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A revision of New Caledonian *Gossia* N. Snow & Guymer (Myrtaceae)

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ABSTRACT
Gossia N. Snow & Guymer from New Caledonia as revised here comprises 30 taxa. Nine new species are proposed, including: *Gossia angustifolia* sp. nov., *G. bourailensis* N. Snow, sp. nov., *G. conduplicata* sp. nov., *G. kaalaensis* sp. nov., *G. katepahiensis* sp. nov., *G. mandjeliaensis* sp. nov., *G. ngaensis* sp. nov., *G. ouazangouensis*, and *G. ramiflora* sp. nov. Ten new subspecies are proposed: two in *Gossia aphthosa* (Vieill. ex Brongn. & Gris) (*G. a.* subsp. *longipedunculata* N. Snow & Munzinger, subsp. nov. and subsp. *austro-orientalis* N. Snow & K. Gandhi, subsp. nov.), and eight in *Gossia clusioides* (Brongn. & Gris) N. Snow (*G. c.* subsp. *avanguiensis* subsp. nov., *G. c.* subsp. *bleuensis* subsp. nov., *G. c.* subsp. *callmanderiana* subsp. nov., *G. c.* subsp. *maoyana* subsp. nov., *G. c.* subsp. *ploumensis* N. Snow, comb. et stat. nov., *G. c.* subsp. *rembaiensis* subsp. nov., *G. c.* subsp. *taomensis* subsp. nov., and *G. c.* subsp. *tiebaghiensis* subsp. nov. The new combination *Gossia conspicua* (Vieill. ex Guillaumin) N. Snow, comb. nov. is made; a second-stage lectotype and epitype are selected for *Gossia diversifolia* (basionym *Eugenia diversifolia* Brongn. & Gris); a lectotype is selected for *Eugenia heckelii* Pancher & Sebert, which here is reduced to synonymy under *G. vieillardii* (Brongn. & Gris) N. Snow; and a lectotype is selected for *Eugenia cataractarum* Guillaumin, which here is reduced to synonymy under *G. kuakuensis* (Baker f.) N. Snow. *Myrtus pulchrefolius* Guillaumin is reduced to synonymy under *Gossia alaternoides*. The Australian species *Gossia byrnesii* N. Snow & Guymer is synonymized under *Eugenia reinwardtiana* DC. The treatment provides a key to and descriptions of all known New Caledonian taxa and includes comments on distributions, distribution maps, ecology and phenology. Illustrations are provided for nearly all taxa and digital images of living material are presented for several. With this revision, *Gossia* now comprises 45 species and ten subspecies.

KEY WORDS
New Caledonia,
Myrtaceae,
conservation,
lectotypification,
new combinations,
new subspecies,
new species.

RÉSUMÉ
Révision du genre néo-calédonien Gossia *N. Snow & Guymer (Myrtaceae).*
Le genre *Gossia* N. Snow & Guymer de Nouvelle Calédonie, révisé ici, comprend 30 taxons. Neuf espèces nouvelles sont proposées, parmi lesquelles : *Gossia angustifolia* sp. nov., *G. bourailensis* N. Snow, sp. nov., *G. conduplicata* sp. nov., *G. kaalaensis* sp. nov., *G. katepahiensis* sp. nov., *G. mandjeliaensis* sp. nov., *G. ngaensis* sp. nov., *G. ouazangouensis*, et *G. ramiflora* sp. nov. Dix nouvelles sous-espèces sont proposées : deux issues de *Gossia aphthosa* (Vieill. ex Brongn. & Gris) (*G. a.* subsp. *longipedunculata* N. Snow & Munzinger, subsp. nov. et subsp. *austro-orientalis* N. Snow & K. Gandhi, subsp. nov.), et huit de *Gossia clusioides* (Brongn. & Gris) N. Snow (*G. c.* subsp. *avanguiensis* subsp. nov., *G. c.* subsp. *bleuensis* subsp. nov., *G. c.* subsp. *callmanderiana* subsp. nov., *G. c.* subsp. *maoyana* subsp. nov., *G. c.* subsp. *ploumensis* N. Snow, comb. et stat. nov., *G. c.* subsp. *rembaiensis* subsp. nov., *G. c.* subsp. *taomensis* subsp. nov., and *G. c.* subsp. *tiebaghiensis* subsp. nov. Une nouvelle combinaison, *Gossia conspicua* (Vieill. ex Guillaumin) N. Snow, comb. nov., est proposée ; un lectotype de seconde étape et un épitype sont sélectionnés pour *Gossia diversifolia* (basionyme : *Eugenia diversifolia* Brongn. & Gris); un lectotype est désigné pour *Eugenia heckelii* Pancher & Sebert, qui est ici mis en synonymie avec *G. vieillardii* (Brongn. & Gris) N. Snow; enfin, un lectotype est désigné pour *Eugenia cataractarum* Guillaumin, qui est mis ici en synonymie avec *G. kuakuensis* (Baker f.) N. Snow. *Myrtus pulchrefolius* Guillaumin est mis en synonymie avec *Gossia alaternoides*. L'espèce australienne *Gossia byrnesii* N. Snow & Guymer est mise en synonymie avec *Eugenia reinwardtiana* DC. Une clé d'identification, ainsi que les descriptions de tous les taxons connus de Nouvelle Calédonie sont proposées. Enfin, des commentaires sur la distribution, l'écologie et la phénologie, ainsi que des cartes de répartition des taxons cités sont fournis, qui sont également, presque tous, figurés ici. Avec cette révision, *Gossia* contient maintenant 45 espèces et dix sous-espèces.

MOTS CLÉS
Nouvelle Calédonie,
Myrtaceae,
conservation,
lectotypification,
combinaisons nouvelles,
sous-espèces nouvelles,
espèces nouvelles.

INTRODUCTION

Gossia N. Snow & Guymer (Myrtaceae) ranges from the eastern parts of New Guinea and Australia to New Caledonia and the Solomon Islands, with most taxa occurring in Australia or New Caledonia (Snow *et al.* 2003; Snow 2005, 2006; Snow & Wilson 2010; Snow & Veldkamp 2010). *Lenwebbia* N. Snow & Guymer and *Gossia* recently were segregated from *Austromyrtus* (Nied.) Burret, which formerly had a broader circumscription; *Austromyrtus* and *Lenwebbia* as revised are endemic to Australia (Snow *et al.* 2003).

New Caledonia was one of the original "hotspot" areas, recognized for its exceptional levels of overall diversity and high levels of plant endemism (e.g., Myers 1988). More recently, authors have proposed the concept of hotspots within hotspots (Cañadas *et al.* 2014) and micro- and nano-hotspots (Fenu *et al.* 2010). Gâteblé *et al.* (2018) documented the heuristic value of these concepts in their overview of taxonomic novelties in New Caledonia since 2000 and concomitant description of eight new species from Île Art in the Belep Archipelago, where unfortunately vegetation destruction also is rampant. Whilst numerical tallies shift as taxa are discovered and existing names are reduced to synonymy, the Myrtaceae without question are at or near the top of the vascular plant families regarding overall diversity of species in New Caledonia (e.g., Morat *et al.* 2012). With further study, some of the taxa proposed here likely will qualify as microendemics.

Prior to this treatment, *Gossia* comprised approximately twenty-seven accepted species and two non-nominal varieties. Botanists and conservation biologists have intensified efforts recently to provide rigorous assessments following IUCN (2012) criteria in New Caledonia, in accordance with the recent global emphasis on plant conservation. Meaningful assessments require well-resolved and current systematic treatments, knowledge of the sizes of populations and their distributions and threats, have well as trends of the sizes of populations and knowledge about which populations occur in protected areas (IUCN 2012). The purpose of this revision is to propose numerous new taxa, provide a key to the New Caledonian taxa and detailed descriptions and synonymy for all taxa, drawings of most taxa, digital images of living material for some taxa, a hotlinked representative herbarium specimen for each taxon, and cite all confirmed specimens. Detailed IUCN (2012) recommendations are not included, but broad statements are given that include relative abundance, distribution, and species needing more study for detailed assessments.

MATERIAL AND METHODS

The author has studied New Caledonian *Gossia* intermittently since 1998, including fieldwork on Grande Terre in 2003, approximately ten weeks of herbarium studies at P (2003, 2005 and 2015), numerous shorter-duration visits to MO, and study of specimens on-site while in residence at GREE, BISH, and KSP (abbreviations following Thiers 2019). Concepts of species and infraspecific taxa follow the basic principles outlined in Snow (1997) and their later modification to reflect the General Lineage Concept (de Queiroz 1998) and its application using a diagnosability criterion (Snow *et al.* 2003; Johnson & Johnson 2006; Johnson *et al.* 2012). Given that many plant species in New Caledonia have high fidelities to certain geological substrates, and that certain areas of the country are particularly high in levels of microendemism, additional consideration has been accorded to substrate and geographical occurrences. The

paucity of material for some taxa is reflected by taxonomic descriptions that are not always strictly in parallel. Terminology largely follows my recent treatments for New Caledonia (Snow *et al.* 2016a, b) or Beentje (2010). Measurements refer to lengths or length × width. All specimens cited have been seen unless indicated with n.v.; barcodes [in square brackets] are indicated for many specimens, especially those at NOU or P; accession numbers are hyphenated (e.g., MO-5906585). Specimens are cited alphabetically by senior collector in their ascending order numerically, from the North (Nord) and South (Sud) Provinces, respectively. Geo-coordinates are given for selected specimens; those in square brackets were determined post facto by various workers, mostly at NOU. Geocoordinates and maps of many specimens can be seen by entering the relevant barcode of specimens at P (see: https://science.mnhn.fr). Images of living taxa indicated as "*vel aff.*" are best estimates of their identities given the lack of voucher specimens. For researchers new to plant taxonomy in New Caledonia, Hopkins & Bradford (2009) is worthy of review given their discussion of problems with some previous numbering systems. As applied here, the largest number of separate taxa initially assigned to one number (including members of other genera) was *Balansa 1490*. All specimens from WELTU, including those used in illustrations, recently were transfered to WELT (B. Sneddon pers. comm. 2017). Several species are widespread and surely not of conservation concern. Others with fewer specimens should be assessed following IUCN (2012) criteria and additional fieldwork.

SYSTEMATICS

Genus *Gossia* N. Snow & Guymer

DISTRIBUTION. — *Gossia* is widespread across Grande Terre in New Caledonia and occasional on adjoining islands, but so far is unreported for the Loyalty Islands; mostly in maquis or more mesic forests and species rarely occurring in dense or extensive populations; near sea level to 1500 m.

GENERIC DESCRIPTION OF *GOSSIA*

Plants
Shrubs to large trees, (0.2-)0.5-18 m.

Branchlets
Terete, compressed, or rarely 4-angled.

Colleters
Absent to obscure, reddish and hair-like if present.

Leaves
2(-3-4) per node, pedicellate or sometimes sessile, venation brochidodromous, thinly to thickly coriaceous, blades flat or bullate.

Inflorescence
Axillary, terminal or ramiflorus, of monads, racemes, or panicles, solitary, paired, or fascicled; extrafloral bracts absent, scale-like or sometimes leafy.

Bracteoles
2, sometimes early caducous.

Hypanthium
Campanulate, cupulate, obconic, or urceolate, not prolonged beyond ovary apex, smooth or sometimes ribbed or rugose; ovary apex glabrous to hairy.

Flowers
4-5(-8)-merous.

Locules
(1-)2(-3), placentation axile (or basal in *G. angustifolia* sp. nov.). Stamens numerous; filaments dorsifixed or subdorsifixed. Stigma apex terete, narrow to slightly globular.

Fruit
Baccate, green (immature) to yellow-orange or red but usually purplish-black at maturity.

Seeds
1-4(-12), testa hard, irregularly rounded and typically somewhat compressed with some angular edges; embryo coiled or less commonly C-shaped. Chromosome numbers unknown.

ARTIFICIAL KEY TO THE NEW CALEDONIAN SPECIES OF *GOSSIA* N. SNOW & GUYMER

1. Branchlets 4-angled (check youngest material) ..... *G. diversifolia* (Brongn. & Gris) N. Snow
— Branchlets rounded or compressed 2

2. Leaf blades blades broadly linear to very narrowly elliptic, apex retuse 3
— Leaf blades broader than narrowly elliptic, apex obtuse to acute (rarely retuse) 5

3. Leaves 4 per node, blades broadly linear to very narrowly obovate ..... *G. virotii* (Guillaumin) N. Snow
— Leaves 2(-3) per node, blades narrowly elliptic to broader 4

4. Leaves thickly coriaceous, margins strongly revolute; internodes at branch tips mostly less than 5 mm long ... . *G. conspicua* (Vieill. ex Guillaumin) N. Snow, comb. nov.
— Leaves coriaceous, margins flat to only slightly revolute; internodes at branch tips mostly greater than 5 mm long ..... *G. alaternoides* (Brongn. & Gris) N. Snow

5. Flowers all or mostly 4-merous 6
— Flowers all or mostly 5-merous 10

6. Leaf blades (8.5-)12 cm or longer ..... *G. aphthosa* (Vieill. ex Brongn. & Gris) N. Snow (in part)
— Leaf blades less than 9.5 cm 7

7. Leaf blades mostly 6-9.5 cm ..... *G. angustifolia* N. Snow, sp. nov.
— Leaf blades mostly < 6 cm 8

8. Leaf base narrowly cuneate; petiole sometimes drying nearly black ..... *G. nigripes* (Guillaumin) N. Snow
— Leaf base rounded to cordate and conduplicate; petiole drying brownish 9

9. Leaf blade conduplicate only at base, surface flat to slightly undulate; apex of inflorescence rigid, not nodding ..... *G. bourailensis* N. Snow, sp. nov.
— Leaf blade conduplicate up to half or more of its length, surface moderately to strongly undulate; apex of inflorescence sometimes nodding ..... *G. conduplicata* N. Snow, sp. nov.

10. Petals > 9 mm 11
— Petals < 9 mm (petals unknown in *G. conduplicata* N. Snow, sp. nov., which probably keys here) 13

11. Base of leaf cordate to rounded; petiole 1.5-2 mm ..... *G. aphthosa* subsp. *longipedunculata* N. Snow & Munzinger, subsp. nov.
— Base of leaf round to cuneate, petiole 2-30 mm 12

12 Calyx lobes sparsely sericeous above; petals sericeous-tomentose below (sometimes densely so); hypanthium surface smooth; leafy bracts along inflorescence axis prominent (but typically soon caducous) ..... *G. clusioides* (Brongn. & Gris) N. Snow
— Calyx lobes sparsely ciliate only on margins; petals minutely ciliate apically but otherwise glabrous below; hypanthium surface sometimes slightly ribbed; leafy bracts along inflorescence mostly absent ..... *G. colnettiana* (Guillaumin) N. Snow

13. Base of leaf blade moderately to strongly conduplicate, blade surface undulate ..... *G. conduplicata* N. Snow, sp. nov.
— Base of leaf blade more or less flat (slightly conduplicate in *G. katepahiensis* N. Snow, sp. nov.), surface mostly flat 14

14. Leaf blades mostly 10 cm or longer 15
— Leaf blades mostly 10 cm or shorter 16

15. Base of petiole sometimes encircled by a corky ring; base of leaf blade cordate to rounded, sometimes clasping; lowermost inflorescences often ramiflorous below leaves; bracteoles very narrowly elliptic to very narrowly obovate ..... *G. aphthosa* (Vieill. ex Brongn. & Gris) N. Snow (in part)
— Base of petiole lacking corky outgrowths; base of leaf rounded or cuneate, never clasping; lowermost inflorescences axillary; bracteoles narrowly ovate to ovate..... *G. clusioides* (Brongn. & Gris) N. Snow

16. Leaf surface bullate (sometimes strongly) or margins strongly and irregularly undulate; bark of second and third year growth often dark and breaking in irregular rectangle patches 17
— Leaf surface smooth or margins to flat or somewhat undulate; bark of second and third year growth mostly somewhat smooth, grayish-brown (or dark and flaking in *G. kuakuensis* or *G. pancheri* (Brongn. & Gris) N. Snow) 18

17. Leaf margins more or less flat; lowermost inflorescences axillary, extrafloral bracts of inflorescence leafy; hypanthium sparsely sericeous in flower; petals sericeous to tomentose below ..... *G. clusioides* (Brongn. & Gris) N. Snow (in part)
— Leaf margins irregularly undulate; lowermost inflorescences on naked branches below leaves, extrafloral bracts absent or scale-like; hypanthium sparsely to moderately sericeous in flower; petals ciliate ..... *G. ramiflora* N. Snow, sp. nov.

18. Leaf apex mostly retuse (rarely obtuse) 19
— Leaf apex obtuse to acute 20

19. Hypanthium *c.* 3 mm; bracteoles and calyx lobes sparsely to densely sericeous; leaves 2 per node ..... *G. pancheri* (Brongn. & Gris) N. Snow
— Hypanthium 2.0-2.5 mm; bracteoles and calyx lobes hairy; leaves 2 or 3 per node ..... *G. alaternoides* (Brongn. & Gris) N. Snow

20. Calyx lobes drying mostly whitish or cream-colored ("petaloid" of some authors) 21
— Calyx lobes drying mostly greenish 22

21. Leaves mostly over 8 cm long, apex acute; adaxial leaf surface somewhat glossy, secondary veins prominently raised; margin somewhat undulate ..... *G. kaalaensis* N. Snow, sp. nov.
— Leaves mostly shorter than 7 cm long, apex obtuse; adaxial leaf surface matte, secondary veins flush; margin slightly revolute ..... *G. ouazangouensis* N. Snow, sp. nov.

22. Leaf base cordate or round 23
— Leaf base cuneate to narrowly cuneate 27

23. Hypanthium sparsely to moderately sericeous 24
— Hypanthium glabrous or very sparsely sericeous near apex 25

24. Extrafloral bracts of inflorescence leafy; bracteoles *c.* 3.5 mm long; petals 8-13 mm ..... *G. colnettiana* (Guillaumin) N. Snow
— Extrafloral bracts of inflorescence leafy; bracteoles scale-like, 0.5-1.4 mm long; petals (4-)5-7 mm ..... *G. vieillardii* (Brongn. & Gris) N. Snow

25. Older branchlets with dark, rectangular flakes; extrafloral bracts of inflorescence leaf-like ..... *G. kuakuensis* (Baker f.) N. Snow
— Older branchlets smooth; extrafloral bracts of inflorescence lacking or small and scale-like 26

26. Petioles 1-3 mm, rounded above; leaf apex broadly acute to obtuse; ovary apex hairy ..... *G. bourailensis* N. Snow, sp. nov.
— Petioles 2.5-4 mm, sometimes slightly sulcate; leaf apex broadly rounded or slightly retuse; ovary apex glabrous ..... *G. katepahiensis* N. Snow, sp. nov.

27. Secondary veins on adaxial leaf (in sicco) surface prominently raised 28
— Secondary veins on adaxial leaf surface (in sicco) flush or only slightly raised 29

28. Leaves elliptic, apex rounded (occasionally retuse); hypanthium sericeous, oil glands of uniform size; ovary apex densely tomentose ..... *G. pancheri* (Brongn. & Gris) N. Snow
— Leaves narrowly elliptic to narrowly ovate or somewhat elliptic, apex acute; hypanthium mostly glabrous, oil glands large and small; ovary apex glabrous ..... *G. kaalaensis* N. Snow, sp. nov.

29. Oil glands on abaxial leaf surface absent to sparse; style villous lower ½-¾, sometimes densely so; base of fruit rounded or often prominently tapered ..... *G. vieillardii* (Brongn. & Gris) N. Snow
— Oil glands on abaxial leaf surface dense; style sericeous to tomentose; base of fruit rounded 30

30. Hypanthium sericeous ..... *G. mandjeliaensis* N. Snow, sp. nov.
— Hypanthium glabrous 31

31. Petioles reddish (drying dark brown); mature leaves mostly 5.0 cm or longer, surface flat, margin slightly recurved; Île des Pins ..... *G. ngaensis* N. Snow, sp. nov.
— Petioles dark red (drying nearly black); mature leaves mostly 4.5 cm or shorter, blades undulate, margin flat; Massif du Panié ..... *G. nigripes* (Guillaumin) N. Snow

Gossia alaternoides (Brongn. & Gris) N. Snow
(Figs 1-3)

Austrobaileya 8 (2): 180 (2010). — *Myrtus alaternoides* Brongn. & Gris, *Bulletin de la Société botanique de France* 12: 177 (1865). — *Austromyrtus alaternoides* (Brongn. & Gris) Burret, *Notizblatt des Botanischen Gartens und Museums zu Berlin-Dahlem* 15: 504 (1941). — Typus: **New Caledonia.** Grande Terre, South Prov., Montagnes de Balade, 1855-1860, *E. Vieillard 495* (holo-, P[P00602575]).

Gossia alaternoides (Brongn. & Gris) N. Snow var. *pulchrifolius* (Guillaumin) N. Snow, *Austrobaileya* 8: 180 (2010). — *Myrtus pulchrifolius* Guillaumin, *Mémoires du Muséum national d'Histoire naturelle, Paris*, sér. B., *Botanique* 8: 144 (1959); *Mémoires du Muséum national d'Histoire naturelle, Paris,* sér. B., *Botanique* 8: 289 (1962) (as *M. pulchrefolius*). — Typus: **New Caledonia.** Grande Terre, South Prov., au-dessus du campement de Bernier, Montagne des Sources, 3.X.1951, *Hürlimann 3021* (holo-, P[P00751827]; iso-, A[A00255461], NY, US, Z[Z-000050850]).

ETYMOLOGY. — Possibly from a superficial resemblance to the Mediterranean species *Rhamnus alaternus* L., but its exact application here uncertain.

DISTRIBUTION, HABITAT AND PHENOLOGY. — Across much of Grande Terre (Fig. 3) but most common in the South Province; in maquis including over ultramafics, 100-700 m. Flowering November through May; in fruit yearround but evidently peaking in April and May.

