1871, fl. ♂, said to be from Mexico (P, photo FHO). — NEW CALEDONIA: *Balansa 2796*, Mt. Mou, 600 m, Feb. 1870, fl. ♀, fr. (P); *Blanchon 1518*, Ouvéa, crête du Casse-Cou, 24 Mar. 1965, fl. ♀ (P); *Dagostini & Veillon 41*, massif de la Tiébaghi, 300 m, 27 July 1996, fr. (NOU); *Däniker 1956*, Ouvéa, E St. Paul, 7 Aug. 1925, fr. (P); *Hoff 2129*, Nouméa, Baie Tina, 10 May 1980, fl. ♀ (P); *MacKee 4103*, lower Tontouta Valley, Mt. Bacon, 50-150 m, 18 Mar. 1956, fl. ♀, fr. (K, L); *MacKee 4332*, La Coulée, base of Mt. Dore, 10-100 m, 1956, fl. ♂ (E, P); *MacKee 14592*, Mt. Kaala au-dessus de Gomen, 500-700 m, 18 Mar. 1966, fl. ♂ (P); *MacKee 14674*, Monéo, 30 m, 6 Apr. 1966, fl. ♀, fr. (P); *MacKee 14789*, Poro, 30 m, 29 Apr. 1966, fl. ♂ (P); *MacKee 15006*, Sarraméa, 19 May 1966, fl. ♂ (P); *MacKee 15073*, Île des Pins, vallée du Creek Mou, 50-100 m, 8 June 1966, fl. ♀, y.fr. (P); *MacKee 22110*, haute Tipindjé, base W du Mt. Poindas, 250 m, 28 June 1970, fr. (P); *MacKee 23620*, Voh, Tiéta, 20 m, 24 Apr. 1971, fl. ♂, fr. (P); *MacKee 23710*, vallée de Poya, Ndokoia, 100 m, 7 May 1971, fl. ♂ (P); *MacKee 25254*, crêtes au SE de la corne de Koumac, 250 m, 13 Apr. 1972, fl. ♀, fr. (P); *MacKee 25856*, leg. *Hmakone & Sam*, Île Walpole, plateau, 80 m, près des anciennes installations, peut-être planté, 10 Nov. 1972, fr. (P); *MacKee 28555*, Pouembout, Riv. Encaissée (Tiaoué), 20 m, 25 Apr. 1974, fr. (P); *MacKee 35682*, Touho, Pouiou, 150 m, 13 Sep. 1978, fr. (CANB); *MacKee 39166*, Mt. Koniambo (base SW), 100 m, 8 June 1981, fl. ♀ (CANB); *McPherson 5578*, Dothio River valley near Thio, 100 m, 23 Mar. 1983, fl. ♂ (CANB); *McPherson 6625*, Lifou, near radio tower above SW coast, 29 May 1984, fr. (CANB); *Schmid 1218*, Boghen, basse altitude, 13 Apr. 1966, fl. ♀ (NOU, P); *Schmid 5290*, leg. *Veillon*, Mt. Ningua, 1000 m, 19 June 1975, fl. ♀, fr. (NOU, P); *Suprin 1922*, Port-Bouquet, Îlot Toupeti, face NE, 3 June 1982, fl. ♀ (CANB, NOU); *Suprin 2389*, Tiga, 20 July 1994, fr. (NOU); *Veillon 3380*, Île Walpole, en plein milieu du plateau, 6 Dec. 1977, fl. ♂, ♀, fr. (NOU, P); *Veillon 4112*, Lifou, Cap des Pins, Oct. 1979, fr. (NOU); *Vieillard 294*, Balade, 1855-1860, fl. ♀, fr. (P); *Vieillard 2456*, Wagap, 1861-1867, fl. ♀, fr. (GH, P, W); *Vivot 1567*, Maré, baie orientale du Titi Kétou (La Roche), 40 m, Feb. 1946, fl. ♀ (P); *White 2190*, Riv. des Pirogues, Oct. 1923, fr. (A, BRI).

3b. var. gracilis (Baill.) T.G. Hartley & Mabb., **comb. et stat. nov.**

Zieridium gracile Baill., *Adansonia* 10: 304 (1872) & *Hist. Pl.* 4: 463 (1873); Guillaumin, *Bull. Soc. Bot. France* 85: 299 (1938). — Lectotype, here designated: *Deplanche 497*, New Caledonia, s.loc., 1861, fl. ♀, y.fr. (holo-, P!; iso-, P-Baillon [fragm.]!).

Shrub 0.5-1 m high, dioecious, monoecious, or polygamous (with ♂, ♀, and ♂ flowers about equal in number). Leaves trifoliolate (occasional leaves unifoliolate), 1.5-4.5(-5.7) cm long; petiole 0.5-2.5 cm long; petiolule in lateral leaflets obsolete or up to 1 mm long, in terminal leaflet obsolete or up to 2 mm long; blades elliptic or narrowly so to obovate, oblanceolate, or spatulate, 0.7-3.5 × 0.5-0.8(-1) cm, base acute to cuneate or attenuate, apex rounded to obtuse, often retuse, secondary veins prominulous to obscure above, 4-7 per side.