SPECIMENS EXAMINED.— **New Caledonia.** Grande Terre, North Prov., au-dessus d'Ouroué à l'embouchure du Dotio, I.1872, *Balansa 3398* (P[P00459516]); Goro-Nickel, relevé 37-38, 20.VI.2002, *Dagostini 525* (NOU); *Fetscherin s.n.*, 1910, entre Thio et Houaïlou (P[P00459523]); Route de Houaïlou à Kouaoua, vers 400 m, 7.V.1969, *Jaffré 231*, (BISH[fragment], NOU[NOU053232], P[P00462828]); Boulinda, 100 m, 9.XI.1971, *Jaffré 480* (NOU[NOU028887], P[P00462829]); Massif du Boulinda, 530 m, 12.X.1972, *Jaffré 973* (NOU[NOU028885], P[P00462831]); Au pied du Massif du Boulinda, 110 m, 10.X.1972, *Jaffré 1030* (NOU[NOU028853]); Plaine des Gaiacs, 10.XII.1977, *Jaffré*

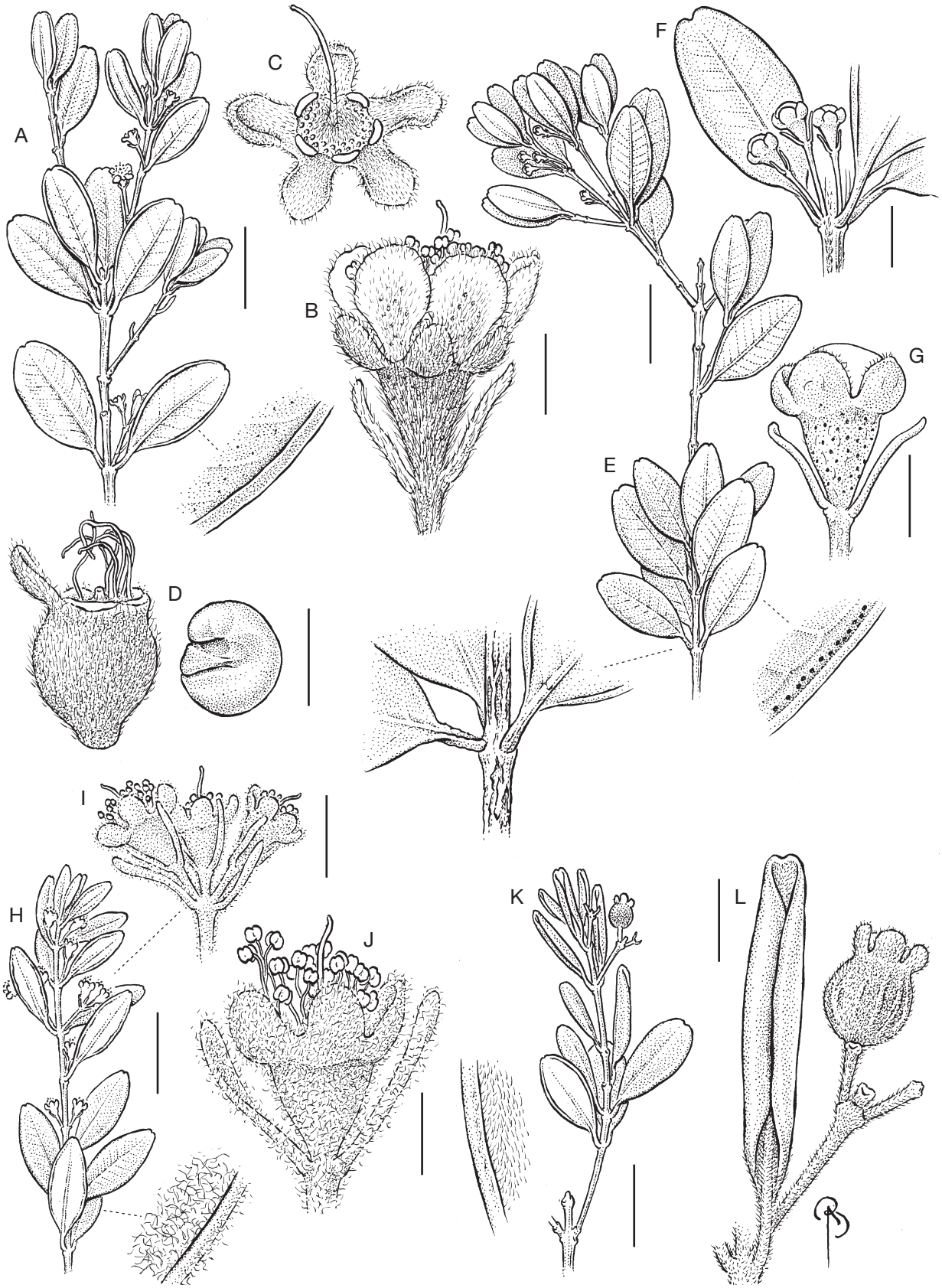

FIG. 1. — *Gossia alaternoides* (Brongn. & Gris) N. Snow, showing variation in the degree of indumentum (glabrous to sericeous or tomentose) and leaf shape: **A**, branchlet; **B**, sericeous flower with bracteoles, hypanthium, calyx lobes, petals, tips of stamens, and apex of stigma; **C**, calyx lobes, staminal disk, points of petal attachment, and style; **D**, young fruit (**left**), mature seed (**right**); **E**, branchlet; **F**, leaves and flowers in bud; **G**, glabrous flower with detail of bracteoles and hypanthium in bud; **H**, branchlet; **I**, inflorescence; **J**, tomentose flower with bracteoles; **K**, branchlet; **L**, revolute leaf and young fruit. Vouchers: **A**-**C**, *Jaffré 141* (NOU); **D**, *Nothis 331* (NOU); **E**-**G**, *Hürlimann 3021* (P); **H**-**J**, *Jaffré 3275* (NOU); **K**-**L**, *Jaffré 231* (NOU). **E**-**G**, reflect what previously was called *Gossia alaternoides* var. *pulchrefolius.* Scale bars: A, E, H, K, 2 cm; B, C, G, J, 2 mm; D, 3 mm; F, I, L, 5 mm.

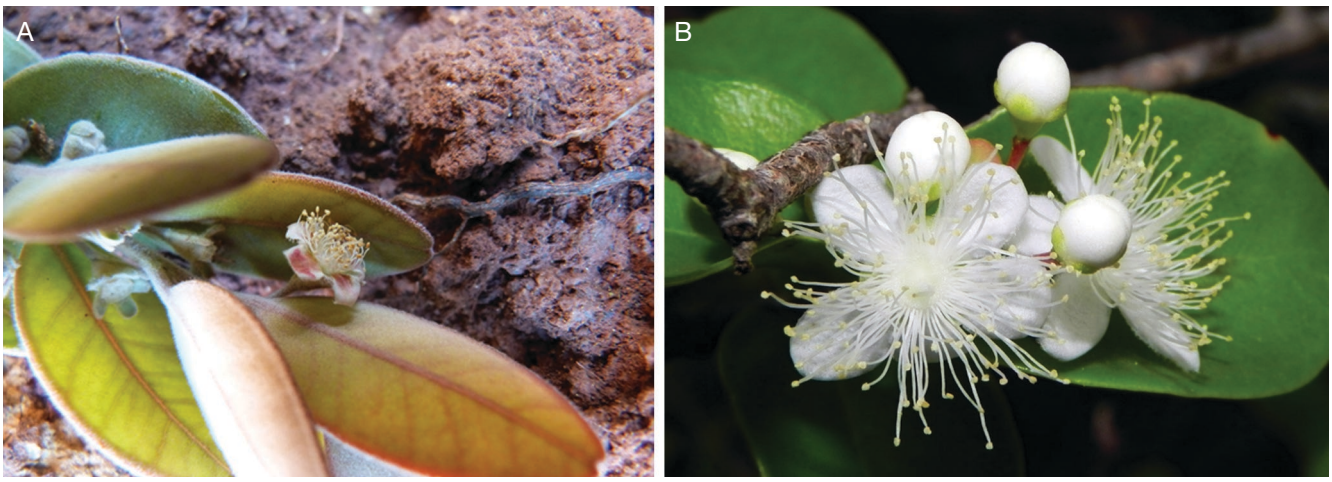

Fig. 2. — *Gossia alaternoides* (Brongn. & Gris) N. Snow: **A**, young leaves with tomentose indumentum and flower; **B**, *Gossia diversifolia*, close-up of flowers and buds, unvouchered taken in Parc Forestier de Nouméa. Vouchers: **A**, *Callmander 1273*, used with permission; **B**, photo: ©Benoît Henry, used with permission (http://endemia.nc).

2018 (NOU[NOU028886]); Massif du Boulinda, col de Nékoro, 11.X.1972, *Jaffré 2203* (NOU[NOU028884]); Massif du Boulinda, 23.II.1978, *Jaffré 2367* (NOU[NOU028852], P[P00462833]); Koniambo, 534 m, 26.X.2000, *Jaffré 3452* (NOU[NOU028919], P[P00316477]); Mt. Koniambo, vers 400 m, 5.I.1961, *MacKee 7965* (CANB, P[P00462840], US); Boulinda, 10.XI.1977, *Morat 5705* (NOU[NOU028876], P[P00462843]); Dothio: le fort américain, [21°35'30.00"S, 166°08'09.99E], 17.XII.1981, *Veillon 4767* (NOU[NOU030916], P[P00462845], WELTU). — South Prov., Col de Vulcain, 900 m, 11.XI.1950, *Baumann-Bodenheim 8120* (A, P[P00459518]); Sommet W du Mt. Humboldt, 21.IX.1951, *Baumann-Bodenheim 15430* (A, BRI, P[P00459521], US, Z); Mine Pin-Pin, 21°22'57.00"S, 165°16'00.00"E, 677 m, 20.XI.2015, *Callmander 1273* (G[images of living material seen], MO n.v., NOU n.v., P n.v.); Massif du Kouakoué sur la crête, VII.1955, *Chevalier 6* (NOU[NOU028915, NOU028921]); Goro-Nickel relevé 37-38, 20.VI.2002, *Dagostini 525* (NOU[NOU028874]); Prony, bords de la Yaté, *Franc 1787* (P[P00459524], [P00459525]; *ibid. loco*, *Franc 1787a* (P[P00459526, P00462814, P00462815]); Prony, 20.XII.1914, *Franc 1901a* (A, BRI, P); *Hürlimann 597* (P[P00462820]); Vallée de la Fausse Yaté, 12.I.1951, *Hürlimann 669* (A, P[P00462821], RSA, US, Z); Pic 576 au-dessus de la vallée de Boulari, 30.I.1951, *Hürlimann 799* (A, NY, P[P00462822], US, Z); Pic 576 au-dessus de la vallée de Boulari, 30.I.1951, *Hürlimann 802* (P[P00462823]); Pente nord du Pic du Casse-Cou, 3.III.1951, *Hürlimann 1016* (P[P00462825]); Route de Yaté, 10.I.1969, *Jaffré 141* (NOU[NOU053233], P[P00462826, P00462827]); Kouaoua, 7.V.1969, *Jaffré 231* (P[P00462828]); Route de Yaté, 20.I.1978, *Jaffré 2254* (CANB n.v., L n.v., MO[MO-5813358], NOU[NOU028883], P[P00462832]); Vallée de la Riv. Ouha-Tontouta, 2.XI.1995, *Jaffré 3275* (BISH[fragment], NOU[NOU053039]), P[P00462834]); N. Dumbéa valley between the 1st and 4th bunkers of abandoned mine, 13.XI.1955, *MacKee 3337* (P[P00462837, P00462838]); Plaine des Lacs: NE Grand Lac, 30.XII.1978, *MacKee 36304* (NOU[NOU028854]); Yaté, 250 m, 18.XII.1985, *MacKee 42946* (MO[MO-6751083], NOU[NOU028879], P[P02089890]); 5 km en aval de la Chute de la Rivière des Lacs, 200 m, 9.XI.1989, *MacKee 43339* (BRI, NOU[NOU028875], P[P02089861] + spirits); Rivière des Lacs, 5 km en aval de la chute, 200 m, 5.IV.1987, *MacKee 43489* (MO[MO-6751077], NOU[NOU028887], P[P02089889]); Yaté, Barrage, 150 m, 25.V.1987, *MacKee 43555* (P[P02089859]); Rivière des Lacs, 220 m, 19.XI.1987, *MacKee 43776* (P[P02089860]); Grand Lac, 250 m, 29.XII.1989, *MacKee* 44239 (BRI, NOU[NOU028878], P[02089887] + spirits); Grand Lac, 250 m, 29.XII.1988, *MacKee 44240* (BRI, MO[MO-6751071], NOU[NOU028855], P[P02089888] + spirits); Port Bouquet, Rivière Koum, au bout de la piste longeant la rivière, berge ouest, 105 m, 24.XI.2001, *Munzinger 1019* (MO[MO-04771341], NOU[NOU028880]); Dothio: le fort Américain, 17.XII.1981, *Veillon 4767* (NOU, P[P00462845]); Tontouta, rive gauche du creek Wanewano entre 20-30 m, 26.III.1993, *Veillon 7917* (NOU[NOU028920]); Baie de Prony, *Vieillard 2618* (P[P00462847]); Entre Goro et la Grand Lac, 29.III.1942, 230 m, *Virot 680* (P[P00462851]); Riv. des Lacs near beginning of Route de Carenage, 22.10°S, 166.50°E, 150 m, 11.XII.1973, *Webster 19208* (DAV, P[P00462852]). — *Ab. loco*: *Le Rat & Le Rat 768* (P[P00462835]).

Representative herbarium specimen. — P00751827.

Description

Shrubs

0.5-3 m.

Branchlets

Terete, emerging densely lanate to glabrous; internodes at branch tips mostly > 5 mm.

Leaves

Stiffly coriaceous, 2-3(-4) per node; petioles 1.5-2.5 mm, slightly sulcate distally; blades 1.5-5.7 × (0.6-)1.2-2.5 cm, narrowly obovate (or rarely obovate [e.g., *Vieillard 2618*]) to narrowly elliptic or elliptic, base cuneate to attenuate, surface flat in center but margin typically recurved (often strongly) throughout, apex prominently retuse or less often obtuse, midnerve slightly sulcate proximally becoming more or less flush, secondary veins invisible above, oil glands below (when not obscured by indumentum on branchlets) common to dense but often indistinct.

Inflorescence

2-4 cm, of monads, triads or few-flowered cymes, terminal or (mostly) axillary, pedicels 0-6 mm; extrafloral bracts typically at base of inflorescence branches.

Bracteoles
0.6-1.2 mm (occasionally two pairs in decussate arrangement below solitary flowers), very narrowly obovate, glabrous to densely lanate.

Hypanthium
2.0-3.0 mm, cupulate, smooth to slightly ribbed, glabrous to densely lanate; ovary apex densely hairy.

Calyx
Lobes 5, (0.6-)1-2 mm, narrowly obovate to narrowly oblong, glabrous to velutinous above and below.

Petals
(1.4-)2-4 × 2.5-3.5 mm, glabrous to densely hairy above and below, white to maroon.

Filaments
2-3 mm, white; anther sacs (0.1-)0.3-0.7 mm, stramineous.

Style
4-5 mm, sometimes hairy proximally, whitish.

Fruits
c. 4.0-5.5 × 4 mm, globose to subcylindrical, yellow-green maturing dark bluish-black.

Seeds
Two.

REMARKS
The indumentum on the emerging branchlets, young leaves, and floral parts varies considerably; in many specimens most or all of it falls away with age. Three or sometimes four leaves per node often occur on this generally sparsely-branched shrub. The apex of the bracteoles in some specimens exceeds the base of the calyx lobes, but this character is inconsistent. The dried immature fruits can appear to be almost capsular and only slightly fleshy. Additional research is needed to test the distinctness of *G. alaternoides*, *G. conspicua* comb. nov., and *G. virotii*. One focal area in particular for additional collections should be near Tontouta, an area from which specimens can be challenging to attribute to these three species.

Previously (in ms.), I recognized up to four infraspecific taxa of this species, but further study only corroborated the distinctness of *Gossia conspicua* comb. nov., in contrast to tentatively having recognized *G. a.* subsp. *pulchrefolius* and earlier tentative names of *Gossia alaternoides* vars. "tomentosa" and "velutinosa". Many specimens bear annotations of those tentative names between 2004 and 2017.

Sterile specimens of *G. alaternoides* can resemble *Uromyrtus emarginata* (Pancher ex Brongn. & Gris) Burret, but that species has pendulous solitary flowers. The leaves also can resemble *Eugenia stricta* Pancher ex Brongn. & Gris, but its vegetative and reproductive parts are glabrous and the embryos are globular and lack the hardened testa characteristic of *Gossia*.

Gossia angustifolia N. Snow, sp. nov.
(Figs 3; 4A-C)

Leaves narrowly elliptic, cuneate at base, the margin slightly sinuous, about three times longer than broad, abaxial surface glands dense, placentation basal.

TYPUS. — **New Caledonia.** Grande Terre, North Prov. Entre Tao et Ouaième: Vallée Pouai, 20°35'33.00"S, 164°49'12.00"E, 11.IX.1961, *MacKee 15612* (holo-, NOU[NOU053037]; iso-, BISH[leaf fragment], MO[MO-5906585]).

PARATYPI. — **New Caledonia.** Grande Terre, Haute Diahot, Paala, 600 m, 15.VII.1977, *MacKee 33461* (BISH[fragment], NOU[NOU053245]); Col d'Amos, 20°17'60"S, 164°25'42"E, 13.X.2002, *Munzinger 1489 et al.* (MO[MO-5841144], NOU[NOU002733], P[P00354502]); Col d'Amoss, 20°18'22"S, 164°23'48"E, 14.X.2002, *Tronchet 387* (K n.v., MO[MO-5906585], NOU[NOU003170], P[P00354930]); Vallée de Néouna (Goapin), entre Aoupinié NW et Forêt plate, 165°13'35.1"S, 21°8'38.3"E, 31.VII.2012, *Vandrot 597 & Chambrey* (MO, n.v., MPU[MPU028535], P[P02089718]).

ETYMOLOGY. — In reference to the relatively narrow leaves, compared to most congenerics in New Caledonia.

REPRESENTATIVE HERBARIUM SPECIMEN. — P00354930.

DISTRIBUTION, HABITAT AND PHENOLOGY. — *Gossia angustifolia* sp. nov. occurs on the edge of the Massif du Panié and at Col d'Amoss (Fig. 3), sometimes common locally; in gallery forests over micaschistes, *c.* 100-600 m altitude. Flowering November (material scant); fruiting July through October.

DESCRIPTION
Shrubs or trees
3-8 m, sometimes densely branched.

Bark
Brownish and somewhat rough.

Branchlets
Terete to laterally compressed; internodes > 5 mm., emerging reddish.

Leaves
Coriaceous, 2 per node; petioles 1.2-3.5 mm, terete; blades 5.0-9.0 × 1.9-3.3 cm, narrowly elliptic, base cuneate, surface flat, margin flat to slightly wavy, apex acute, midnerve above sulcate, secondary veins slightly raised above, oil glands of lower surface dense but faint. Inflorescence 2-2.5 cm, of few-flowered racemes or panicles, terminal and axillary; pedicels 0.3-1.4 cm; extrafloral bracts lacking or scale-like.

Bracteoles
1.5-2 mm, narrowly oblanceolate, sparsely sericeous.

Hypanthium
2.5-3.5 mm, campanulate or urceolate, width in flower unknown, surface smooth, sparsely sericeous; ovary apex glabrous.

Calyx
Lobes 5, 1.2-1.5 mm, broadly rounded, glabrous above, sparsely sericeous below, greenish.

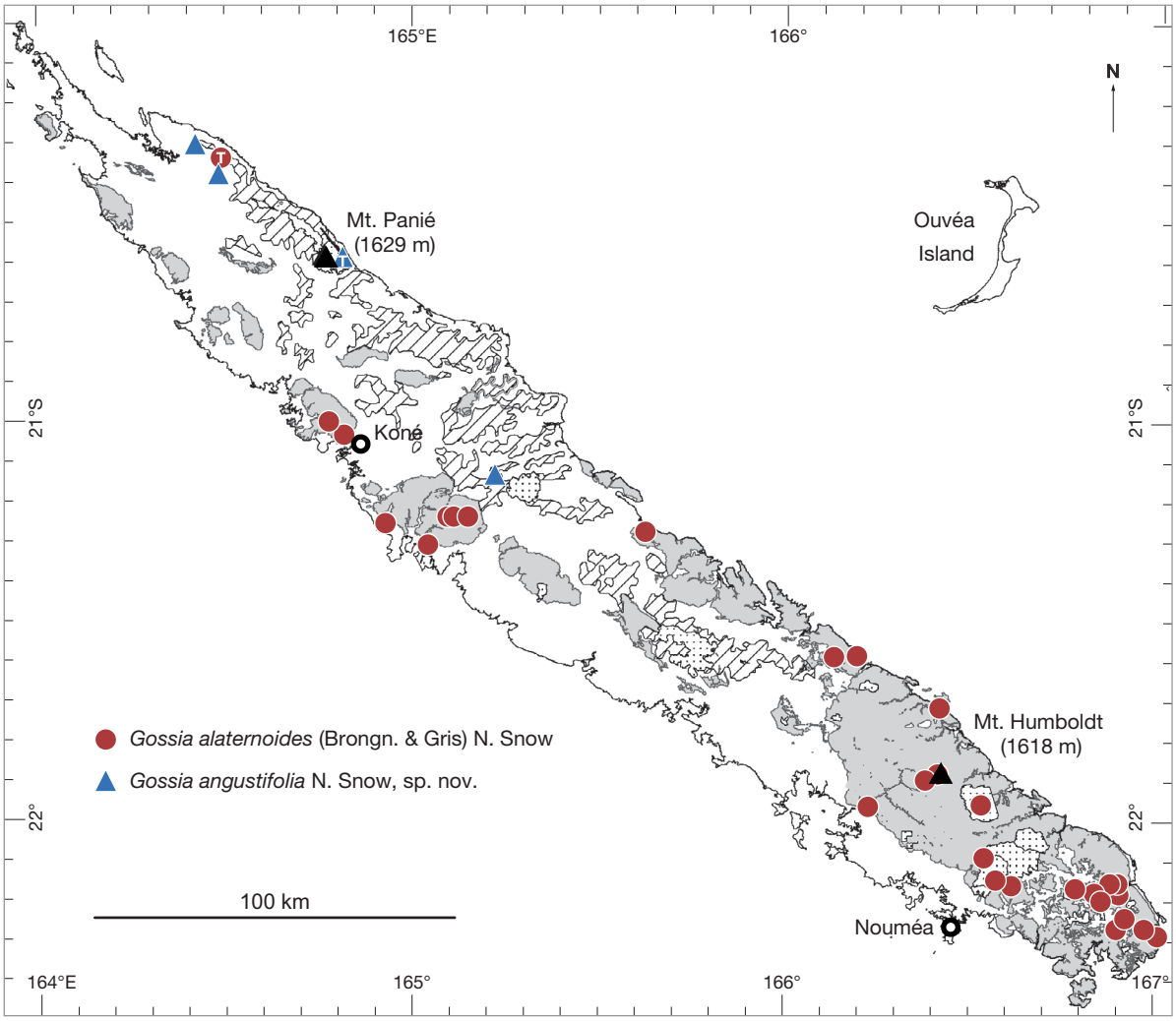

FIG. 3. — Distribution maps of *Gossia alaternoides* (Brongn. & Gris) N. Snow and *G. angustifolia* N. Snow, sp. nov. Note: in all distribution maps, **gray areas** indicate ultramafic substrates, **slash-hatching** indicates dense humid forests, and **dotted areas** indicate protected areas; icons with "**T**" indicate type localities.

Petals stamens and style
Unknown.

Berry
6-8 × *c.* 7 mm, globular, base rounded, whitish to reddish; seeds 2.

REMARKS
Gossia angustifolia sp. nov. is recognized by its narrowly elliptic leaves with slightly undulate (*in sicco*) margins and (usually) dense but small oil glands on the lower surface. It can resemble *G. ramiflora* sp. nov. based on the slightly undulate leaf margins and their overall shape, but the margins of *G. ramiflora* sp. nov. typically are significantly more undulate. It also can resemble *G. vieillardii*, but that species has fewer oil glands on the lower leaf surface. Preliminary results suggest this species is atypical in the genus by virtue of its basal placentation in a single locule (Fig. 4C). The laminar oil glands are less dense on one specimen (*Vandrot 597*).

Gossia aphthosa (Vieill. ex Brongn. & Gris) N. Snow (Figs 4D-G; 5; 13E-I)

Austrobaileya 8: 180 (2010). — *Eugenia aphthosa* Brongn. & Gris, *Bulletin de la Société botanique de France* 13: 469 (1865). — *Austromyrtus aphthosa* (Brongn. & Gris) Burret, *Notizblatt des Botanischen Gartens und Museums zu Berlin-Dahlem* 15: 504 (1941). — Typus: **New Caledonia.** Grande Terre, South Prov., Collines de Wagap, *Vieillard 2172* (holo-, P[P00602542]; iso-, A[A00255453, A00255454], B, BISH, G[G003410963, G00340964], L[3 sheets], MEL, P[P00602543], Z[Z-000050852]).

ETYMOLOGY. — Likely from the Greek *aphtha*, which is a reference to thrush (= mouth ulcers), coupled with the Latin suffix *osa* ("full of"). *Aphthosa* thus presumably refers to the ring of corky tissue at the base of the petioles.

DISTRIBUTION, HABITAT AND PHENOLOGY. — In three distinct regions areas on Grande Terre (Fig. 5); in gallery forests and other humid to wet forests over ultramafics, schists, micaschists, and gneiss, 250-500 m. Flowering August through February; fruiting September through June.

Description

Trees or shrubs
2-8 m.

Branchlets
Terete to compressed; internodes > 5 mm.

Leaves
Coriaceous, 2 per node; petioles 2-4.8 mm, flat to terete; blades (8.5-)12.0-24.0 × (3.5-)6.6-13.0 cm, elliptic to broadly elliptic, base cordate (and sometimes amplexicaulous) to broadly rounded, surface flat, margin flat to somewhat revolute at edges, apex obtuse to somewhat acute, midnerve above sulcate, secondary veins flush above, oil glands of lower surface dense but indistinct.

Inflorescence
1.5-6 cm, of monads, triads, or few-flowered racemes, axillary or clustered on naked branches; pedicels 0.3-1.5 cm; extrafloral bracts lacking or scale-like.

Bracteoles
(1.5-)3-4 mm, very narrowly ovate or elliptic to very narrowly obovate, sparsely sericeous.

Hypanthium
c. 1.5 × 1.5 mm, campanulate, surface smooth, glabrous to densely sericeous; ovary apex glabrous.

Calyx
Lobes 4 or 5, 1-2 mm, broadly triangular, sparsely sericeous above, glabrous to sparsely sericeous below, green.

Petals
c. 5 × *c.* 4 mm, glabrous above and below, ciliate on margins.

Filaments
5-8 mm; anther sacs 0.4-0.5 mm.

Style
6-7 mm, glabrous to sparsely sericeous at base.

Berry
8-9 × 8-9 mm, globular, base rounded, green maturing becoming dark purplish to blackish; seed number unknown.

Remarks
Gossia aphthosa can be distinguished among New Caledonian congeners by its relatively large, flat, and broadly rounded to cordate leaf bases and frequently cauliflorous inflorescences. The nominal subspecies has a prominent ring of corky tissue at the base of the petioles, which is unique in the genus (e.g., Snow *et al.* 2003). The three subspecies are based on differences in eco-geography and non-fixed, but mostly consistent differences in morphology. The inflorescence branches are said to be reddish on some specimens (e.g., *MacKee 13229*) and the leaves are said to emerge pinkish (*MacKee 4427*).

Key to the subspecies of *Gossia aphthosa* (Vieill. ex Brongn. & Gris) N. Snow

1. Base of petiole surrounded by prominent ring of corky tissue; hypanthium often silvery-sericeous (northern late Cretaceous micaschistes and gneiss, Massif du Panié, Northern Province) ..... *Gossia aphthosa* subsp. *aphthosa*
— Base of petiole without corky swellings; hypanthium mostly glabrous (northern Central Range basement Mesozoics ands schistes) 2

2. Inflorescences 5-8 cm; leaf blades stiffly coriaceous, base strongly cordate and clasping; north-central humid forests ..... *Gossia aphthosa* subsp. *longipedunculata* N. Snow & Munzinger, subsp. nov.
— Inflorescence less than 6 cm; leaf blades coriaceous, base rounded or cordate and clasping; southeast humid forests over ultramafics ..... *Gossia aphthosa* subsp. *austro-orientalis* N. Snow & K. Gandhi, subsp. nov.

Gossia aphthosa subsp. ***aphthosa***
(Figs 4D-G; 5)

Specimens examined. — **New Caledonia.** North Prov. Plateau du Col des Roussettes route forestière près de Riv Ouen – Sieu, 21°25'45.19"S, 165°27'15.01"E, 29.IX.1964, *Blanchon 994* (NOU[NOU029700], P[P00462860]); Touho, Ponandou, 20°49'12.00"S, 165°13'45.12"E, 15.V.1973, *MacKee 26722* (NOU[NOU053234]); Tiwaka: Pente Sud, Inédète, 250 m, 30.III.1974, *MacKee 28444* (NOU[NOU029696], P[P06668973]); Ponandou, le Captage, 27.X.2005, *Munzinger 3084 et al.* (P[P05121899], WELTU).

Representative herbarium specimen. — P05121899.

Distribution, habitat and phenology. — Central and northeast parts of Grande Terre; over micaschistes and gneiss, 250 m.

Remarks
A reliable diagnostic character is the corky swellings surrounding the base of the petioles (Fig. 4D-E, G). The hypanthium of some (e.g., *MacKee 28444*) can be prominently sericeous; the leaf blades of some appear to be only thinly coriaceous (e.g., *Munzinger 3084*).

Gossia aphthosa subsp. ***austro-orientalis***
N. Snow & K. Gandhi, subsp. nov.
(Fig. 5)

Differing from *Gossia aphthosa* subsp. *longipedunculata* N. Snow & Munzinger, subsp. nov. by its generally shorter inflorescences, leaf blades of somewhat thinner texture, and bases of leaves that are not as tightly clasping the stem.

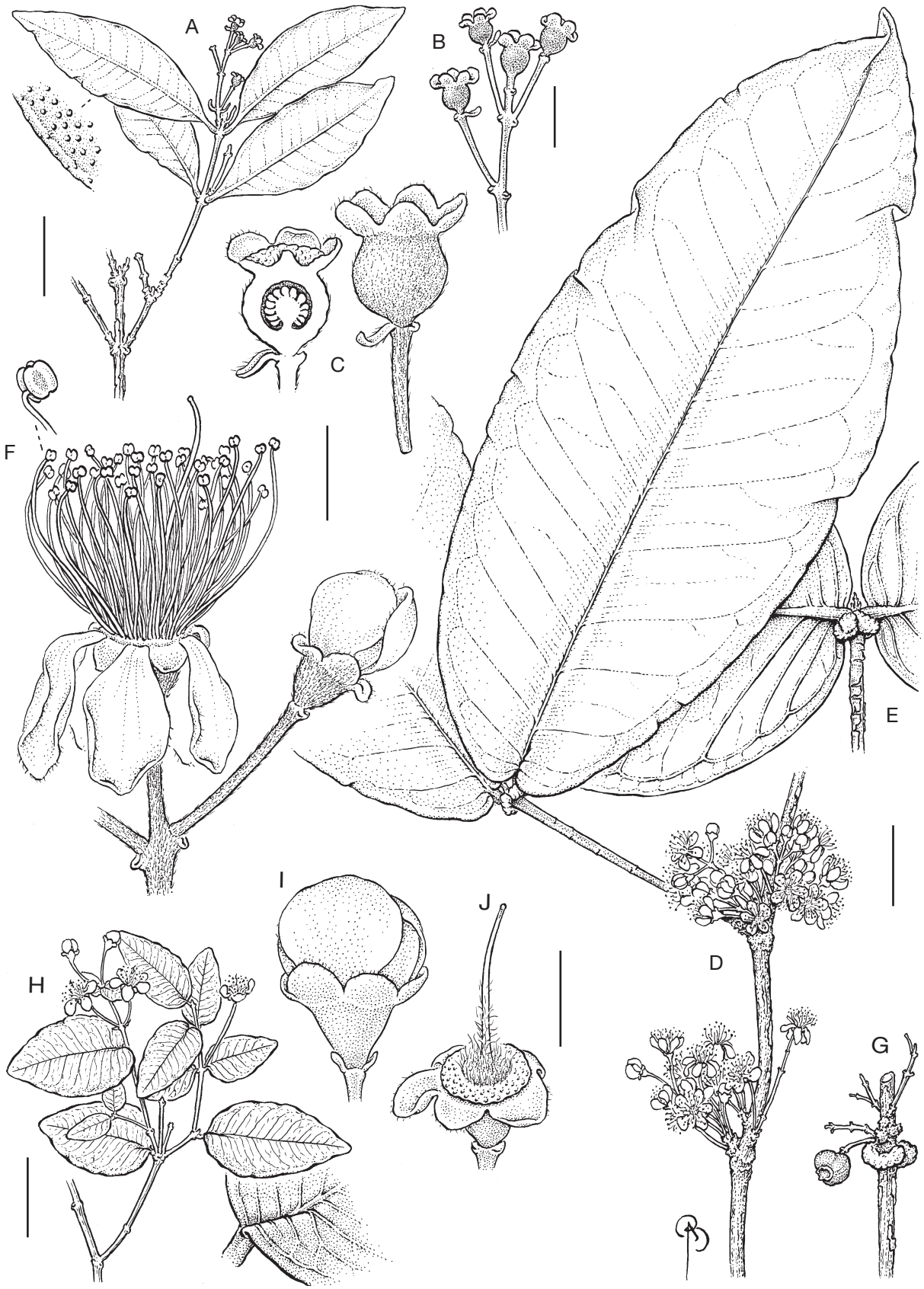

FIG. 4. — **A**-**C**, *Gossia angustifolia* N. Snow, sp. nov.: **A,** branch; **B,** inflorescence in part; **C**, flower with petals and stamens removed, and in longitudinal section at left; **D**-**G**, *Gossia aphthosa* (Vieill. ex Brongn. & Gris) N. Snow subsp. *aphthosa*: **D**, branch showing leaves with corky swellings at base of leaf and ramiflorous inflorescences; **E**, detail of corky swellings; **F**, detail of flower with reflexed petals; **G**, remnants of inflorescence in axil (with corky swellings) of dehisced leaf; **H**-**J**, *Gossia bourailensis* N. Snow, sp. nov.: **H,** branch with inflorescences; **I,** detail of flower bud; **J,** detail of flower with petals removed showing calyx lobes, staminal ring, hairy ovary apex, and style with proximal pubescence. Vouchers: **A**-**C**, *MacKee 33461* (NOU); **D**, **F**, *MacKee 28444* (P); **E**-**G**, *MacKee 26722* (NOU); **H**-**J**, *Balansa 1516a* (P); **K**, *Veillon 5958* (NOU); **J**, *MacKee 5328* (P). Scale bars: A, D, E, G, H, 2 cm; B, 5 mm; C, F, I, J, 3 mm.

Typus. — **New Caledonia.** Grande Terre, South Prov., Rivière Bleue, 25.X.1974, *M. Schmid 5180* (holo-, P[P00462872]; iso-, [NOU[NOU029695], P[P00462871]).

Paratypi. —**New Caledonia.** Grande Terre, South Prov., Forêt du Mois de Mai, 22°07'06.99"S, 166°38'48.01"E, 19.XII.2006, *Barrabé et al. 431* (NOU[NOU016015], MO[MO-6012551], P[P04776185]); Forêt du Mois de Mai, 13.VI.1951, *Baumann-Bodenheim 14066* (P[P00462856]); *ibid. loco,* 24.VI.1951, *Baumann-Bodenheim 14182* (A, P[P00462857], Z); *ibid. loco*, 24.VI.1951, *Baumann-Bodenheim 14206* (A, P[P00462859], Z); Vallée de Thy, 22°07'06.99"S, 166°32'12.84"E, 28.VI.2003, *Biffin 112 & Craven* (CANB[CANB799723, n.v.], P[P02090975]); Thy Upper Western Road forest, 340 m, 5.II.1980, *Brinon 692* (P[P00462861]); St. Louis, 600 m, 14.XI.1949, *MacDaniels 2216* (P[P00462864]); Mt. Koghi, slope towards Vallée de Thy (St. Louis), 400-500 m, 21.IV.1956, *MacKee 4427* (A, L, P[P00462866]); *ibid. loco*, 21.IV.1956, *MacKee 4446* (P[P00462867]); Forêt Desmazures, 13.IV.2005, *Munzinger 2767* (NOU[NOU07908], P[P04827941, P04827945]); Haut Yaté, Rivière Bleue, 300 m, *Schmid 5269* (NOU[NOU029684, NOU029688], P[P00462873]); Haute Yaté: Forêt du Mois de Mai, 200 m, 25.XI.1982, *Suprin 2259* (P[P00462874]); *ibid. loco*, 8.III.1966, *Veillon 660* (NOU[NOU029689], P[P00462875]). — ***Ab loco.*** 1868-1872, *Balansa 88* (A, P[P00462854, P00462855]).

Representative herbarium specimen. — P04827941.

Etymology. — From the Latin *australis* (south) and *oriens* (east), in reference to its more southerly and easterly distribution on Grande Terre relative to the other subspecies.

Distribution, Habitat and Phenology. — Southern part of Grande Terre; in dense humid forests or riparian forests over ultramafics, *c.* 150-660 m. Flowering March through June; fruiting April through October.

Remarks

The subspecies varies from being shrubs from 3 m to trees to 10 m. The fruit is said to transition from green to white, followed by reddish to dark purple. The pulp of the mature fruit is said to be sour (*MacKee 4446*).

Gossia aphthosa subsp. *longipedunculata* N. Snow & Munzinger, subsp. nov.
(Figs 5; 13E-I)

Differing from *Gossia aphthosa* subsp. *austro-orientalis* N. Snow & K. Gandhi, subsp. nov. by its somewhat longer inflorescences (5-8 cm vs less than 6 cm in *G. a.* subsp. *austro-orientalis* N. Snow & K. Gandhi, subsp. nov.), more stiffly coriaceous leaf blades, and different eco-geography. Also resembling *Gossia colnettiana*, but that species has rounded to cuneate leaf bases (vs cordate-clasping leaf bases in *G. a.* subsp. *austro-orientalis* N. Snow & K. Gandhi, subsp. nov.).

Typus. — **New Caledonia.** Grande Terre, North Prov., Haute Amoa, 21°00'02.98"S, 165°14'31.99"E, 300-400 m, 7.IX.1968, *MacKee 19502* (holo-, P[P05094105]; iso-, NOU[NOU029685]).

Paratypi. — **New Caledonia.** Nékoro, prop. P. Johnson, 1.IV.2004, *Dagostini 654* (NOU[NOU001193]); Haute Vallée de l'Amoa, 21°00'02.98"S, 165°14'31.99"E, 12.VIII.1965, *MacKee 13229* (BISH, MO[MO-04777159], NOU[NOU023797], P[P00462868, P00462869, P00462870]; *ibid. loco*, 300 m, 28.IV.1968, *MacKee 18698* (NOU[NOU029687], P[P02089984]); Ponérihouen, 21°11'00.99"S, 165°17'48.98"E, 700-900 m, 6.XI.1972, *MacKee 25749* (NOU[NOU053235]); *ibid. loco*, 21°11'00.99"S, 165°17'48.98"E, 28.IV.1973, *MacKee 26628* (NOU[NOU053235, NOU053038); Haute Tchamba, 21°0'55"S, 165°15'6"E, 10.XI.2002, *Munzinger 1456 et al.* (MO[MO-04767308], NOU[NOU002675], P[P00354535], WELTU).

Representative herbarium specimen. — P00354535.

Etymology. — In reference to the relatively long peduncles occurring on many specimens.

Distribution, habitat and phenology. — Central Grande Terre, near Ponérihouen, Haute Tchamba, and Haute vallée de l'Amoa (Fig. 5) in humid forests on volcanic-sedimentary soils, 300-900 m. Flowering confirmed August through April; fruiting October and November.

Remarks

This subspecies is recognized most easily by its large (8-12 mm) petals. (An unpublished manuscript name of mine for some specimens was *Gossia* "grandiflora".) The inflorescences often are densely fasciculate in leaf axils or on branches and stems. It can also resemble *G. kuakuensis*, but that species has larger flowers and a slightly ribbed to rugose hypanthium.

Gossia bourailensis N. Snow, sp. nov.
(Figs 4; 6)

Resembling *Gossia diversifolia* but differing by its terete branchlets and the leaf blade, which is conduplicate only at its base.

Typus. — **New Caledonia.** Grande Terre, South Prov. Bourail, dans les bois, III.1869, *Balansa 1516a* (holo-, P[P00724290]; iso-, BISH[fragment], P[P00402718, P00402755]).

Paratypi. — **New Caledonia**, Grande Terre, South Prov. Bourail, 1868-1970, *Balansa 416a* (Z[Z-000050855]); Peya (Bourail), 14.IV.2011, *J.-P. Butin 58* (P[P02089712]); Montagne des Sources, 21°08'09.96"S 166°36'10.80"E, 19.II.1982, *Veillon 5958* (NOU[NOU0534329]).

Representative herbarium specimen. — P00724290.

Etymology. — Derived from the town of Bourail.

Distribution, habitat and phenology. — A poorly understood species as presently known and collected only from the vicinity of Bourail (in 1869) and more recently (1982) from Montagne des Sources (Fig. 6); in woods, *c.* 50 m. Flowering February and March; fruiting through August.

Description

Shrubs

4-5 m.

Branchlets

Terete; internodes > 5 mm.

Leaves

Coriaceous, 2 per node; petioles 1-3 mm, rounded; blades 2.0-3.7 × 1.3-2.3 cm, ovate, base rounded to cordate, surface flat to slightly wavy but somewhat conduplicate above petiole, margin flat to slightly undulate, apex broadly acute to obtuse, midnerve above flush, secondary and tertiary veins slightly raised throughout, oil glands of lower surface sparse and indistinct.

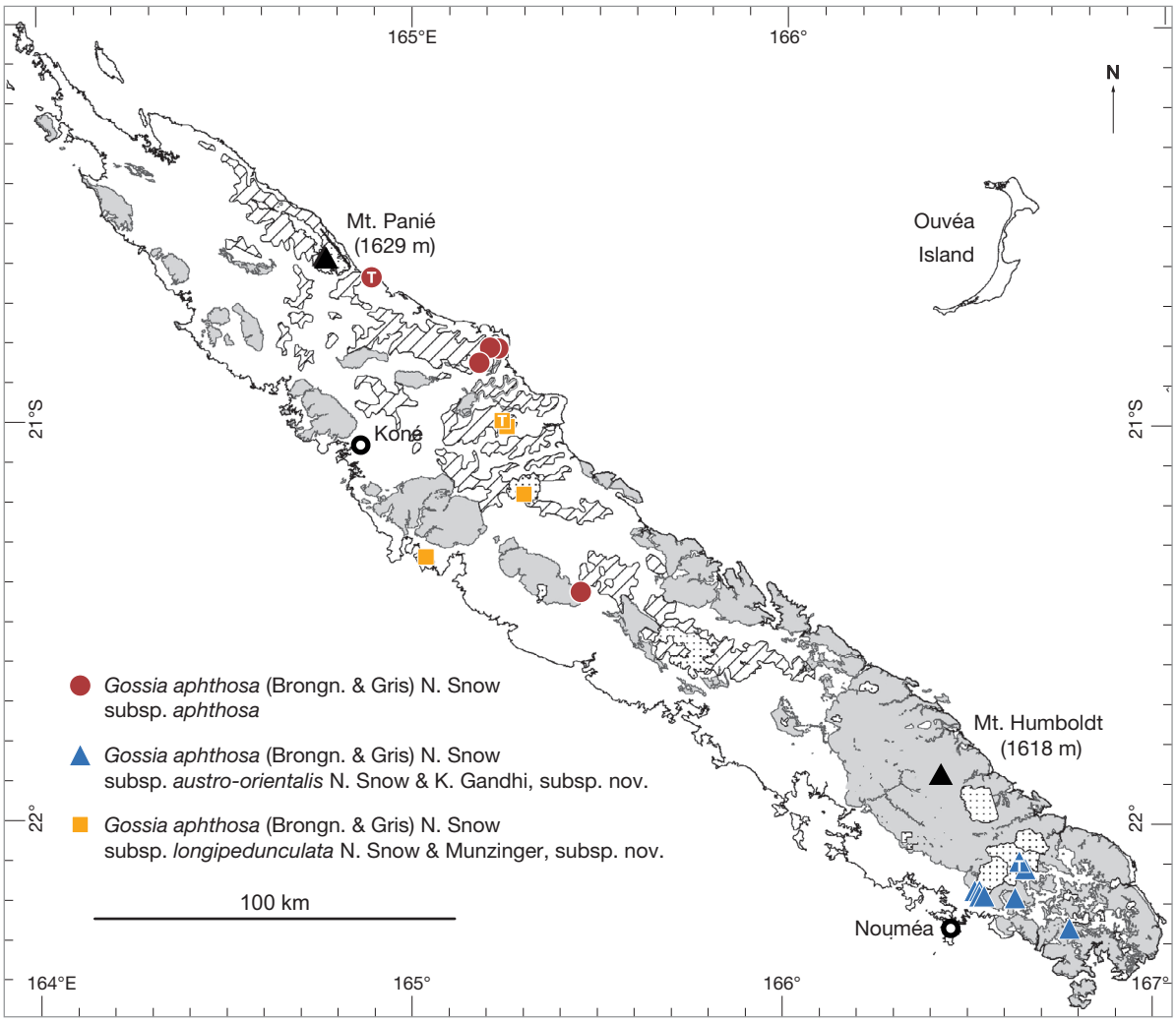

Fig. 5. — Distribution map for subspecies of *Gossia aphthosa* (Brongn. & Gris) N. Snow.