Inflorescences 1- or few-flowered, 0.24-3 cm long, up to 1 cm wide. Flowers ♂, ♀, or ♂; ovaries in functional gynoeceum and abortive carpels in fruit pubescent.

The lectotype designated above is one of two syntypes cited in the protologue of *Zieridium gracile*, the other being *Pancher s.n.* (*Vieillard 298*), cited below.

DISTRIBUTION AND ECOLOGY. — This variety is restricted to the Grande-Terre, where it is known only from the vicinities of Voh, Pouembout, Baie St. Vincent, and Thio. Recorded mostly from coastal forest and sclerophyllous forest, rarely from maquis and rock crevices; on calcareous terrains; 50-150 m altitude.

ADDITIONAL SPECIMENS EXAMINED. — NEW CALEDONIA: *Balansa 3530*, Ouroué, près de l'embouchure du Dothio, July 1871, fl. ♂ (P); *Jaffré 2981*, Baie St. Vincent, Îlot Montagnes, 5 Sep. 1988, fl. ♂ (NOU); *MacKee 40992*, Tontouta, Presqu'île Montagnes, 5 Nov. 1982, fl. ♀, fr. (CANB); *MacKee 43062*, Tontouta, Uitoé, 60 m, 29 Mar. 1986, fl. ♀, fr. (CANB); *MacKee 44092*, leg. *Boulet*, Tontouta, Presqu'île Montagnes, 50 m, 5 Sep. 1988, fl. ♀, fr. (CANB); *McPherson 5554*, W end of Plateau de Tiéa, S of Pouembout, 100 m, 4 Mar. 1983, fl. ♂, ♀ (CANB); *Pancher 723*, s.loc., fl. ♀ (P); *Pancher 5996*

(Vieillard 298), s.loc., fl. ♀, y.fr. (P); *Pancher s.n.* (Vieillard 298), s.loc., fl. ♀, y.fr. (P-Bailion [fragm.]); *Pancher s.n.*, 1879, s.loc., fl. ♀, y.fr. (P); *Suprin 2138*, Presqu'île Montagnes, 5 Nov. 1982, fl. ♂, ♂, ♀, fr. (CANB, NOU); *Veillon 6872*, Presqu'île Montagnes, expos. W, 150 m, 5 Sep. 1988, fl. ♂, ♂, ♀, fr. (CANB, NOU); *Veillon 7011*, Îlot Leprédour, 24 Nov. 1988, fr. (NOU); *Vieillard 298*, St. Vincent, 1855-1860, fl. ♀, y.fr. (P); *Vieillard 2464*, Montagne de Gaumouen près Gatope, 1861-1867, fl. ♂, ♀ (P).

3c. var. *gracillima* T.G. Hartley, var. nov.

Frutex dioecius vel monoecius 1-4 m altus; foliis trifoliolatis (foliis infrequentibus unifoliolatis), 1.5-7.5 cm longis; petiolo 0.5-3 cm longo; laminis anguste ellipticis usque oblanceolatis vel linearibus, 1.4-4.5 × 0.15-0.6 cm, basi cuneatis usque attenuatis, apice obtusis, saepe retusis, venis secundariis obscuris vel subobscuris, utrinsecus 4 vel 5; inflorescentiis 1- vel pauci-floris, 0.5-1.7 cm longis, usque 0.8 cm latis; floribus ♂ vel ♀; ovariis in gynoeccio functionalis et carpellis abortivis in fructu glabris vel fere glabris.

TYPUS. — *MacKee 20523*, New Caledonia, Poya, Avangui, 100 m, 11 Apr. 1969, fl. ♂, ♀, fr. (holo-, P!; iso-, NOU, n.v.).

Shrub 1-4 m high, dioecious or monoecious. Leaves trifoliolate (occasional leaves unifoliolate), 1.5-7.5 cm long; petiole 0.5-3 cm long; petiolules obsolete; blades narrowly elliptic to oblanceolate or linear, 1.4-4.5 × 0.15-0.6 cm, base cuneate to attenuate, apex obtuse, often retuse, secondary veins obscure or subobscure, 4 or 5 per side.

Inflorescences 1- or few-flowered, 0.5-1.7 cm long, up to 0.8 cm wide. Flowers ♂ or ♀; ovaries in functional gynoeccium and abortive carpels in fruit glabrous or nearly so.

DISTRIBUTION AND ECOLOGY. — This variety is restricted to the Grande-Terre, where it is known only from the general vicinity of Poya. Recorded from coastal and ravine forests, on ultramafic terrains, 10-200 m altitude.

PARATYPES. — NEW CALEDONIA: *MacKee 14537*, Col de Nékoré (entre Népoué et Poya), 100-200 m, 16 Mar. 1966, fr. (P); *MacKee 28563*, Poya, Avangui,

200 m, 25 Apr. 1974, fl. ♀ (P); *MacKee 40724*, Népoué, 10 m, 5 Sep. 1982, fl. ♀, fr. (CANB); *Schmid 5362*, Boulinda, Avangui, 300 m, 6 Nov. 1984, fr. (NOU).

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