Inflorescence
1.4-1.8 cm, of monads, terminal, axillary, or from naked internodes; extrafloral bracts absent or scale-like.

Bracteoles
0.5-1 mm, narrowly ovate to ovate, glabrous to sparsely sericeous.

Hypanthium
1.5-2.2 × 2.5 mm, obconic to campanulate, surface smooth, glabrous; ovary apex hairy.

Calyx
Lobes 4 or 5, 0.5-2 mm, broadly rounded, glabrous above and below, green.

Petals
4 (or irregularly 5-8), 4-5 × 2.8-4.5 mm, glabrous above and below, minutely ciliate on margins.

Filaments
3.5-5 mm; anther sacs 0.3-0.5 mm.

Style
4-4.5 mm, sparsely sericeous to tomentose throughout.

Fruits
Green 4-5.5 × 4-5 mm, globular, base rounded, mature color unconfirmed; seed number 1.

Remarks
Gossia bourailensis sp. nov. resembles *G. diversifolia* but has terete branchlets, a somewhat narrower petiole, and the base of the leaf blade is more or less conduplicate. It also resembles *G. conduplicata* sp. nov., which has much more pronounced folding of the leaf blades, and *Gossia katepahiensis* sp. nov., which has a more broadly rounded leaf apex and glabrous ovary. Some petioles of *G. bourailensis* sp. nov. are twisted and bent away from the axis of the midrib, but this is a subtle character. Some flowers of *Balansa 416a* have eight petals, which probably is a developmental anomaly. The distribution as currently understood, from the type specimen in 1869 near the west-central part of Grande Terre and Montagne des Sources in 1982 is anomalous; further study is needed.

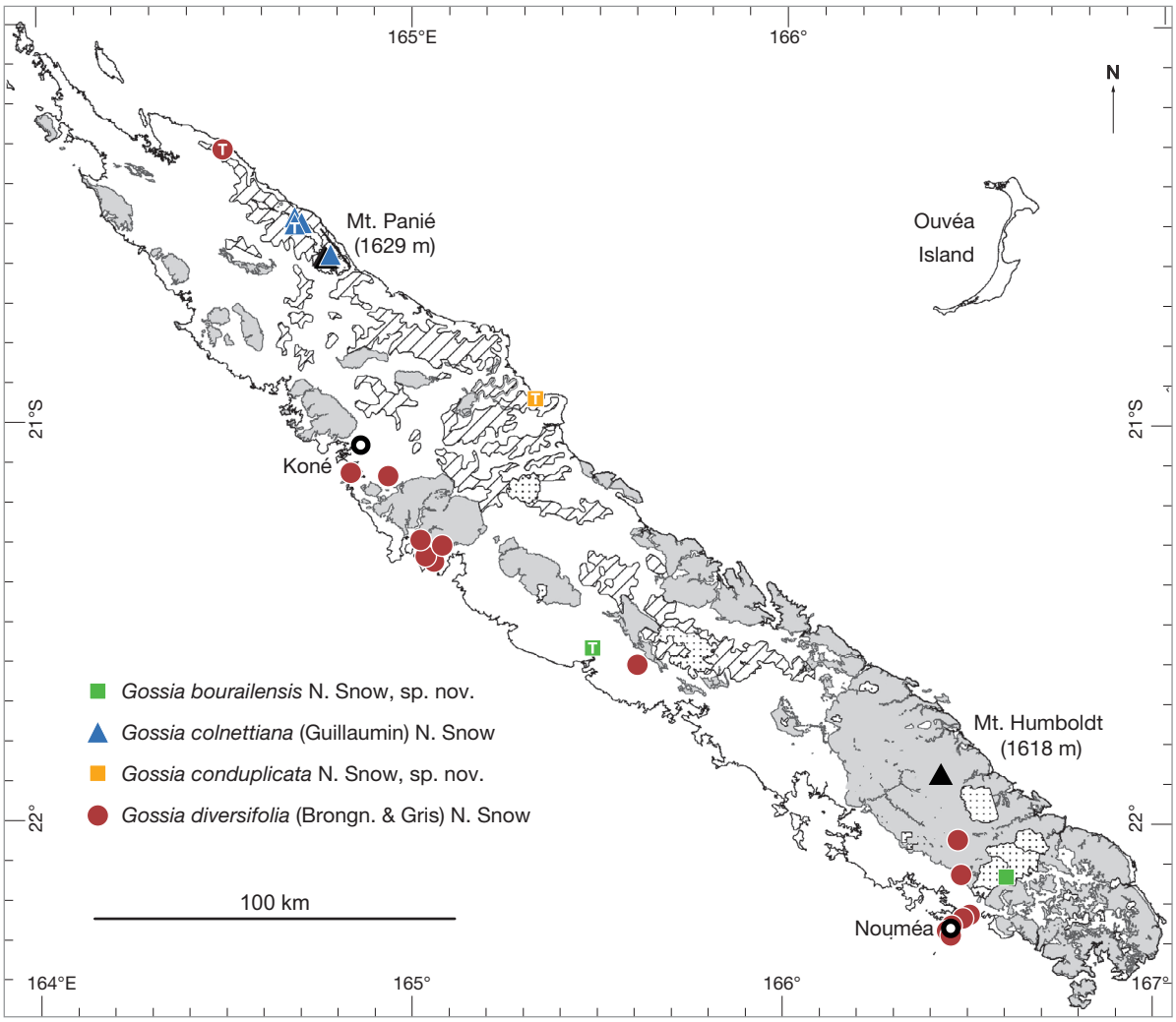

FIG. 6. — Distribution maps for *Gossia bourailensis* N. Snow, sp. nov., *G. colnettiana* (Guillaumin) N. Snow, *G. conduplicata* N. Snow, sp. nov. and *G. diversifolia* (Brongn. & Gris) N. Snow.

Gossia clusioides (Brongn. & Gris) N. Snow
(Figs 7-11)

Austrobaileya 8: 180 (2010). — *Eugenia clusioides* Brongn. & Gris, *Bulletin de la Société botanique de France* 12: 180 (1865). — *Austromyrtus clusioides* (Brongn. & Gris) Burret, *Notizblatt des Botanischen Gartens und Museums zu Berlin-Dahlem* 15: 503 (1941). — Typus: **New Caledonia.** Grande Terre, South Prov., *Deplanche 525* (holo-, P[P00602545]).

ETYMOLOGY. — Derived from the generic name *Clusia* L. (Clusiaceae) given the resemblance of its leaf blades to many species of that genus.

DISTRIBUTION, HABITAT AND PHENOLOGY. — Across much of Grande Terre (Fig. 7); in humid or gallery forests over micaschistes, graywackes, or ultramafics, 10-900 m. Flowering December to June; fruiting January to November.

DESCRIPTION

Trees or shrubs
(0.5-)3-9(-15) m tall.

Branchlets
Round to compressed; internodes > 5 mm.

Leaves
Coriaceous, 2 per node; petioles 3.5-20 mm, slightly sulcate; blades 7.0-18.5 × 2.5-12.0 cm, narrowly elliptic to broadly elliptic or obovate, base cuneate or rounded, surface flat to strongly bullate, margin flat to revolute, apex obtuse to sometimes retuse, midnerve above strongly sulcate, secondary veins flush to impressed above, oil glands of lower surface sparse to common but indistinct.

Inflorescence
90-160 mm; of monads, cymes, racemes, or panicles, terminal or axillary, pedicels 0.7-2.0 cm; extrafloral bracts leafy and pronounced when present but soon deciduous.

Bracteoles
6-7 mm, narrowly ovate to ovate, sparsely sericeous.

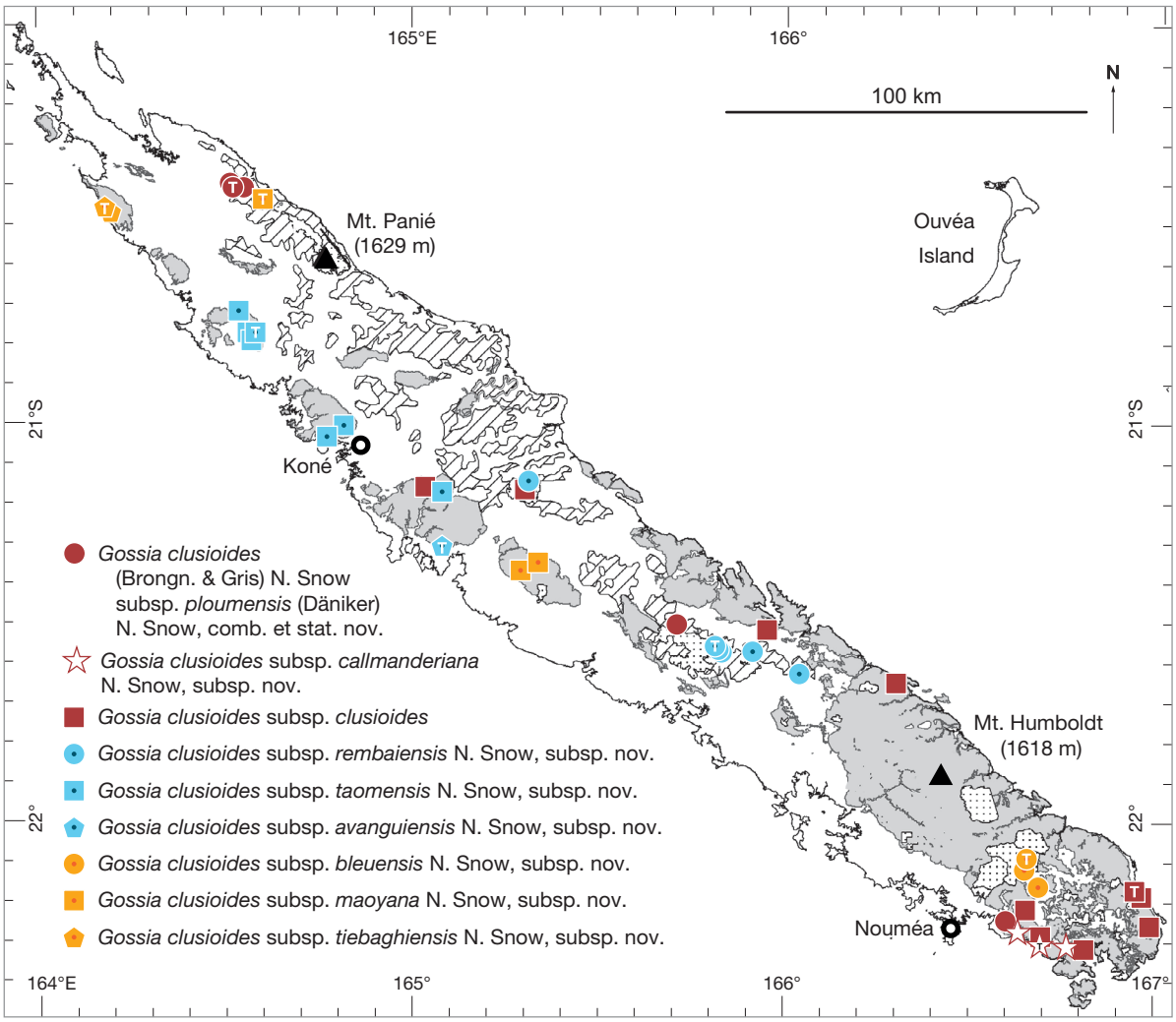

FIG. 7. — Distribution map for subspecies of *Gossia clusioides* (Brongn. & Gris) N. Snow.

Hypanthium
4-5 × 6-11 mm, campanulate, surface smooth, sparsely sericeous to sericeous (trichomes sometimes reddish at base); ovary apex glabrous.

Calyx
Lobes 5, 2.5-4.5 mm, broadly ovate to rounded, sericeous above (sometimes densely so), sparsely sericeous below, green.

Petals
9-11.5 × 7-9 mm, glabrous above, sericeous-tomentose below (trichomes reddish at base).

Filaments
6-8 mm; anther sacs 0.6-1.0 mm.

Style
Up to 9 mm, glabrous.

Fruits
7-17 × 7-15 mm, globular, base rounded to tapered, dark bluish-black; seeds 1-3.

REMARKS

Gossia clusioides has large flowers and small leafy bracts in the inflorescences that typically are soon caducous; the species also can be diagnosed by the strongly sulcate midveins on the upper leaf surface. It is one of several species in which the epidermis begins to crack into dark, irregularly rectangular flakes during the second year of growth.

Herbarium labels indicate that some members are slender and somewhat sparsely branched. Specimens with large (non-bullate) leaves might be confused with of *G. aphthosa*, but the flowers and fruits of *G. clusioides* are considerably larger.

The species has considerably more variation in leaf morphology than others of *Gossia* in New Caledonia. As treated here, *Gossia clusioides* comprises nine subspecies that are separated based primarily on differences in leaf dimensions and texture (smooth versus bullate), edaphic preferences, and often (but not always) geographic isolation. Some sites, however, have more than one subspecies. Much additional fieldwork is needed to further test the distinctness of the subspecies and to better understand their differences and distributions, especially given that these entities may be undergoing speciation.

KEY TO THE SUBSPECIES OF *GOSSIA CLUSIOIDES* (BRONGN. & GRIS) N. SNOW

1. Leaf blades moderately to strongly bullate 2
— Leaf blades flat (sometimes slightly bullate in subspp. *clusioides* and *taomensis*) 5

2. Mature leaves (6.5-)7.0-12.5 cm wide ..... *Gossia clusioides* subsp. *ploumensis* (Däniker) N. Snow, comb. et stat. nov.
— Mature leaves 3.5-6.5 cm wide 3

3. Leaves ovate to elliptic or broadly elliptic ..... *Gossia clusioides* subsp. *maoyana* N. Snow, subsp. nov.
— Leaves narrowly elliptic 4

4. Leaves 4-7 times longer than wide ..... *Gossia clusioides* subsp. *avanguiensis* N. Snow, subsp. nov.
— Leaves 2-3(-4) times longer than wide ..... *Gossia clusioides* subsp. *bleuensis* N. Snow, subsp. nov.

5. Leaves mostly elliptic to broadly elliptic or obovate (rarely narrowly elliptic in subsp. *clusioides*) 6
— Leaves narrowly elliptic 7

6. Leaf blades thickly coriaceous, upper surface often glossy, abaxially secondary veins often somewhat distinct, margin often strongly recurved nearly throughout; southwestern coast over ultramafics ..... *Gossia clusioides* subsp. *callmanderiana* N. Snow, subsp. nov.
— Leaf blades coriaceous, upper surface matte, abaxial secondary veins flush or distinct, margins flat to slightly recurved; across much of Grande Terre ..... *Gossia clusioides* subsp. *clusioides*

7. Leaves obovate to elliptic, apex obtuse or (usually at least slightly) retuse ..... *Gossia clusioides* subsp. *rembaiensis* N. Snow, subsp. nov.
— Leaves narrowly elliptic, apex obtuse to broadly acute 8

8. Petioles 2-7 mm long; leaves 3-6 cm long ..... *Gossia clusioides* subsp. *taomensis* N. Snow, subsp. nov.
— Petioles 8-20 mm long; leaves 9.5-17 cm long ..... *Gossia clusioides* subsp. *tiebaghiensis* N. Snow, subsp. nov.

Gossia clusioides subsp. *avanguiensis* N. Snow, subsp. nov. (Figs 7; 11A)

Similar to *Gossia clusioides* subsp. *bleuensis* subsp. nov. but with leaf blades 4-7 × longer than wide (vs 2-3[-4] × longer in *G. c.* subsp. *bleuensis* subsp. nov.), more strongly bullate, and occurring near the west central coast at about 400 m (vs subsp. *bleuensis* subsp. nov. in the southeast).

TYPUS. — **New Caledonia.** Grande Terre, North Prov. Poya: Avangui, 400 m, 3.VIII.1976, in low forest on rocky serpentine slope, *MacKee 30824* (holo-, P[P02089852]).

PARATYPUS. — **New Caledonia.** Grande Terre, North Prov. Poya: Avangui, 2.I.1976, *MacKee 30629* (NOU[NOU029543], P[P02089853]).

REPRESENTATIVE HERBARIUM SPECIMEN. — P02089852.

ETYOMOLOGY. — After Avangui, the type locality.

DISTRIBUTION, ECOLOGY AND PHENOLOGY. — Poya (Avangui) (Fig. 7); in low forests over ultramafics, to 400 m. Flowering confirmed only for March; fruiting confirmed only for January.

REMARKS

MacKee sometimes returned to the same specimen to collect flowers and fruits at different times, and the two specimens cited likely are from the same tree (P. Lowry pers. comm. 2015). The unvouchered photo (Fig. 11A), which almost assuredly is this taxon, is said to be from Näräja, between Ponérihouen and Ouaté, but I have been unable to confirm that location.

This subspecies, as presently known from vouchered collections, is a dense, multicaulous shrub of *c.* 1 meter. However, the non-vouchered digital images (Fig. 11A; see also http://endemia.nc/flore/fiche6365) of a larger shrub appears to represent this subspecies; its developing leaves remain stramineous to light maroon until they reach full size and become green.

Gossia clusioides subsp. *bleuensis* N. Snow, subsp. nov. (Figs 7; 8A; 10B)

Leaf blades strongly bullate, 4.0-8.0(-11.5) cm, narrowly elliptic. The inflorescence can be up 8.5 cm long, exceeding adjacent leaves. The growth form in profile often is slender.

TYPUS. — **New Caledonia.** Grande Terre, South Prov., Rivière Bleue reserve, forested slopes 300 m, 30.VII.1981, *McPherson 4001* (holo-, P[P00402735]; iso-, BISH[fragment], MO, NOU[NOU030915], PTBG, WELTU).

PARATYPI. — **New Caledonia.** Grande Terre, South Prov., Rivière Bleue, 22.II.1951, *Baumann-Bodenheim 10873* (P[P00402729]); Bon Secours, *Baumann-Bodenheim 11847* (P[P00402730]); Rivière Bleue, Mois de Mai, 23.VI.1951, *Baumann-Bodenheim 14045* (MO[MO-5163034], P[P00402727]); Forêt Faux Bon Secours, 9.V.1981, *MacKee 39042* (NOU[NOU029540], P[P02089862, P02089863]).

REPRESENTATIVE HERBARIUM SPECIMEN. — P02089863.

ETYMOLOGY. — From its occurrence in the vicinity of Rivière Bleue.

DISTRIBUTION, HABITAT AND PHENOLOGY. — Southeast Grande Terre (Fig. 7); forested slopes over ultramafics, 300-450 m. Flowering May and June; fruiting confirmed only for July to December.

REMARKS

Further fieldwork may reveal this as being the same taxon as *G. a.* subsp. *avanguiensis* subsp. nov., which is diagnosed primarily by its longer leaves, but which occurs much farther north.

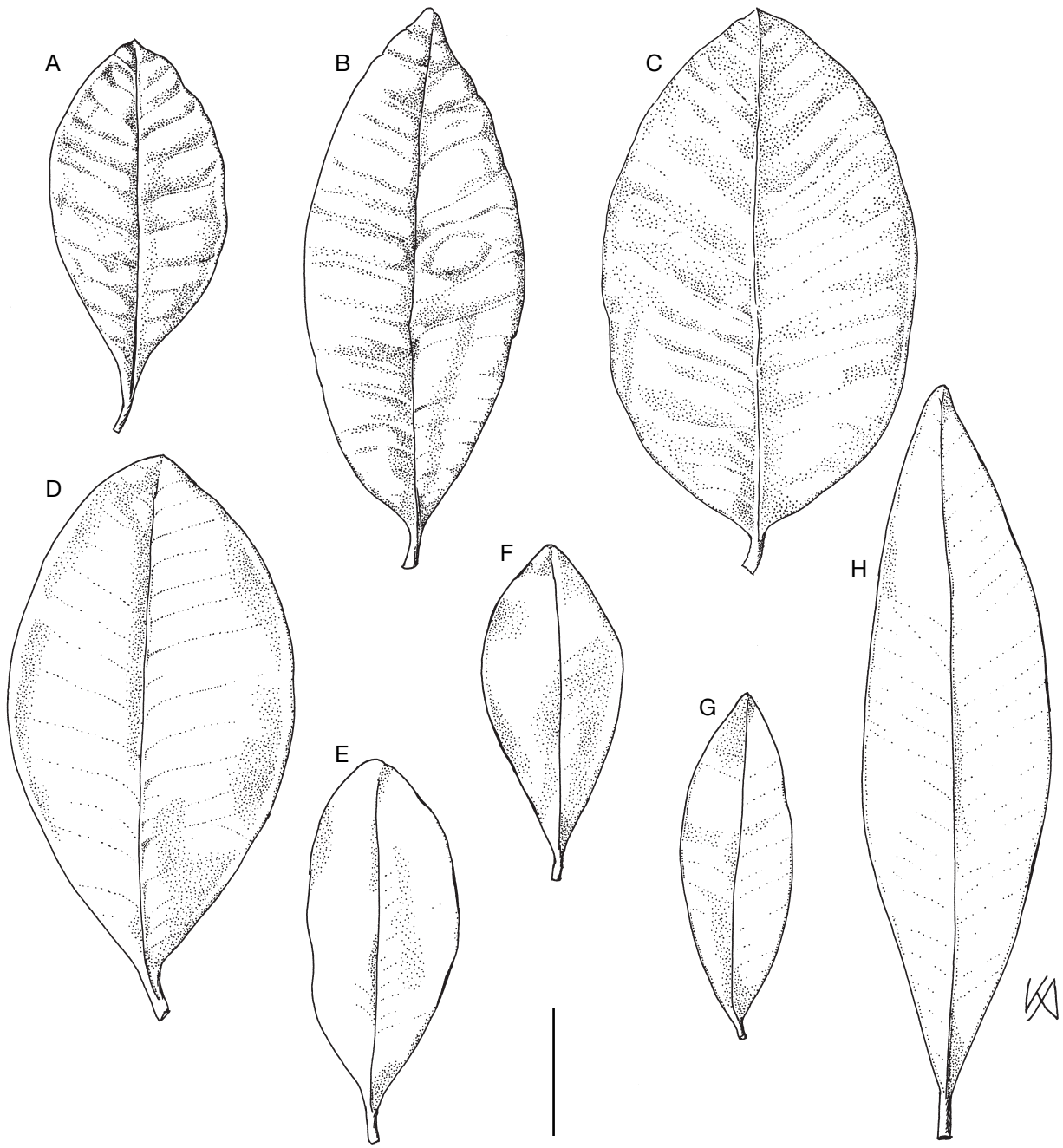

Fig. 8. — Typical leaf morphology for most subspecies of *Gossia clusioides* (Brongn. & Gris) N. Snow: **A**, *G. c.* subsp. *bleuensis* N. Snow., subsp. nov., with narrowly elliptic, bullate blades; **B**, *G. c.* subsp. *maoyana* N. Snow, subsp. nov., blades relatively narrow and bullate but longer than those of subsp. *bleuensis*; **C**, **D**, *G. c.* subsp. *callmanderiana* N. Snow, subsp. nov., blades elliptic and flat; **E**, *G. c.* subsp. *rembaiensis* N. Snow, subsp. nov.; **F**, *G. c.* subsp. *clusioides*; **G**, *G. c.* subsp. subsp. *taomensis* N. Snow, subsp. nov.; **H**, *G. c.* subsp. *tiebaghiensis* N. Snow, subsp. nov. Vouchers: **A**, *McPherson 4001* (BISH); **B**, *Dawson 16603* (WELTU)); **C**, *Jaffré 1275* (BISH); **D**, *Virot 1537* (BISH); **E**, *McPherson 5083* (BISH); **F**, *MacKee 25608* (NOU); **G**, *Veillon 4828* (NOU); **H**, *McPherson 3323* (NOU). Scale bar: 2 cm.

Gossia clusioides subsp. ***callmanderiana*** N. Snow, subsp. nov.
(Figs 7; 8C, D; 10A)

Leaf blades flat, thickly coriaceous, and often with a glossy adaxial surface; margin becoming recurved more or less throughout; secondary abaxial veins often prominent and projecting slightly.

Typus. — **New Caledonia.** Grande Terre, South Prov., Baie Ngo, 28.VII.1983, *Suprin 2221* (holo-, P[P00402738]; iso-, NOU[NOU053238], P[P00402752]).

Paratypi. — **New Caledonia.** Grande Terre, South Prov., Route de Prony, 17.XII.1973, *Jaffré 1197* (NOU[NOU029545], P[P00402724]); Région du Col de Plum, II.1974, *Jaffré 1275* (BISH[fragment], NOU[NOU029546], P[P00402731]); Plum, 18.V.1985, *MacKee 42596* (NOU[NOU029581], P[P05094060]); Plum, 30 m, 31.III.1986, *MacKee 43056* (P[P02089854]); Au-dessus de la Baie N'go, 4.II.1982, *Veillon 4813* (NOU[NOU029547], P[P05094308]); Rive Nord de la Baie N'go, 28.IV.1945, *Virot 1537* (BISH, P[P00402721, P00402748, P00402749], WELTU).

Representative herbarium specimen. — P02089854.

Etyomology. — In recognition of Martin Wilhem Callmander (1975-) of the Conservatoire et Jardin botaniques de la Ville de Genève (G), for his many collections and editorial commitment to expedite the publication of taxonomic novelties from New Caledonia (e.g., Snow *et al.* 2016a, b).

Distribution, ecology and phenology. — Vicinity of Baie Ngo and Plum (Fig. 7); in maquis over ultramafics, up to 50 m. Flowering March through July; fruiting confirmed only for February.

Remarks

Athough somewhat subtle on herbarium specimens, the leaf texture is thicker and the sheen of the adaxial surface is more glossy (reflective) than members of *G. a.* subsp. *bleuensis* subsp. nov. and *G. a.* subsp. *clusioides*, which also occur in the southeast.

Gossia clusioides subsp. *clusioides* (Figs 7; 8F)

Specimens examined. — **New Caledonia.** Grande Terre. North Prov. Col de Poro (Bota Mere), 10.II.2004, *Dagostini & Rigault 792* (NOU[NOU002967], P[P05121901]); Ponérihouen: Pente est du Mont Aoupinié, 500-700 m, 27.VI.1972 , *MacKee 25608* (BISH, NOU[NOU029590], P[P00402732]); Haute Néaoua-Ouen-Sieu, 500-600 m, 12.II.1970, *MacKee 21835* (NOU[NOU029589]); Kopeto, crête est du Mont Vert, 700 m, 24.VI.1973, *MacKee 26893* (P[P02089844]); Koné, Massif Koniambo, Creek Confiance, rive gauche, 21°02'07.85"S, 164°48'42.33"E, 100 m, 21.IX.2016, *Muzinger 7875* (*legit.* Scoptera) (MPU[MPU640696]). — South Prov., Bassin du Boulari, 17.V.1869, *Balansa 1490a* (A, P[P00402723], Z); Col de Mouirange, forêt Desmazure, 8.III.2005, *Dagostini 1040* (NOU[NOU009286]); Ngo Col, 100 m, 22.X.2004, *Dagostini 1296* (NOU[NOU019100]); À Yaté, 20.III.1916, *Franc 2084* (A, BISH, NOU[NOU029555], P[P00402728]); Kuébini, 2 m, 21.VI.1968, *MacKee 19007* ([NOU029583], P[P02089849]); Kuébini, 5.III.1971, *MacKee 23393* (NOU[NOU029582], P[P02089856, P02089857]); Yaté, Touaourou, 5 m, 21.XII.1986, *MacKee 43385* (NOU[NOU029579], P[P00402720]); Mt Nakada, *c.* 900 m, VI.1979, *Morat 6411* (P[P00462887]); Plaine de Kanala, 1861-1867, *Vieillard 2597* (P[P00402750]); Bois de la Plaine, Kanala, *Vieillard 2612* (P[P00402751]); Neuméníe, Mé Ouébo, *c.* 350 m, 18.XII.1981, *Veillon 4772* (NOU[NOU029554], P[P00402739], WELTU); Riv. Tara, 2.5-3 km N of Touaourou, 10-20 m, 18.VIII.1968, *Webster & Hildreth 14881* (DAV, GH, NSW, P). — *Ab loco. Balansa 1490* (P[P05093917]); *Petit 166* (P[P00402737]).

Representative herbarium specimen. — P02089856.

Distribution, habitat and phenology. — Across much of Grande Terre, sometimes near coast in southeast (Fig. 7); in maquis over ultramafics, 5-900 m. Flowering February to September; fruiting February to December.

Remarks

My concept of this subspecies has shifted significantly through time, rendering as outdated many prior annotations (some dating back to 2003), including some that were annotated as type specimens. Specimens at the southern tip of Grande Terre can have narrowly elliptic leaves (*MacKee 23393*).

Gossia clusioides subsp. *maoyana* N. Snow, subsp. nov. (Figs 7; 8B)

Trees or shrubs 3-4 m. Leaf blades slightly bullate, ovate to elliptic or broadly elliptic.

Typus. — **New Caledonia.** Grande Terre, North Prov., Nord Massif Ignambi, 600 m, 28.XI.1967, *Veillon 1514* (holo-, P[P00758089]; iso-, NOU[NOU030918]).

Paratypi. — **New Caledonia.** Grande Terre, North Prov., Mé Maoya, 780 m, 20.XI.1992, *Jaffré 3196* (NOU[NOU029543]); Mé Maoya, 500 m, 30.XI.1992, *Dawson WELTU 16603* (BISH[fragment], WELTU). — *Ab loco.*, *Balansa 1490* (P[P00402745]).

Representative herbarium specimen. — P00758089.

Etymology. — In reference to collections from Mé Maoya.

Distribution, habitat and phenology. — Mé Mayoa and Ignambi (Fig. 7); in dense but often low stature forests over ultramafics, 400-780 m. Flowering confirmed February to April; fruiting January through November.

Remarks

Additional sampling may reveal this to be the same as the nominal subspecies, although the latter occurs in the southeast. Some specimens, including the holotype, were annotated previously with a manuscript infraspecific epithet of "orientalis".

Gossia clusioides (Brongn. & Gris) N. Snow subsp. *ploumensis* (Däniker) N. Snow, comb. et stat. nov. (Figs 7; 9; 10D)

Differing from other subspecies by the relatively large, elliptic, and moderately to strongly bullate leaf blades.

Austrobaileya 8: 180 (2010). — *Eugenia ploumensis* Däniker, *Beiblatt zur Vierteljahrsschriftder Naturforschenden Gesellschaft in Zürich,* Beibl. 19, 78: 298 (1933). — *Austromyrtus ploumensis* (Däniker) Burret, *Notizblatt des Botanischen Gartens und Museums zu Berlin-Dahlem* 15: 504 (1941). — Typus: **New Caledonia.** Grande Terre, South Prov., Ploume, 9.II.1926, *A.U. Däniker 2807* (holo-, Z[Z-000016108]; iso-, Z[Z-000016109]).

Distribution, habitat and phenology. — Across much of Grande Terre (Fig. 7); in forests; *c.* 300-600 m. Flowering August through March; fruiting confirmed from December through June.

Specimens examined. — **New Caledonia.** Grande Terre, North Prov. Silva Peala, ad occidentem Pouebo, 500-600 m, 6.V.1968, *Bernardi 12606* (P[P00402719]; Mount Mandjelia and slopes, 540 m, 20°24'19"S, 164°31'01"E, *Craven 15027 et al.* (CANB, n.v.; P[P02091556]); Forêt de Tende (Haute Diahot), exploitation forestière Frouin, 500-600 m, 12.XI.1967, *MacKee 17534* (NOU[NOU029693], P[P02088630]); Forêt de Tende (Haute Diahot), 500-600 m, 17.IX.1967, *MacKee 17550* (P[P02089850]); Haute Diahot: Exploitation Forestière, Frouin, Forêt Tendé, 31.III.1969, *MacKee 20453* (NOU[NOU05323]); Haut Diahot, Tendé, 600 m, 30.VI.1982, *MacKee 40567* (MO[MO-6751044], NOU[NOU029690], P[P02089872]); Road leading up to Mt Mandjélia from Ouégoa, *c.* 650 m, 11.VIII.2003, *Snow 9215 et al.* (ASU, BISH, BRI, CANB, KSP[KSP016939], MO, NOU[NOU00683], NY, P[P00459485], WELTU). — South Prov. Mt Mi (= Do Mt sentier Ouanémie [Hopkins & Bradford 2009: appendix 2]), 20.II.1869, *Balansa 1490a* (P[P00402725,

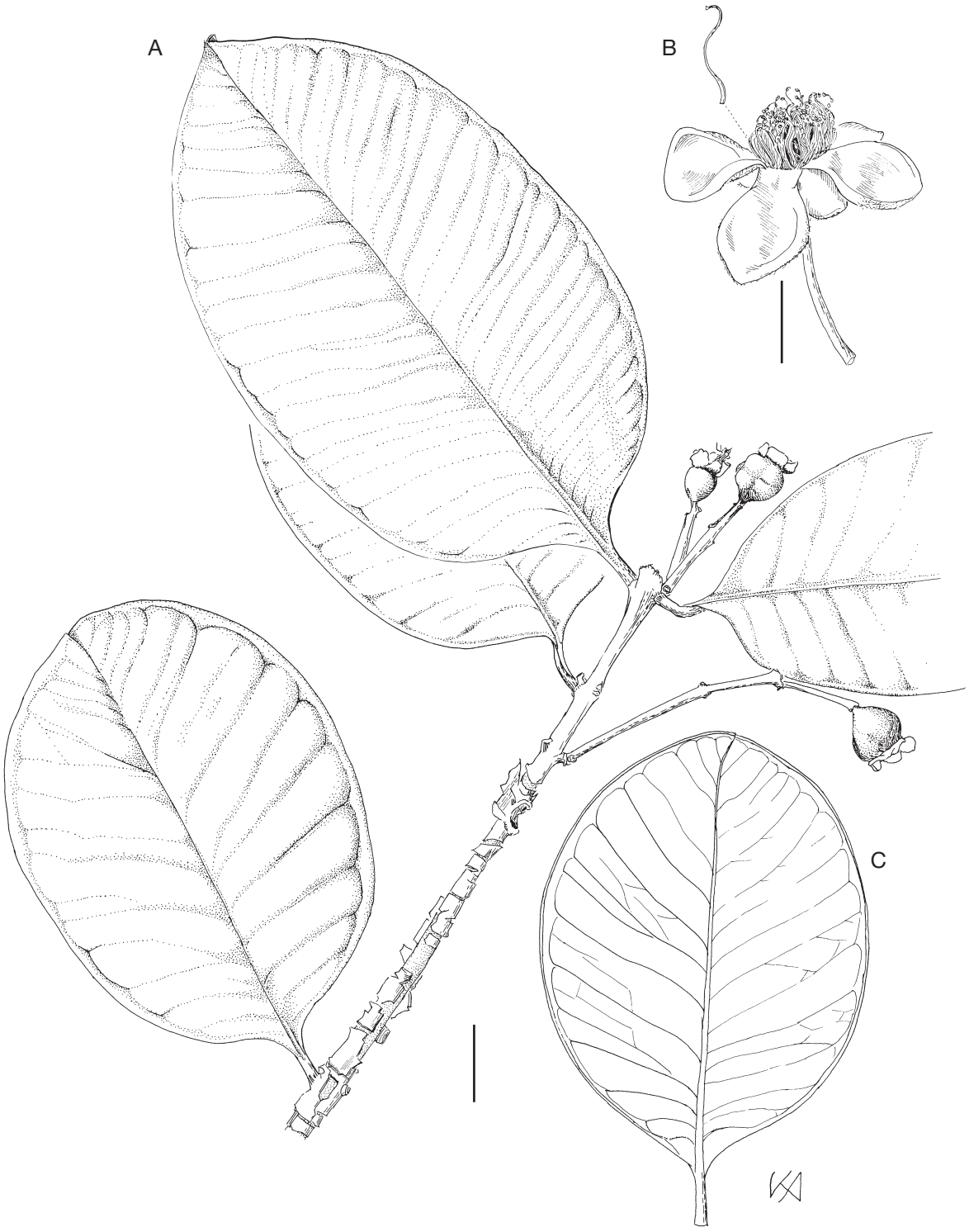

Fig. 9. — *Gossia clusioides* (Brongn. & Gris) N. Snow subsp. *ploumensis* (Däniker) N. Snow, comb. et stat. nov., showing peeling and cracking bark of branchlets. Voucher: *Snow 9215*, BISH (sheet 3 of 3). Scale bars: A, C, 2 cm; B, 1 cm.

P06669014]); Entre St Louis et Ounia, 15.I.1869, *Balansa 1490bis* (P[P00402726, P00402753, P00402754]; Piste du pont des Japonais, 166°42'40"E, 22°15'31"S, 4.II.2007, *Munzinger 4119 et al.* (MO n.v., NOU n.v., P[P05321122, P05321125, P05321126], WELTU).

Representative herbarium specimen. — P05321125.

Remarks

This subspecies has large, elliptic and moderately to strongly bullate leaf blades. It occurs from the north to south near the coasts, but I am unable to discern consistent differences between the northern and southern populations. Previously annotated specimens of this subspecies may bear the manu-

Fig. 10. — Living specimens of *Gossia clusioides*: **A**, *G. c.* subsp. *callmanderiana* N. Snow, subsp. nov. *vel aff.*; **B**, *G. c.* subsp. *bleuensis* N. Snow, subsp. nov. *vel aff.*; **C**, *G. c.* subsp. *ploumensis* (Däniker) N. Snow, comb. et stat. nov.; **D**, *G. c.* subsp. *ploumensis* comb. et stat. nov. *vel aff.*, but with larger and more prominently bullate leaves than normal and possibly representing an undescribed taxon. Vouchers: A, ©Hervé Vandrot, taken at Cascade la Pandanas-Koniambo in 2010 (http://endemia.nc); **B**, © Christian Létocart, taken at Yaté; **C**, ©Daniel & Irène Létocart, taken at Napoérédjeine in 2007; **D**, ©Jean-Louis Ruiz, taken at Pont des Japonais in 2005 (http://endemia.nc).

script names *Gossia* "grandibullata" or *Gossia clusioides* subsp./var. "grandibullata". Unvouchered photos (Fig. 10D) of a possible specimen of this subspecies taken by J.-L. Ruiz near the River de Pirogues showed honeybees (*Apis* sp.) pollinating the flowers.

Gossia clusioides subsp. *rembaiensis* N. Snow, subsp. nov. (Figs 7; 8E)

Leaf blades flat; differing from other subspecies by its attenuate base of leaf and retuse apex.

Typus. — **New Caledonia.** Grande Terre, South Prov. Forested slopes near Mt Rembai, south of Col d'Amieu, *c.* 500 m, 7.XI.1982, *McPherson 5083* (holo-, P[P00402736]; iso-, BISH[fragment], MO[MO-3218923, MO-2907911], NOU[NOU029586, NOU67076]).

Paratypi. — **New Caledonia.** Grande Terre, North Prov. Mt. Rembai, 450 m, 7.XI.1982, *Dawson WELTU16591* (WELTU); Contrefort Nord-ouest du Mt. Canala, 700-800 m, 28.VII.1971, *MacKee 24011* (P[P02089847]); Ponerihouen, Pente est du Mont Aoupinie, 500 m, 27.VII.1974, *MacKee 29024* (NOU[NOU029577], P[P02089848]); Mont Pembai, 700 m, 31.V.1990, *MacKee 44916* (NOU[NOU029580], P[P02089858]; Mt Nakada, vers 900 m, VI.1979, *Morat 6411* (P[P00462887]).

Representative herbarium specimen. — P00402736.

Distribution, habitat and phenology. — Inland mountains on Grande Terre (Fig. 7); humid forested slopes over schistes or graywackes, 450-900 m. Flowering November through July; fruits not seen.

Remarks

Indicated as being common in some places locally (*MacKee 44916*). The flowers are said to have a spicy-fragrant smell (*McPherson 5083*). MacKee (*MacKee 29024*) indicates the local name as being "tu".

Gossia clusioides subsp. *taomensis* N. Snow, subsp. nov. (Figs 7; 8G; 11B)

Leaf blades flat to slightly bullate, narrowly elliptic to elliptic, 3-6 cm, less than 3 times as long as wide; petioles 2-7 mm long. Inflorescences 3-7 cm long.

Typus. — **New Caledonia.** Grande Terre, North Prov., Mont Taom: Crête Est, 1000 m, 13.VII.1979, *MacKee 37148* (holo-,

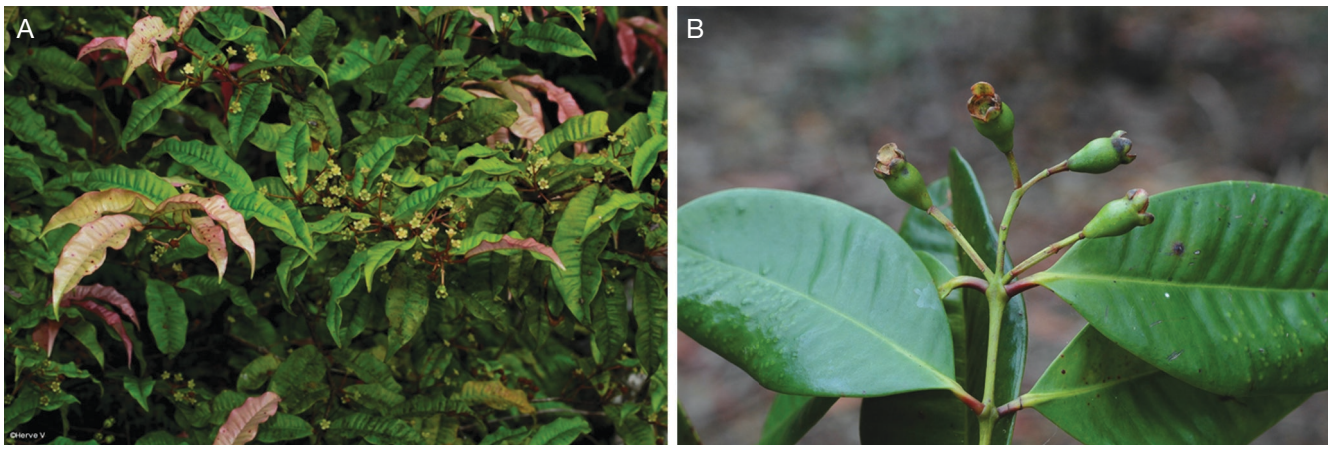

FIG. 11. — Living specimens of *Gossia clusioides*: **A**, *G. c.* subsp. *avanguiensis* N. Snow, subsp. nov. *vel aff.*; **B**, *G. c.* subsp. *taomensis* N. Snow, subsp. nov. Vouchers: **A**, ©Hervé Vandrot, taken at Naraja entre Ouaté et Ponérihoen (http://endemia.nc); **B**, *Munzinger 3015*; photo by J. Munzinger.

P[P00402734]; iso-, BISH, NOU[NOU029551, NOU029585], WELTU).

PARATYPI. — **New Caledonia.** Grande Terre, North Prov. Base sud du Koniambo, Riv. Rouge, maquis sur terrain rocheux serpentineux, 50 m, 23.III.1969, *MacKee 20343* (P[P02089846]); Base sud de Koniambo (as « Koriambo »), Rivière Rouge, 50-100 m, 15.IV.1972, *MacKee 25301* (NOU[NOU029552], P[P02089983]; Taom, Mt. Homédéboa, 800-900 m, 16.X.1969, *MacKee 20967* (NOU[NOU029587], P[P02089845]); Mont Paeoua, 900-1000 m, VI.1973, *MacKee 26887* (NOU[NOU029584], P[P02089843]); Base du Koniambo, Rivière Pandanus, 3.X.2005, *Munzinger & Swenson 3015* (P[P04885463]); Massif du Taom, 900 m, 24.III.1982, *Veillon 4828* (NOU[NOU029585, NOU029551], WELTU).

REPRESENTATIVE HERBARIUM SPECIMEN. — P00402734.

DISTRIBUTION, HABITAT AND PHENOLOGY. — Peaks of northwest coast (Koniambo and Massif du Taom; Fig. 7); in maquis over ultramafics, *c.* 50-1000 m. Flowering confirmed only for March; fruiting July through October.

REMARKS

Evidently rare near the base of Koniambo. This subspecies has leaves similar to, but of significantly smaller dimensions, than those of *G. c.* subsp. *tiebaghiensis* subsp. nov.

Gossia clusioides subsp. ***tiebaghiensis*** N. Snow, subsp. nov. (Figs 7; 8H)

Leaf blades flat, 9.5-18.0 × 3.0-6.5 cm, narrowly elliptic. Inflorescence 5.0-6.5 cm.

TYPUS. — **New Caledonia.** Grande Terre, North Prov., Dôme de Tiébaghi (Pente ouest), 400 m, 25.IV.1976, *MacKee 31129* (holo-, P[P00402733]; iso-, NOU[NOU030917]).

PARATYPI. — **New Caledonia.** Grande Terre, North Prov., Pente sud-ouest du Dôme de Tiebaghi, 300-500 m, 9.V.1966, *MacKee 14935* (BISH, CHR n.v., MO, P[P02089851], WELTU n.v.); Massif de Tiébaghi, *c.* 12 air-km NW of Koumac, 8.XI.1980, *McPherson 3323* (BISH, BRI n.v., MO[MO-3225918], NOU[NOU029550]).

REPRESENTATIVE HERBARIUM SPECIMEN. — P00402733.

ETYMOLOGY. — From the type locality.

DISTRIBUTION, HABITAT AND PHENOLOGY. — Massif de Tiébaghi (Fig. 7); in creekside forests and degraded maquis over ultramafics, *c.* 300-500 m. Flowering April; fruiting April through November.

Gossia colnettiana (Guillaumin) N. Snow (Figs 6; 12A-D)

Austrobaileya 8: 180 (2010). — *Eugenia colnettiana* Guillaumin, *Mémoires du Muséum national d'Histoire naturelle, Paris*, sér. B, *Bot.* 8: 242 (1962). — Typus: **New Caledonia.** Grande Terre, North Prov., Mt Colnett, 1370 m, 13.IX.1951, *Hürlimann 1973* (holo-, P[P00602541]; iso: Z[Z-000050851]).

ETYMOLOGY. — Based on the type locality.

DISTRIBUTION, HABITAT AND PHENOLOGY. — Mt Colnett and Mt Panié (Fig. 6); forests and forested slopes, presumably over metamorphics, 1000-1500 m. Flowering September through November; fruiting confirmed for early May, but likely extending into mid June or longer.

SPECIMENS EXAMINED. — **New Caledonia.** Grande Terre, North Prov. Mt. Colnett, 1000 m, 27.X.2003, *McPherson 18973 et al.* (MO); Mt. Colnett, forested eastern slopes, 1000 m, 29.X.2003, *McPherson 19021* (MO); *ibid. loco*, 29.X.2003, *MacKee 19062* (MO); *ibid. loco*, 1250-1500 m, 31.X.2003, *McPherson 19108* (BISH, KSP[KSP004707], MO, NOU[NOU004355]); Mont Panié, 20°35'09.96"S, 164°46'14.99"E, 1300 m, 5.V.2007, *Munzinger 4337 et al.* (NOU[NOU21487], P[P06668691]).

REPRESENTATIVE HERBARIUM SPECIMEN. — P06668691.

DESCRIPTION

Shrubs or trees

1-5 m.

Branchlets

Terete, surface smooth; internodes > 5 mm.

Leaves

Coriaceous, 2 per node; petioles 2-2.8 mm, terete; blades 2.0-6.5 × 1.2-3.5 cm, elliptic, base rounded, surface flat, margin

flat to somewhat revolute, apex obtuse to slightly acute, midnerve above sulcate, secondary veins above flush, oil glands of lower surface common, sometimes faint.

Inflorescence
(2.0-)3.5-7.5 cm, of monads, simple cymes, or few-flowered racemes, terminal or axillary along upper nodes; pedicels 5-30 mm; extrafloral bracts leafy if present.

Bracteoles
c. 3.5 mm, narrowly elliptic to narrowly obovate, glabrescent to sparsely sericeous.

Hypanthium
Campanulate, 4-5 × 4.5-5 mm, sometimes slightly ribbed, more or less sericeous; ovary apex hairy.

Calyx
Lobes 5, 3.5-5 mm, broadly ovate, sparsely ciliate on margins, glabrous above, glabrous to sparsely sericeous below, greenish-white (in vivo).

Petals
8-13 × 6-8 mm, glabrous above and below, minutely ciliate apically.

Filaments
8-14 mm; anther sacs 0.6-0.8 mm.

Style
11-16 mm, sparsely hairy at base.

Fruit
Not seen but said to be greenish when young (e.g., *Munzinger 4337*).

Remarks
The species closely resembles *G. kuakuensis,* but the latter has a glabrous hypanthium and occurs from 100-600 m in areas farther west or south, whereas *G. colnettiana* has a sericeous hypanthium and occurs at 1000 m or above.

Gossia conduplicata N. Snow, sp. nov.
(Figs 6; 12E-G)

Resembling *Gossia diversifolia* except that much to most of the blade itself is conduplicate, and it lacks the winged branchlets of *G. diversifolia*.

Typus. — **New Caledonia.** Grande Terre, North Prov., Poindimié, 165°19'59.988"E, 20°56'36.996"S, 4.VIII.1967, *MacKee 17222* (holo-, P[missing]; iso-, P[P00781068], BISH[fragment], NOU[-NOU029074], WELTU).

Representative herbarium specimen. — P00781068.

Etymology. — In reference to the partially to strongly folded (conduplicate) leaf blades.

Distribution, habitat and phenology. — Known only from the type collection at or near Poindimié (Fig. 6) in humid forests at 50 meters. Flowering unknown; fruiting in April.

Description
Shrubs
To 3 m.

Branchlets
Terete; internodes > 5 mm.

Leaves
Coriaceous, 2 per node; petioles 1.5-2.5 mm, flattened to broadly sulcate above; blades 2.0-3.0 × 1.2-2.0 cm, ovate, base rounded but conspicuously conduplicate above petiole (up to or more than half the length), surface moderately to strongly undulate, apex acute, midnerve above flush to slightly sulcate, secondary veins not raised above, oil glands absent from lower surface.

Inflorescence
A monad or simple cyme, axillary and terminal, sometimes nodding apically; extrafloral bracts absent.

Bracteoles
c. 1 mm, narrowly elliptic, glabrous.

Hypanthium
c. 3 × 3 mm, campanulate, surface smooth, glabrous.

Calyx
Lobes 4(-5), 1.2-2.2 mm, broadly rounded, glabrous above and below, green.

Petals
Unknown.

Filaments
Not seen, estimate of *c.* 80.

Style
Not seen; ovary apex sparsely hairy.

Fruit
4.5-5.5 × 4.5-5.5 mm, globular, base rounded, green (immature) to red (mature); seed 1.

Remarks
This poorly known species is diagnosed by its strongly conduplicate leaves with undulate margins, and efforts to relocate it should be a high priority. The calyx lobes in fruit are reflexed in the one known specimen, unlike the more common condition of ascending to erect lobes. The similar species *G. diversifolia* has winged branchlets. *Gossia conduplicata* sp. nov. differs from *G. bourailensis* sp. nov. by its more undulate leaf margin and narrowly acute leaf apex. The base of the leaf blade in *Gossia katepahiensis* can be conduplicate, but only slightly so. The type specimen of *Gossia diversifolia* was collected from Balade, farther north along the eastern coast from Poindimié, the one known locality of *G. conduplicata* sp. nov. Further study is needed to better understand the differences of these two taxa.

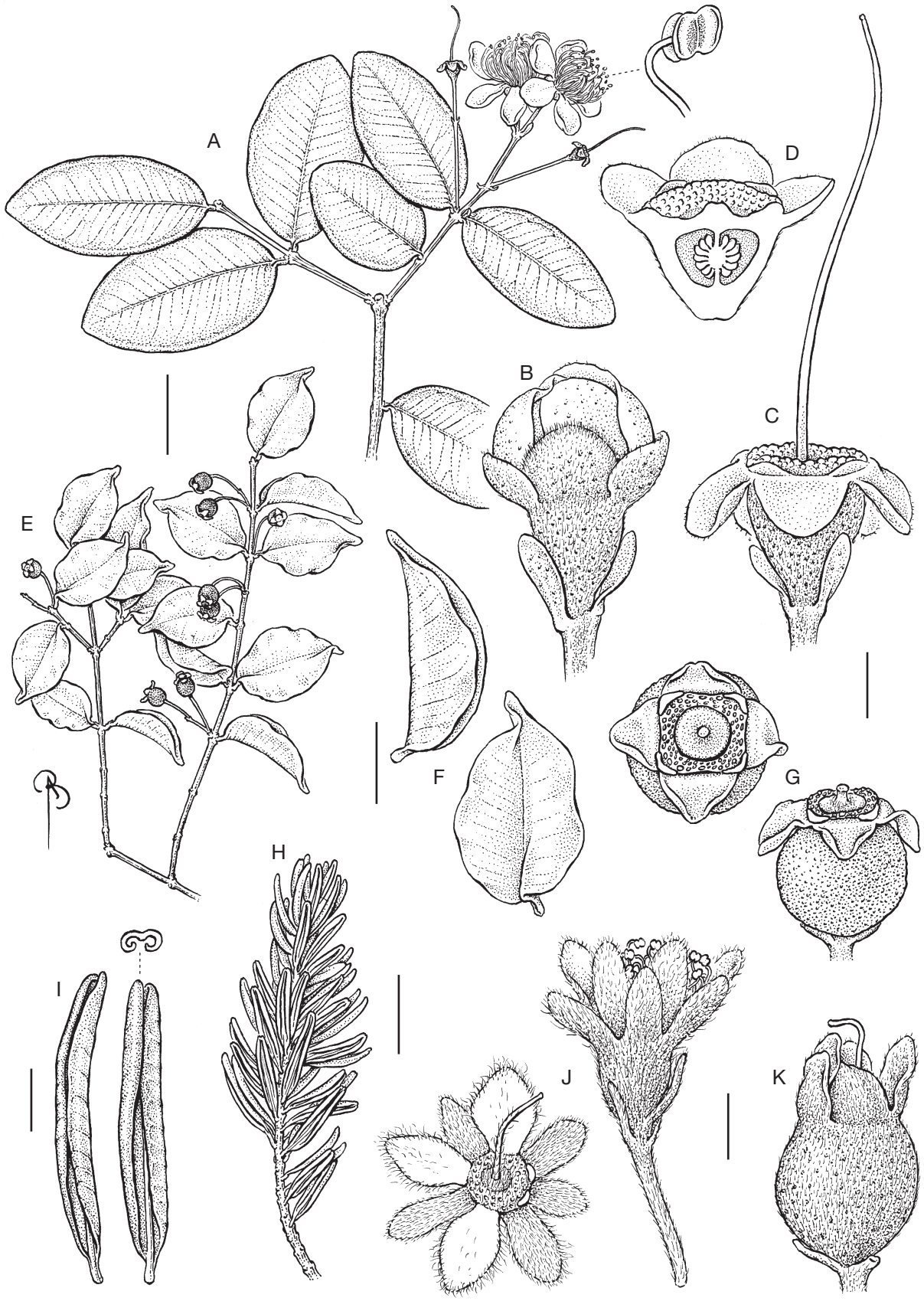

FIG. 12. — **A**-**D**, *Gossia colnettiana* (Guillaumin) N. Snow: **A**, branch and inflorescence; **B**, bracteoles and flower bud; **C**, flower minus petals and stamens; **D**, longitudinal section through flower showing bilocular ovary with axile placentation; **E**-**G**, *Gossia conduplicata* N. Snow, sp. nov.: **E**, branch with inflorescences; **F**, leaves (lateral (**left**) and dorsal (**right**) views); **G**, immature fruit views, apical (**left**) and lateral (**right**); **H**-**K**, *Gossia conspicua* (Vieill. ex Guillaumin) N. Snow, comb. nov.: **H**, branch with dense leaves and short internodes; **I**, strongly recurved leaf blades; **J**, flower (apical view minus two petals at left), lateral view (**right**); **K**, immature fruit. Vouchers: **A**-**C**, *MacKee 19108* (BISH); **D**, *Jaffré 3228* (NOU); **E**-**G**, *MacKee 17222* (NOU); **H**, **I**, **K**, *Veillon 5958* (NOU); **J**, *MacKee 5328* (P). Scale bars: A, E, 2 cm; B-D, G, J, K, 2 mm; F, 1 cm; H, I, 5 mm.

Gossia conspicua (Vieill. ex Guillaumin) N. Snow, comb. nov. (Figs 12H-K; 14)

Myrtus conspicua Vieill. ex Guillaumin, *Bulletin de la Société botanique de France* 85: 631 (1939). — *Austromyrtus conspicua* (Guillaumin) Burret, *Notizblatt des Botanischen Gartens und Museums zu Berlin-Dahlem* 15: 505 (1941). — *Gossia alaternoides* (Brongn. & Gris) var. *conspicua* (Vieill. ex Guillaumin) N. Snow, *Austrobaileya* 8: 180 (2010). — Typus: **New Caledonia.** Grande Terre, South Prov., Montagne de Ouatendé près Gatope, *E. Vieillard 2618* (holo-, P[P00602574]; iso-, G[G00341336, image seen], GH[GH00255460], P[P00462848, P00462849]).

Representative herbarium specimen. — P00602574.

Etymology. — Derivation uncertain.

Distribution, habitat and phenology. — Southeast on Grande Terre (Fig. 14) in maquis over ultramafics, *c.* 800-1350 m, and from the northwest at Oua Tilou and Point d'As; flowering December to May; fruiting confirmed January through November.

Specimens examined. — **New Caledonia.** North Prov., Vallée supérieure de la Riv. Voh, 24.IV.1951, *Baumann-Bodenheim 12105* (P[P00462818], US, Z); Versant N de l'Oua Tilou, 14.IV.1951, *Guillaumin & Baumann-Bodenheim 12361* (P[P00462819], RSA, US, Z); Slopes of Mt Koniambo, 400-800 m, 31.III.1956, *MacKee 4264* (P[P00462839]); Mt. Koniambo, 400 m, 5.I.1961, *MacKee 7965* (CANB, P[P00462840], US); Crête Sud du Mont Taom, 1000 m, 31.VII.1981, *MacKee 39391* (NOU[NOU028914], P[P00462842]). — South Prov., Sommet W du Mt. Humboldt, 1400 m, 21.IX.1951, *Baumann-Bodenheim 15430* (A, BRI, P[P00459521], US, Z); Mont Oua tendé, 1868, *without collector*, (P[P00462846]); Crête de la Montagne des Sources, 8.III.1951, *Hürlimann 1002* (A, P[P00462824], US, Z); Sommet Point d'As, 19.XI.1971, *Jaffré 535* (NOU[NOU028908], P[P00462830]); Crête de la Montagne des Sources, 1000 m, 13.III.1951, *MacKee 2237* (P[P00462836]); Plateau below Montagne des Sources, 800 m, 23.IX.1956, *MacKee 5328* (L, P[P05221714]); Mont Kouakoué, south of summit, forest above creek, 21°57'46"S, 166°32'06"E, 1200 m, 9.V.2006, *McPherson 19407 et al.* (KS-P[KSP004706], MO, NOU[NOU017142], P[P06668975]); Mont Kouakoué, 1250-1350 m, 30.IV.2006, *Pillon 396 et al.* (MO[MO-04860792], NOU[NOU012051], P[P06668688]); Mont Kouakoué, 21°58'1"S, 166°32'34"E, 1044 m, 12.I.2002, *Tronchet 604* (MO[MO-04796930], NOU[NOU004501], P[P00354719]).

Description

Shrubs
0.2-1.5 m.

Internodes
Mostly < 5 mm near tips of branchlets.

Branchlets
Terete, shortly tomentose on emergence but becoming increasingly glabrous.

Leaves
Stiffly coriaceous, 2-4 per node; petioles 1.5-3.1 mm, sulcate above throughout; blades (1.5-)2.0-3.1 cm, broadly linear to narrowly elliptic or narrowly obovate, base cuneate, margin strongly recurved throughout, apex retuse, midnerve above sulcate proximally becoming flush distally, the secondary (and less frequently) tertiary veins somewhat raised, oil glands of lower surface present, somewhat sparse and obscure.

Inflorescence
Less than 1 cm (including flower), pedicels 3.5-6.0 mm, monads axillary, extrafloral bracts absent.

Bracteoles
2.6-4.0 mm, linear, soon deciduous.

Hypanthium
3-4 mm, obconic, smooth, lanate; ovary apex indumentum unknown.

Calyx
Lobes 5, 1.6-2.1 mm, broadly triangular to narrowly oblong, lanate. Petals and stamens not seen.

Style
c. 3 mm (material scant), hairy proximally.

Fruits (material scant)
5-6 mm, globose, base rounded, green becoming pale purple to blackish; seeds (only 1 seen) 1 per fruit, *c.* 3.4 mm.

Remarks
The size, shape, texture, strong marginal recurvation, and emergent indumentum of the young leaves of *Gossia conspicua* comb. nov. most closely resemble *Gossia virotii* (which see, for details). Although subtle, the nodes can be somewhat swollen, thus resembling small platforms from which the petioles arise (e.g., *Tronchet 604*). One specimen with atypically narrow leaf blades (*MacKee 39391*) resembles *Gossia virotii*.

Gossia diversifolia (Brongn. & Gris) N. Snow (Figs 2; 6; 13A-D)

Austrobaileya 8: 180 (2010). — *Eugenia diversifolia* Brongn. & Gris, *Bulletin de la Société botanique de France* 12: 180 (1865). — *Myrtus diversifolia* (Brongn. & Gris) Guillaumin, *Bulletin de la Société botanique de France* 85: 631 (1938). — Typus: **New Caledonia.** Grande Terre, North Prov. Circa Balade, *Vieillard 476* (lectotype designated by Snow & Veldkamp 2010: 180); second-stage lectotype, here designated, *Vieillard 476* (P[P00462912]): epitype, here designated, *Pancher s.n.* (P[P00462909], and see comments below).

Myrtus flavida Schltr., *Botanische Jahrbucher für Systematik* 40 (3): Beibl. 92: 30 (1908), **syn. nov.** — Typus: **New Caledonia.** South Prov., *Le Rat 2003* (type-, B? n.v.).

Etymology. — Derived from the Latinization of "diversely leaved" by the authors in the protologue.

Distribution, habitat and phenology. — Eastern coast of Grande Terre and locally common around Baie de Tina (Fig. 6); in sclerophyllous forests among hills, sometimes behind mangroves, on black clays or soils derived from schists or calcareous schists; 5-100 m. Flowering December through May; fruiting December through October.

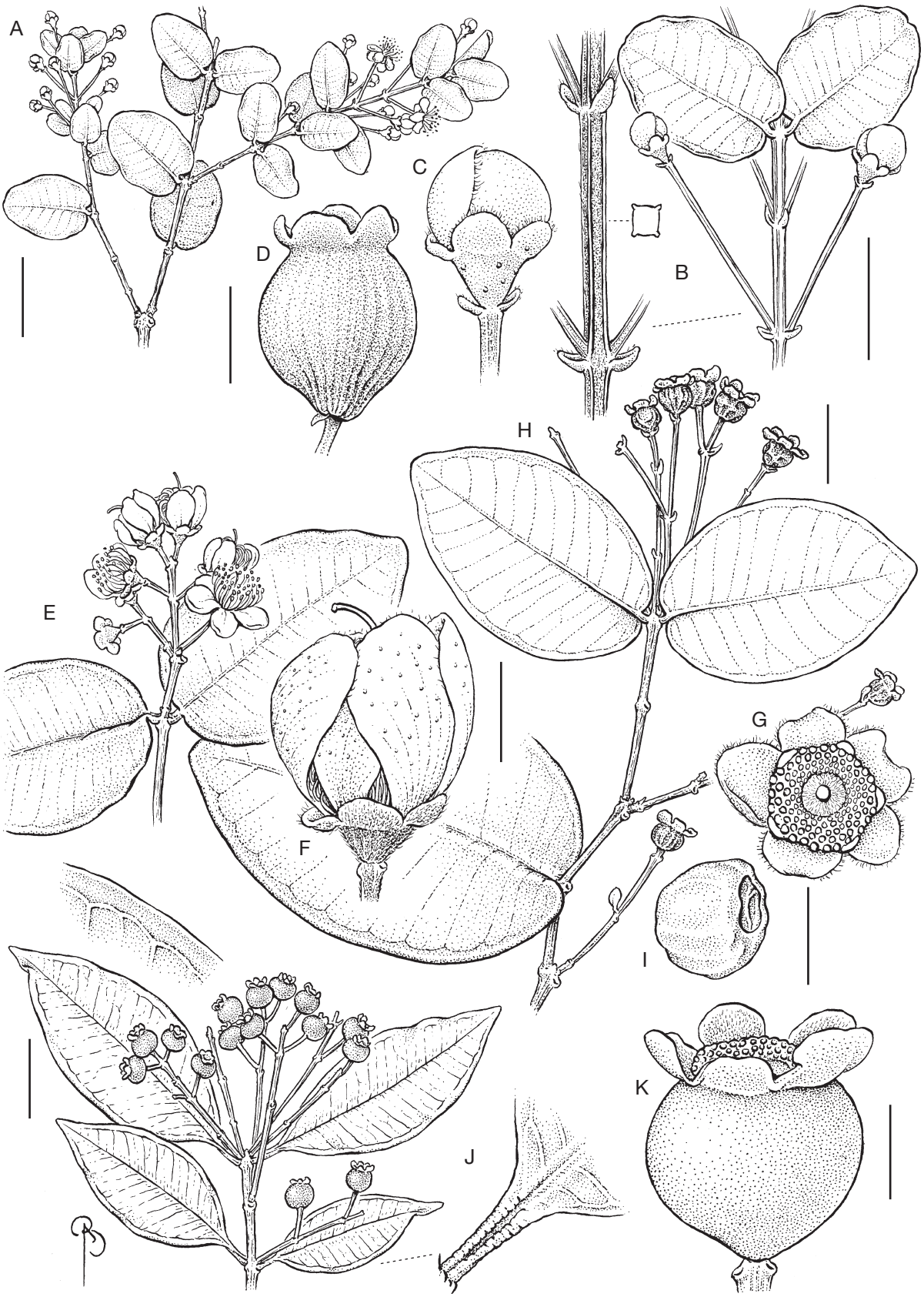

FIG. 13. — **A**-**D**, *Gossia diversifolia* N. Snow, sp. nov.: **A**, branch with flowers; **B**, detail of branchlet with quadrangular-winged young stems; **C**, flower in bud; **D**, immature fruit; **E**-**I**, *Gossia aphthosa* (Vieill. ex Brongn. & Gris) N. Snow subsp. *longipedunculata* N. Snow & Munzinger, subsp. nov.: **E**, leaves and terminal inflorescence; **F**, flower detail prior to anthesis; **G**, apical view of flower with staminal disk (petals and stamens removed); **H**, branch with leaves and inflorescence; **I**, maturing fruit. **J**, **K**, *Gossia kaalaensis* N. Snow, sp. nov.: **J**, branch with inflorescences, petiole (adaxial view) to right, raised adaxial leaf venation near margin (enlarged at upper left); **K**, immature fruit. Vouchers: **A**-**C**, *MacKee 43897* (NOU); **D**, *Jaffré 3228* (NOU); **E**-**G**, *MacKee 26628* (NOU); **H**-**I**, *MacKee 25749* (NOU); **J**, **K**, *McPherson 2551* (P). Scale bars: A, J, 2 cm; B, 1 cm; C, D, K, 3 mm; E-G, I, 5 mm; H, 2 mm.

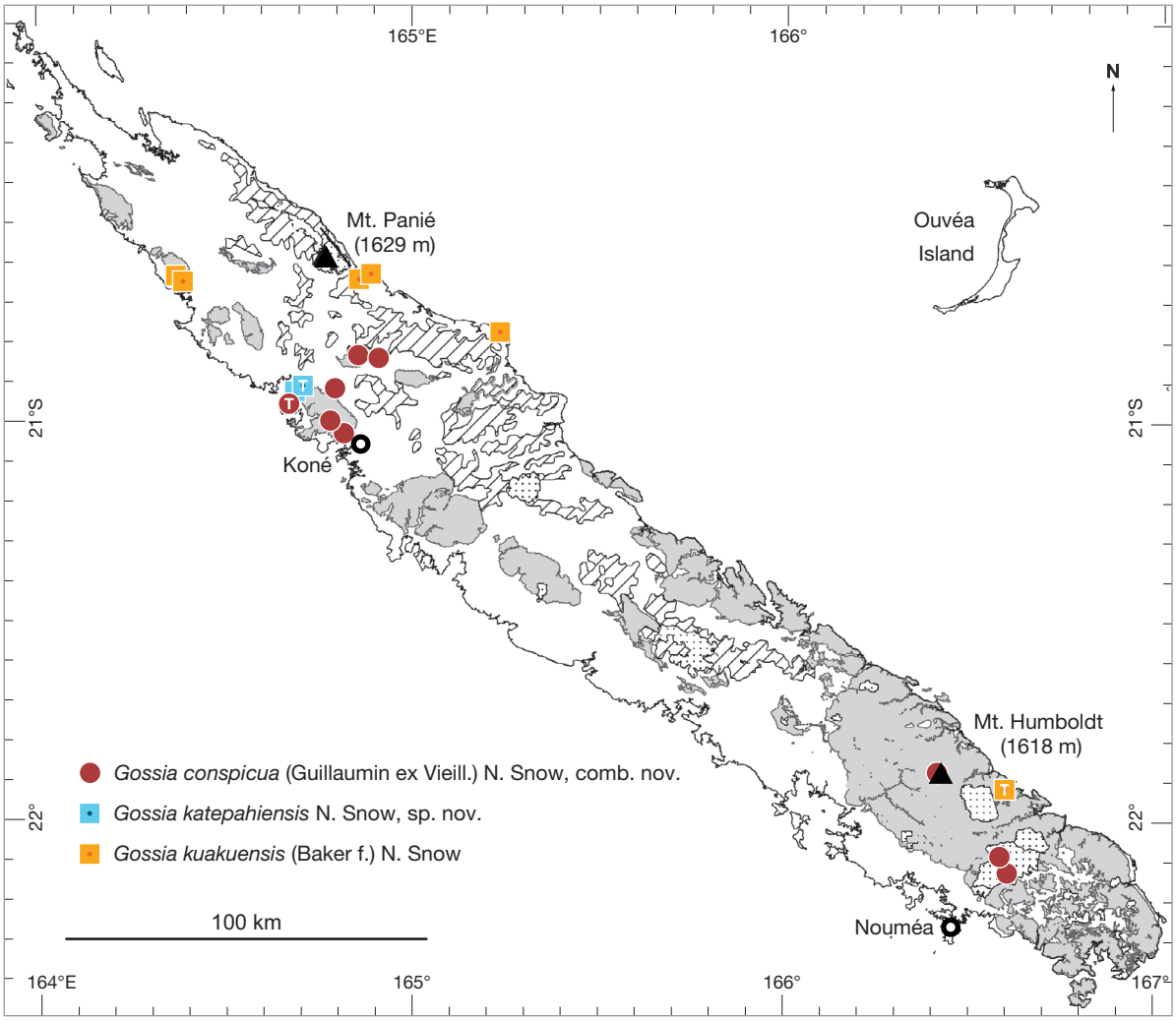

Fig. 14. — Distribution maps of *Gossia conspicua* (Guillaumin ex Vieill.) N. Snow, comb. nov., *G. katepahiensis* N. Snow, sp. nov., and *G. kuakuensis* (Baker f.) N. Snow.

Specimens examined. — **New Caledonia.** North Prov., Pouembout, conservatoire botanique de Tiéa, 5.IX.2000, *Dagostini 209* (P[P00316468]); Pouembout, 16.II.1972, *MacKee 25012* (NOU[NOU028889]); Pouembout, 16.IV.1981, *MacKee 38948* (NOU[NOU028896]); Creek hervouet (propriété Johnson), 10.X.2004, *Munzinger 1866* (MO[MO-6175968], NOU[NOU006339], P[P06668680]); Poya, forêt de Nekoro, 28.IX.1988, *Veillon 6896* (NOU[NOU028902]); Poya, forêt de Neoni, 29.VI.1989, *Veillon 7054* (NOU[NOU028897]); Poya, propriété Johnston, 10-20 m, 6.V.1998, *Veillon 8096* (BISH, NOU[NOU028904], P[P00467803]). — South Prov., Nouméa, 1868-1870, *Balansa 126* (A, G, P[P00462889, P00462890, P00462891]); Baie de Prony, Herbarium L. Roterau s.n. (P[P00500668]); Baie de Tina, 18.V.1985, *Hoff 905* (NOU[NOU028906]); Baie de Tina, 1.VI.1974, *Jaffré 1303* (NOU[NOU028894], P[P0462898, P0462890]); Baie de Tina, 9.IX.1988, *Jaffré 2988* (NOU[NOU028905]); Parc forestier de Nouméa, 11.VII.1992, *Jaffré 3167* (NOU[NOU028893]); Nouméa, parc forestier, 19.III.1993, *Jaffré 3228* (NOU[NOU053230]); Mt. Dzumac, 9.X.1909, *Le Rat 547* (P[P00462900, P00462901]); Forêt de Magenta, *Le Rat 2085* (A, P[P004629802]); Route de la prise d'eau, Dumbéa, IX.1904, *Le Rat 2269* (P[P00462903]); Port Despointes, 17.IV.1956, *MacKee 4420* (A, L, P[P00462904]); Montravel, parc forestier, 30 m, 2.III.1965, *MacKee 12178* (NOU[NOU028892], P[P00462905]); *MacKee 12412*, Montravel, parc forestier, 50 m, 9.IV.1965 (MO[MO-5813360], NOU[NOU028891]); Nouméa, Baie de Tina, 16.III.1972, *MacKee 25151* (NOU[NOU028890]); Baie de Tina, 24.III.1974, *MacKee 28365* (NOU[NOU028895]); Nouméa: Baie de Tina, 3.X.1974, *MacKee 29369* (NOU[NOU028898], P[P02089820]); Nouméa: Baie Tina, 4.III.1975, *MacKee 29834* (NOU[NOU028901]); Nouméa: Baie de Tina, 20.II.1976, *MacKee 30715* (NOU[NOU02899]); Rivage SE Baie La Conception, 2.IV.1981, *MacKee 38895* (NOU[NOU028900]); Baie de Tina, 12.II.1988, *MacKee 43897* (BRI, MO[MO-6751078], NOU[NOU053243], P[P02089873]); Baie Tina, 10-15 m, 16.X.1990, *Müller 54* (P[P04682695]); Montravel Jardin Botanique, 19.VI.1965, *Schmid 351* (NOU[NOU028907]); Bois de Port Desfontes (Nouméa), X.1942, *Virot 794* (P[P00500654]); Bois de Port Desfointes (Nouméa), 14.XI.1942, *Virot 817* (A, P[P00462915, P00462916]); Bois de Port Desfointes, 13.XII.1942, *Virot 918* (A, MO[MO-04856944], P[P00462918, P00462919]). — *Ab loco*. 1868, *Balansa 416a* (Z[Z-000050493]); *Balansa 3400* (P[P00462894, P00462893]); *Baudouin* s.n. (P[P00462895]); *Deplanche 211* (P[P00462897]); *Pancher 50* (P[P00462925]); Herbarium Pancher *s.n.* (G[G00340971, G00340966]); *Vieillard 476* (P[P00462913]).

Representative herbarium specimen. — P00462909.

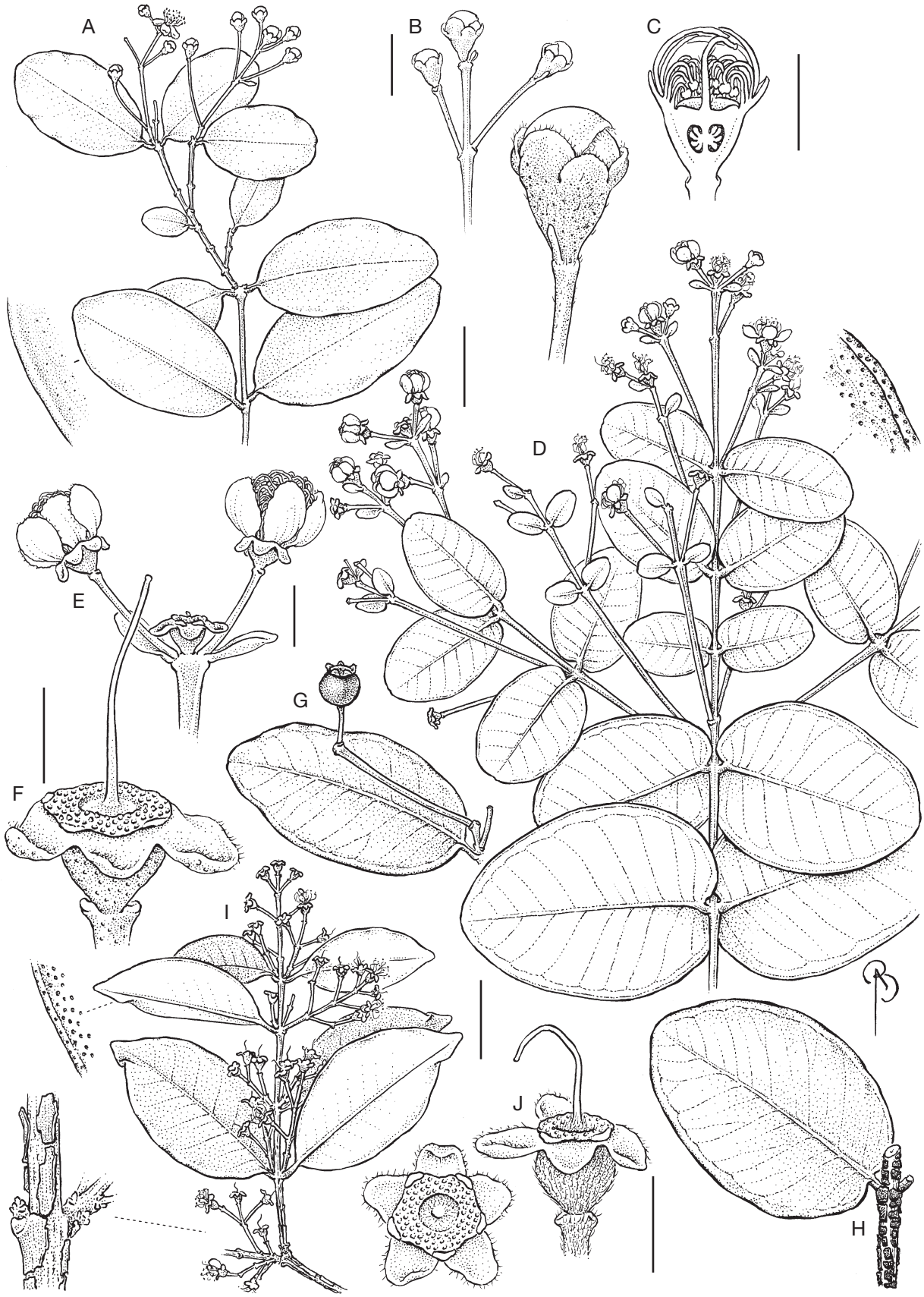

FIG. 15. — **A**-**C**, *Gossia katepahiensis* N. Snow, sp. nov.: **A,** branch with inflorescences; **B**, flowers in bud; **C**, detail of flower bud (in longitudinal section at right); **D**-**H**, *Gossia kuakuensis* (Baker f.) N. Snow: **D**, flowering branch; **E**, detail of simple cyme (note small leafy bracts at base); **F**, detail of flower (minus petals and stamens); **G**, young fruit and leaf; **H**, older branch with attached leaf showing dark, more or less rectangular cracking in epidermal layers; **I**, **J**, *Gossia mandjeliaensis* N. Snow, sp. nov.: **I**, flowering branch (detail of cracking outer epidermal layers (**lower left**) and abaxial oil glands (**upper left**)); **J**, flower from above (lacking petals and stamens) (**left**) and laterally (**right**). Vouchers: **A**-**C**, *McPherson 5690* (WELTU – from 2 sheets); **D**-**F**, *Compton 930* (BM); **G**, *Vieillard 2171* (P); **H**, *Vieillard 2218* (P); **I**-**J**, *McPherson 2551* (P). Scale bars: A, D, 2 cm; B, E-G, 5 mm; C, J, 3 mm; I, 2 mm. Scale bar lacking: **H**, leaf *c.* 5 cm long.

Description
Erect shrubs or treelets
1.5-4 m.

Branchlets
4-angled; internodes mostly > 5 mm.

Leaves
Coriaceous, 2 per node; petioles 0.8-1.7 mm, round to flattened above; blades 1.8-3.1 × 0.9-2.1 cm, ovate to widely ovate, base rounded to cordate, surface flat or slightly irregular, margin slightly undulate, apex obtuse to somewhat acute, midnerve above flush, secondary veins sometimes prominent above, oil glands of lower surface common but faint (typically most abundant along margin).

Inflorescence
0.6-1.5 cm, of monads (mostly) or simple cymes, terminal or axillary, extrafloral bracts (at base of pedicel) scale-like.

Bracteoles
0.5-0.8 mm, narrowly ovate to ovate, glabrous to sparsely sericeous.

Hypanthium
1.4-2 × 2.0-2.5 mm, campanulate, surface smooth (or minutely ribbed in fruit), glabrous; ovary apex shortly hairy.

Calyx
Lobes 5, 0.8-1.8 mm, broadly rounded, glabrous above and below, green.

Petals
c. 3.5 × 3-4 mm, glabrous above and below, white.

Filaments
2-4 mm, white; anther sacs *c.* 0.5 mm, pale yellowish.

Style
c. 3.5 mm, sparsely sericeous below.

Fruits
5-8 × 5-7 mm, globular, base rounded, green turning reddish to black; seeds 2.

Remarks
The combination of 4-angled branchlets, cordate or rounded leaf bases, and the tapered fruit base easily diagnose the species vegetatively from congenerics. The tapered fruit bases can also occur in *G. vieillardii*. The images of living material were taken in a semi-manicured area (with mowed lawn) in the Parc Forestier de Nouméa.

Among the collections Brongniart & Gris (1865: 180) mentioned in the protologue (*Pancher s.n.,* [collected in] 1862; *Vieillard 462*), Snow (Snow & Veldkamp 2010: 182) designated *Vieillard 462* as the lectotype. Since *Vieillard 462* consists of two sheets (unknown to the author at the time of lectotypification), a second-stage lectotypification is provided above. Moreover, epitypification (Art. 9.9, Turland *et al.* 2018) is desirable given the sterile condition of the lectotype, and that *Vieillard 462* at P consists of two sheets, both of which lack fertile material. At the present time, the two sheets of Pancher at P are databased as "types", but no such indication or annotation appears on the specimens, and it is unclear at this point whether I was aware of their type status when I first annotated one of these specimens (P00462908) from *Eugenia* to *Gossia* in 2004. Among the two sheets of Pancher, one in Pancher's hand (P00462908) indicates the specifics of the collection on the blue label (on the left), whereas the collecting year of 1862 (also in Pancher's hand) is on the label (to the right), however this specimen also is sterile. The other specimen of Pancher (P00462909) indicates the year 1861 (printed, not written by hand) on the right-hand label, but details of the collection on the blue label to the left also are in Pancher's hand (and are nearly identical to those of P004652908), and since this specimen has four flowers, it is selected as the epitype.

Gossia kaalaensis N. Snow, sp. nov.
(Figs 13J-K; 17)

Petioles narrowly and deeply sulcate, but broadening distally. Leaves narrowly ovate to ovate, margin somewhat undulate, secondary and tertiary veins of both surfaces prominently raised. Sepals densely short-sericeous below.

Typus. — **New Caledonia.** Grande Terre, North Prov., Slopes of Mt Kaala, above village, 20°37'39.00"S, 164°23'12.12"S, *c.* 550 m, 7.X.1982, *G. McPherson 4973* (holo-, P[P00758090]; iso-, BISH[fragment]; MO[MO-3211396]; NOU[NOU030910]).

Paratypi. — **New Caledonia.** North Prov. Mont Kaala, 4.IV.1968, *Bernardi 12528* (BISH[fragment], L, P[P00462920], US, Z); Voh. Massif Katépaï, au bord d'une ancienne piste, 20°55'49.72"S, 164°42'02.92"E, *c.* 470 m, 19.IX.2016, *Munzinger 7853 (leg.* Scoptera) (MPU[640685], P[P02090976]). — South Prov. Kongouaou (= Koungouhaou), 650 m, 2.V.1976, *Jaffré 1725* (NOU[NOU029644]); Contrefort NW Mt. Taom, 10.V.1979, *MacKee 36887* (NOU[NOU029643], P[P02089830]); Crête du Oua-Tilou, 20°50'08.99"S, 164°51'27.00"E, 850 m, 18.V.1983, *Morat 7398* (NOU[NOU029645], P[P00462921]); Montagnes de Balade, *Vieillard 484* (left branchlet on mixed collection; P[P00463007, P00602546]); Oua Tendé près Gatope, *Vieillard 2610* (K[K001000439], P[P00462922, P00462923, P00462924]); circ. Kaala-Gomen; S slopes of Mt. Kaala, *c.* 500 m, 11.VIII.1968, *Webster & Hildreth 14719* (DAV, GH, NSW, P[P00462928]).

Representative herbarium specimen. — P00758090.

Etymology. — After the type locality.

Distribution, habitat and phenology. — Grande Terre from the northwest, where it is most common, sporadically south to Koungouhaou (Fig. 17); in maquis and scrub that grades into low-stature but dense forests, over ultramafics or graywackes, 470-850 m. Flowering April through July; fruiting May through October.

Description
Shrubs
0.7-2 m.

FIG. 16. — **A**-**C**, *Gossia kuakuensis* (Baker f.) N. Snow *vel aff.*: **A**, inflorescences and leaves; **B**, leaves and branchlets with dark rectangular flaking bark; **C**, young fruits; **D**, *Gossia pancheri*. Vouchers: **A**-**C**, *Fleurot 226* (NOU, P); photo ©Dominique Fleurot, with permission; from Näräjaa, Ponérihouen (http://endemia.nc); **D**, *J.-N. Labat 3486* (P).

Bark
Marbled with light and dark gray.

Branchlets
Terete to laterally compressed; internodes > 5 mm.

Leaves
Coriaceous, 2 per node; petioles 3-5 mm, deeply sulcate; blades (4.5-)8.0-9.5 × 1.8-3.4 cm, narrowly elliptic to narrowly ovate or somewhat elliptic, base cuneate (rarely almost rounded), surface flat to somewhat undulate, margin somewhat undulate, apex acute, midnerve sulcate above, secondary veins prominently raised above, oil glands of lower surface common, indistinct to prominent (and relatively large or small).

Inflorescence
1.5-3.5 cm, of monads, 3-flowered cymes, or few-flowered racemes, axillary, terminal or sometimes arising from internodes, pedicels 0.3-1.3 cm; extrafloral bracts absent or scale-like.

Bracteoles
1-1.5 mm, linear to very narrowly obovate, glabrous to sparsely sericeous.

Hypanthium
c. 2-3 × *c.* 2.5 mm, campanulate to obconic, surface smooth, glabrous (or sparsely sericeous); ovary apex glabrous.

Calyx
Lobes 5, 1.3-2 mm, broadly ovate to broadly rounded, sericeous-tomentose above, glabrous to sparsely and very short sericeous below, drying whitish.

Petals
3.5-5 × 4-5 mm, sparsely villous above, glabrous below, shortly ciliate on edges.

Filaments
2.5-4 mm; anther sacs 0.5-0.7 mm.

Style
4-5 mm, sparsely sericeous.

Fruits
c. 5-5 × 6-7 mm, subglobular to globular, base rounded; green maturing to dark reddish; seeds 2.

Remarks
Several characters are diagnostic for *Gossia kaalaensis* sp. nov. The leaf blades (in sicco) typically are dark green, narrowly elliptic to narrowly ovate, apically acute, and the upper surface is frequently undulate, glossy and has prominently raised secondary veins. The petiole is deeply sulcate but flattens and broadens distally. The hypanthium often has relatively large, pustular oil glands interspersed among much smaller glands. It most closely resembles *Gossia vieillardii*, but leaves of that species typically are a lighter shade of green. *Gossia kaalaensis* sp. nov. may also resemble *G. pancheri*, but the latter has a sericeous hypanthium.

A specimen with a similar leaf shape and texture to *G. kaalaensis* sp. nov. is atypical by the much smaller length of its leaves (*Munzinger 7577* [MPU620440]); its placement at the current time is unresolved.

Gossia katepahiensis N. Snow, sp. nov.
(Figs 14; 15A-C)

Resembling *Gossia kuakuensis* but differing by its narrower bracteoles; similar to *Gossia vieillardii* but having rounded leaf bases; and differing from *Gossia bourailensis* sp. nov. by the broadly obtuse to rounded apex of the leaf.

Typus. — **New Caledonia.** Grande Terre, North Prov., Mt. Katépahié, above Voh, 20°55'58.08"S, 164°41'33.00"E, 4.V.1983, *c.* 350 m, *McPherson 5690* (holo-, P[P00402743]; iso-, BISH[fragment], BRI, MO[MO-3183836], NOU[NOU030911], NSW, WELTU[2 sheets]).

Paratypi. — **New Caledonia.** North Prov., Voh, Massif Katépahï, en haut d'un sentier de randonnée, 20°55'26.36"S, 164°42'16.94"E, *c.* 530 m, 19.IX.2016, *Munzinger 7867* (*leg.* Scoptera) (MPU[MPU640688]; P[P02090939]).

Representative herbarium specimen. — P00402743.

Etymology. — Derived from the type locality.

Distribution, habitat and phenology. — Known from two collections on Mt. Katépahie (Fig. 14) from forest remnants over ultramafics from approximately 350-530 meters. Flowering in May; fruiting in August.

Description
Rounded shrubs to trees
1.5-3 m.

Bark
Light gray to almost white and longitudinally furrowed.

Branchlets
Terete, bright red on emergence; internodes > 5 mm.

Leaves
Coriaceous, 2 per node; petioles 2.5-4 mm, sometimes slightly sulcate; blades 2.2-5.5 × 1.5-3.5 cm, elliptic, base rounded, surface flat, margin slightly recurved and surface slightly undulate, apex rounded to broadly obtuse (and sometimes slightly retuse), midnerve sulcate above, secondary veins faintly visible above and below, oil glands of lower surface faint and moderately common.

Inflorescence
Of monads or elongated racemes, axillary and terminal; extrafloral bracts absent or scale-like.

Bracteoles
1-2 mm, narrowly obovate, glabrous.

Hypanthium
2.5-3 × 2-3 mm, obconic, surface smooth, glabrous to sparsely sericeous; ovary apex glabrous.

Calyx
Lobes 5, 1-1.5 mm, broadly rounded, sparsely sericeous near base above, glabrous to sparsely sericeous below, green.

Petals
4-5 × 3-4 mm, ciliate on margins, glabrous below.

Filaments
3-5 mm; anther sacs 0.4-0.6 mm.

Style
c. 5 mm, sericeous.

Fruits (young)
7-8 mm, ellipsoid and somewhat tapered at the base, light green but beginning to darken; seeds up to 2.

Remarks
This species resembles several others in *Gossia*. Its leaf apex is rounded to broadly obtuse (and sometimes slightly retuse), and the secondary veins are visible in sicco. Mature inflorescences typically are longer than the adjacent leaves, and the inflorescence and pedicels are relatively thin and often somewhat bowed. In addition, the base of the petals is thicker than most other species.

A specimen I annotated in 2004 with this name (P[P00402742]) likely represents a different taxon, given its cuneate leaf bases and shorter inflorescences; its identity is uncertain from the digital image.

A specimen allegedly from Tahiti by an unknown collector (Anonymous, « Commun à Tahiti » ([P05094318])) was identified (but not annotated) by some other person. Although its relatively large inflorescence resembles that of the type specimen, its different leaf morphology and the distance between Tahiti and New Caledonia (*c.* 4700 km) together make such an identification unlikely.

Gossia kuakuensis (Baker f.) N. Snow
(Figs 14; 15D-H; 16A-C)

Austrobaileya 8: 181 (2010). — *Psidium kuakuense* Baker f., *Journal of the Linnaean Society, Botany* 45: 318 (1921). — Typus: **New Caledonia.** Grande Terre, South Prov., Kuakué (= Kouakoué), 13.V.1914, *Compton 930* (holo-, BM[BM000581652]).

Psidium floribundum Vieill. ex Guillaumin, *nomen nudum*, *Annales du Musée colonial de Mareille*, sér. 2, 9: 150 (1911). — See discussion in Snow & Veldkamp (2010: 181) regarding this unpublished name.

Eugenia cataractarum Guillaumin, *Bulletin de la Société botanique de France* 85: 636 (1939). — *Austromyrtus cataracarum* (Guillaumin) Burret, *Notizblatt des Botanischen Gartens und Museums zu Berlin-Dahlem* 15: 503 (1941). — Typus: **New Caledonia**. Grande Terre, South Prov., Secus ripus torentium prope Touho, *Vieillard 2171* (lecto-, P[P00602576] designated here; isolecto-, G, GH[GH00071539], P[P00751830]).

Specimens examined. — **New Caledonia.** North Prov., Näräjaa, Ponerihouen, 550 m, 26.III.2016, *Fleurot 226* (P[P01168448]); Pente Sud du Mt. Kaala, 12.VI.1965, *MacKee 12758* (NOU[NOU029641], P[P00462879, P00462880]); Pente Sud-Ouest du Mt. Kaala, 300-600 m, 10.IX.1967, *MacKee 17490* (NOU[NOU029640], P[P02089978, P05094102]); Massif de Tion-non, 800-900 m, 21.III.1968, *MacKee 18516* (P[P02089982]; Col d'Amieu-Ouambéa, 500-600 m, 31.III.1970, *MacKee 21745* (NOU[NOU030905]); Bord des torrents, Wagape, *Vieillard 2171bis* (BISH, P[P00462881, P00462882]); Bord des torrents à "Poinendu", *Vieillard 2218* (G[G00340965, G00340992, images seen], MEL n.v., P, 2 sheets).

Representative herbarium specimen. — P02089978.

Etymology. — From the type locality.

Distribution, habitat and phenology. — Scattered on Grande Terre (Fig. 14); in maquis on ultramafics or edges of dense moist forests over sedimentary volcanics, 100-600 m (but more data needed; see remarks). Flowering March through June; fruiting confirmed only for September.

Description

Shrubs or trees
1-6 m.

Branchlets
Terete to compressed (the older branchlets with dark, rectangular flakes); internodes > 5 mm.

Leaves
Coriaceous, 2 per node; petioles 1.5-4 mm (or leaves sessile), sometimes slightly sulcate; blades (3-)4.5-9.0 × 3.0-6.0 cm, elliptic to broadly elliptic, base rounded to cordate or clasping, surface flat to somewhat creased along midvein, margin flat to slightly irregular, apex obtuse, midnerve above flush to slightly sulcate at base, secondary veins flush above, oil glands of lower surface dense but indistinct.

Inflorescence
2.5-8.5 cm, a dichasium, raceme or panicle, terminal or axillary; pedicels (1.5-) 4-11 mm; extrafloral bracts leaflike.

Bracteoles
1.5-4.5 mm, linear to narrowly elliptic, glabrous to sparsely sericeous.

Hypanthium
Obconic, 2.3-2.6 × (2-)3.4-3.8(-4.2) mm wide, surface smooth, glabrous; ovary apex glabrous.

Calyx
Lobes 5, 1.5-3 mm, broadly rounded, ciliate but otherwise glabrous, green.

Petals
4-6 × 3-5 mm, white, sparsely ciliate on margins.

Filaments
2.5-4.5(-6) mm; anther sacs *c.* 0.5 mm. *Style* 3-5(-6.5) mm, glabrous to sparsely sericeous.

Fruits
5.5-10 × 5.5-10 mm, subglobular to globular, base rounded, green when young (mature color unconfirmed); seeds 1-4.

Remarks
The bark of branchlets and main trunk typically breaks into dark rectangular flakes, and the branches reportedly can be pendant. Some leaves on the holotype are atypically clasping. The peduncles in the inflorescence are glabrous but can be prominently striate.

We tentatively here include *Fleurot 226* (Fig. 16A-C in Näräjaa, Ponérihouen), although its leaves are sessile and slightly clasping, whereas other specimens have short petioles, and its fruits have 4-merous calyx lobes. Study of herbarium vouchers (unavailable before submission) will help determine its proper placement.

Gossia mandjeliaensis N. Snow, sp. nov.
(Figs 15I-J; 17)

The leaves resemble those of *Gossia vieillardii*, but the oil glands on the lower leaf surface of *G. mandjeliaensis* sp. nov. are conspicuous and dense and the base of its hypanthium somewhat rounded.

Typus. — **New Caledonia.** Grande Terre, North Prov., Forested slopes below radio tower of Mandjélia, *c.* 5 air-km W of Pouebo, 20°23'58.99"S, 164°31'30.00"E, 12.IV.1980, *McPherson 2551* (holo-, P[P00402744]; iso-, BISH, MO[MO-3226084], NOU[NOU030914], WELTU).

Paratypi. — *McPherson 6327*, Mandjélia, above Pouébo, 20°24'18.40"S, 164°31'05.00"E, *c.* 650 m, 21.II.1984 (MO[MO-3225874], NOU[NOU029639], P[P00462929], WELTU).

Representative herbarium specimen. — P00402744.

Etymology. — After the type locality.

Distribution, habitat and phenology. — Known only from Mt. Mandjélia (Fig. 17); forested slopes over metamorphic rock, 600-650 m. Flowering February through April; fruiting period unknown.

Description

Trees
To 10 m.

Branchlets
Terete; internodes > 5 mm.

Leaves
Coriaceous, 2 per node; petioles 2-3 mm, sometimes slightly sulcate; blades (1.5-)3.0-6.0 × (-1.0)2.0-4.0 cm, narrowly elliptic to broadly elliptic, base cuneate (or occasionally rounded), surface flat, margin flat, apex obtuse to acute, midnerve above sulcate near base but becoming flush distally, secondary veins faint and flush above and below, oil glands dense but typically indistinct above and below.

Inflorescence
Up to 3.5 cm, of monads, simple cymes, or few-flowered racemes, axillary or terminal, pedicels 0.1-0.8 cm; extrafloral bracts absent or scale-like.

Bracteoles
1.5-3 mm, linear, very narrowly elliptic, or narrowly obovate, more or less sericeous.

Hypanthium
3-4 × 3-4 mm, campanulate, surface smooth, sericeous; ovary apex sparsely hairy.

Calyx
Lobes 5, 1.3-1.9 mm, broadly rounded, glabrous above, sericeous near base below and ciliate on edges, green.

Petals
4-5 × 4-5 mm, glabrous above, glabrous to sparsely sericeous below.

Filaments
3-5 mm; anther sacs 0.5-0.6 mm.

Style
c. 5 mm, sericeous at base.

Fruits
Dimensions unknown, said to be green, mature fruit unknown; seeds not seen.

Remarks
Gossia mandjeliaensis sp. nov. differs from other New Caledonian congenerics by subtle traits, including the dense but small oil glands on the leaf surfaces; a glabrous to slightly hairy staminal disk; sericeous indumentum on the pedicels, abaxial surface of calyx lobes, and style; and faint abaxially secondary leaf veins. *Gossia colnettiana* is somewhat similar, but has fewer oil glands abaxially, raised abaxial secondary veins, ferrugineous sericeous hairs in flower, and a hairy staminal disk.

Gossia ngaensis N. Snow, sp. nov.
(Figs 18A-C; 19)

Resembling *Gossia nigripes* but with longer and flatter leaf blades (margins not recurved), and without an obtuse apex.

Typus. — **New Caledonia.** Grande Terre, South Prov., Île des Pins, Pic Nga near Kuto, 22°39'18.00"S, 167°27'24.98"E, *c.* 100 m, 14.VIII.1982, *G. McPherson 4878* (holo-, MO[MO-3210881]; iso-, BISH fragment, NOU[NOU052879]).

Representative herbarium specimen. — No images currently available.

Etymology. — Derived from Pic Nga, the locality of the type specimen.

Distribution, habitat and phenology. — Known only from the type collection from Pic Nga near Kuto on Île des Pins (Fig. 19); in scrub over ultramafics along a creek, *c.* 100 m. Flowering August; fruiting August.

Description
Shrub
To 2 m.

Branchlets
Terete to strongly compressed; internodes > 5 mm.

Leaves
Coriaceous, 2 per node; petioles 3-5 mm, sometimes slightly sulcate; blades (2.8-)5.0-8.3 × 1.2-4.0 cm, elliptic, base cuneate, surface flat, margin flat to slightly revolute, apex broadly obtuse and sometimes slightly retuse, midnerve sulcate in lower half, secondary veins flush to slightly raised above, oil glands of lower surface dense and prominent.

Inflorescence
Of single flowers or simple cymes, terminal or axillary; extrafloral bracts absent.

Bracteoles
Unknown.

Hypanthium
4.5-7 × 4-5 mm wide (in fruit), obconic, surface smooth, glabrous; ovary apex glabrous.

Calyx
Lobes 5, 1.7-2.5 mm, broadly triangular to broadly rounded, sparsely short ciliate near apex, greenish.

Petals
c. 5 × 5 mm, glabrous above, glabrous to sparsely sericeous below.

Filaments
4-6 mm; anther sacs 0.4-0.6 mm.

Style
c. 5 mm, sparsely sericeous.

Fruits
5.5-7 × 5-7.5 mm, globular, base rounded, green (immature); seeds 1-2.

Remarks
Gossia ngaensis sp. nov. allegedly was photographed on Pic Nga during September 2017 (G. Gâteblé pers. comm. 2018),

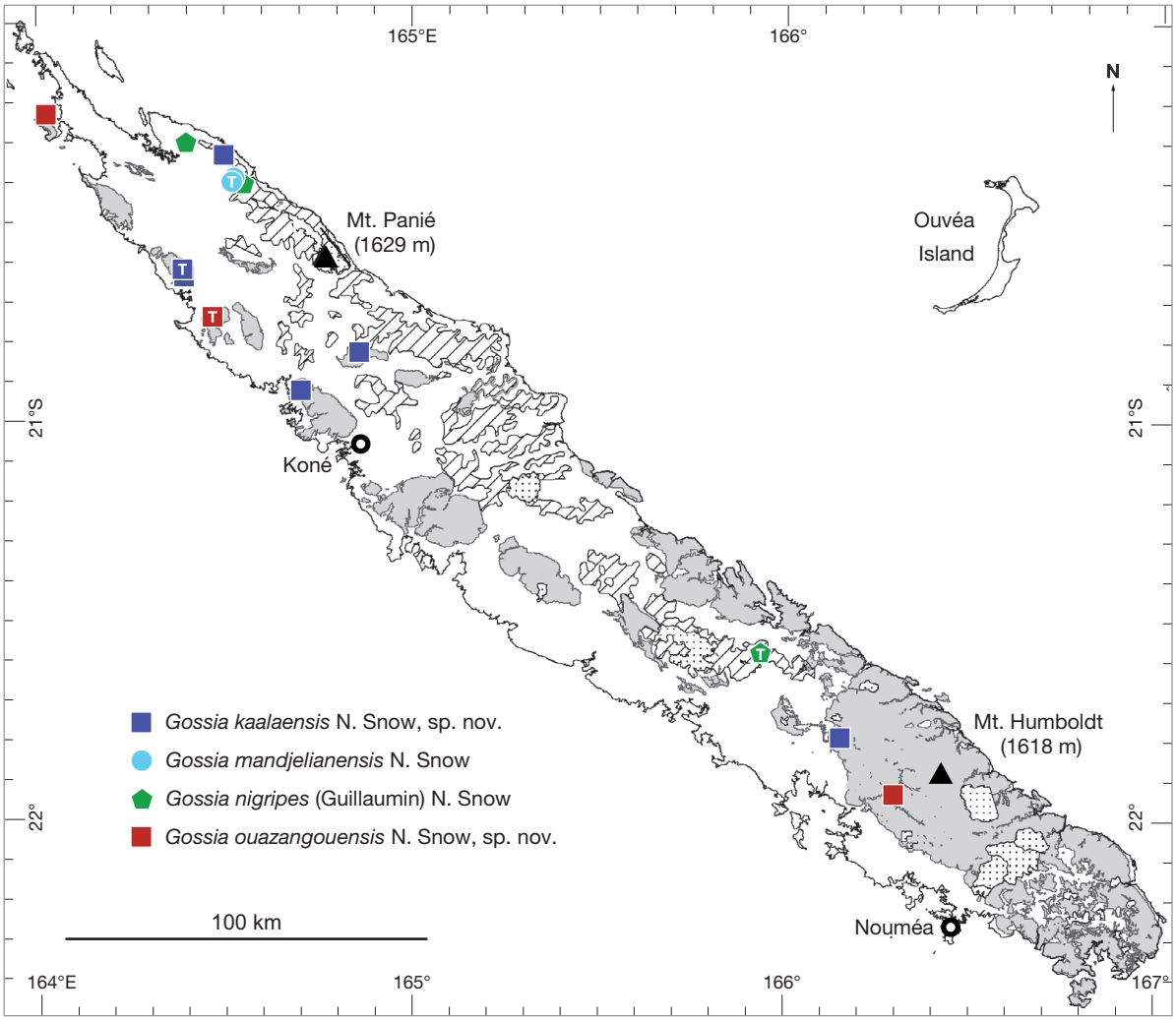

FIG. 17. — Distribution maps of *G. kaalaensis* N. Snow, sp. nov., *G. mandjeliaensis* N. Snow, *G. nigripes* (Gullaumin) N. Snow, and *G. ouazangouensis* N. Snow, sp. nov.

but no voucher was taken and its identification was not confirmed. The species most closely resembles *G. nigripes* (see key for differences). It also resembles *G. mandjeliaensis* sp. nov., but its hypanthium is sericeous and it occurs on Massif du Panié on the northeast part of Grande Terre.

Gossia nigripes (Guillaumin) N. Snow
(Figs 17; 18D, E)

Austrobaileya 8: 181 (2010). — *Myrtus nigripes* Guillaumin, *Bulletin de la Société botanique de France* 85: 632 (1939). — *Austromyrtus nigripes* (Guillaumin) Burret, *Notizblatt des Botanischen Gartens und Museums zu Berlin-Dahlem* 15: 505 (1941). — Typus: **New Caledonia**. Grande Terre, South Prov., Montagnes situées au Sud de Canala, 20.XI.1869, *B. Balansa 2085* (holo-, P[P00602577]; iso-, P[P00462930, P00462931]).

ETYMOLOGY. — Derivation from the Latin *niger* (black) and *pes* (foot) in reference to the petioles (foot of the blade), which dry dark brown to blackish.

DISTRIBUTION, HABITAT AND PHENOLOGY. — Mt Mandjélia and areas to the north and from the type collection south of Canala (Fig. 17); over micaschistes and forests, sometimes as a dominant on montane ridges, *c.* 500-1000 m. Flowering February and March; fruiting June through December.

SPECIMENS EXAMINED. — **New Caledonia.** Grande Terre, North Prov. Pouébo, 600 m, 24.VII.1974, *MacKee 28968* (P[P02089864]); Mt Mandjélia; 19.XII.1981, *McPherson 4509* (BISH[fragment], MO, NOU[NOU029638], NSW, P[P05094545], PTBG, WELTU); above Ouegoa along forest road, 18.VIII.1981, *Mueller-Dombois 81081810* (BISH); *ibid. loco*, *Mueller-Dumbois 81081831* (BISH); Col d'Amoss, 20°18'22"S, 164°23'51"E, 14.X.2002, *Tronchet 364 et al.* (K n.v., MO, NOU, P[P00354952]); Haut Diahot, Tendé, 600 m, 30.VI.1982, *MacKee 40566* (MO, NOU[NOU029624], P[P02089875]).

REPRESENTATIVE HERBARIUM SPECIMEN. — P02089875.

DESCRIPTION
Shrubs or trees
3-8 m.

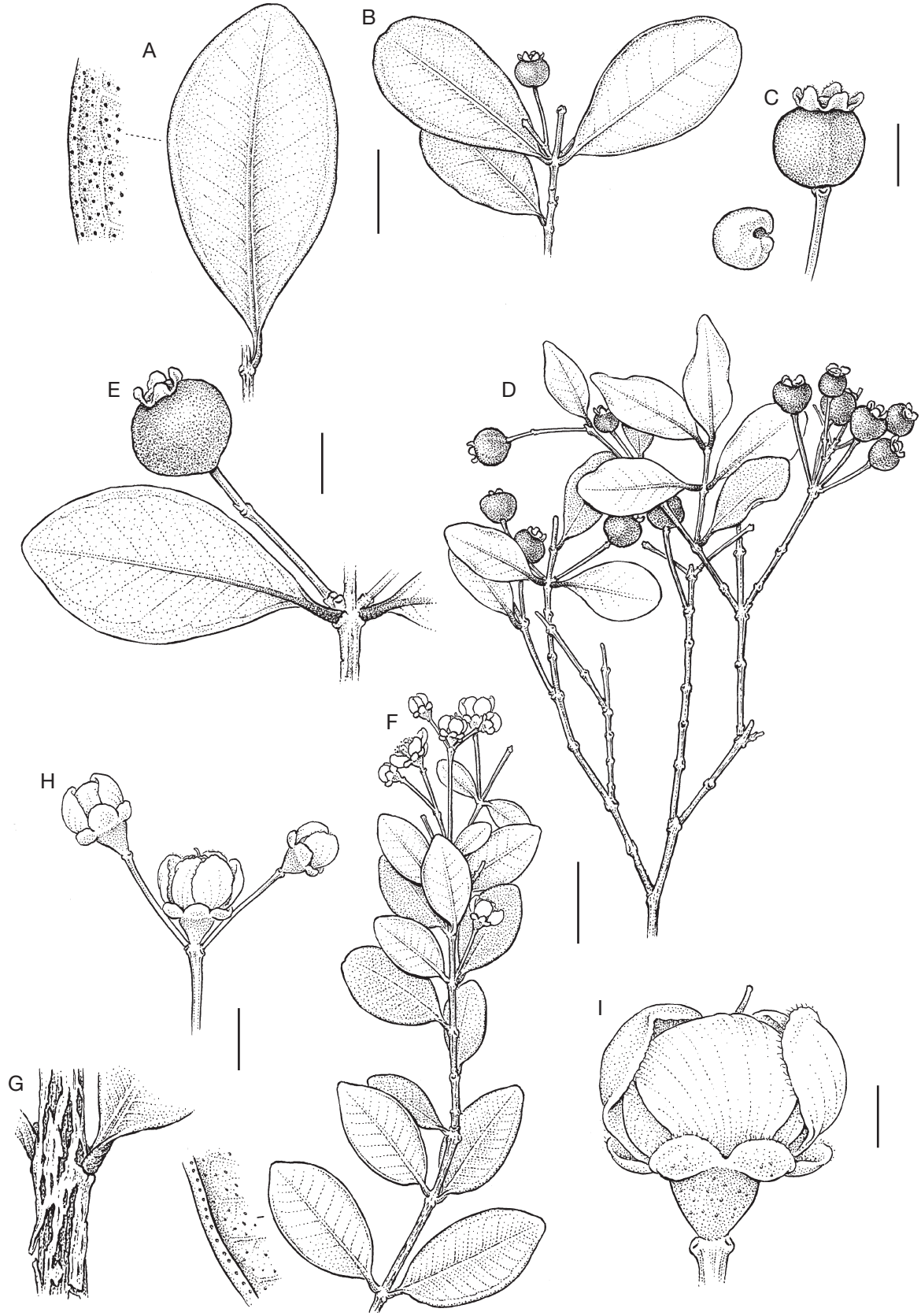

FIG. 18. — **A**-**C**, *Gossia ngaensis* N. Snow, sp. nov.: **A**, adaxial surface of leaf (**right**) with detail (**left**) venation; **B**, tip of branch with solitary young fruit; **C**, seed (**left**) and fruit (**right**). **D**, **E**, *Gossia nigripes* (Guillaumin) N. Snow: **D**, branch with fruits; **E**, detail of leaf (with dark petioles) and fruit; **F**-**I**, *Gossia ouazangouensis* N. Snow, sp. nov.: **F**, flowering branch with abaxial oil gland details (**lower left**); **G**, branchlet showing cracking epidermal layer; **H**, detail of cyme; **I**, detail of flower prior to anthesis. Vouchers: **A**-**C**, *McPherson 4878* (NOU); **D**-**E**, *McPherson 4509* (WELTU); **F**-**I**, *MacKee 16927* (P). Scale bars: A, B, D, 2 cm; C, E, F-I, 5 mm.

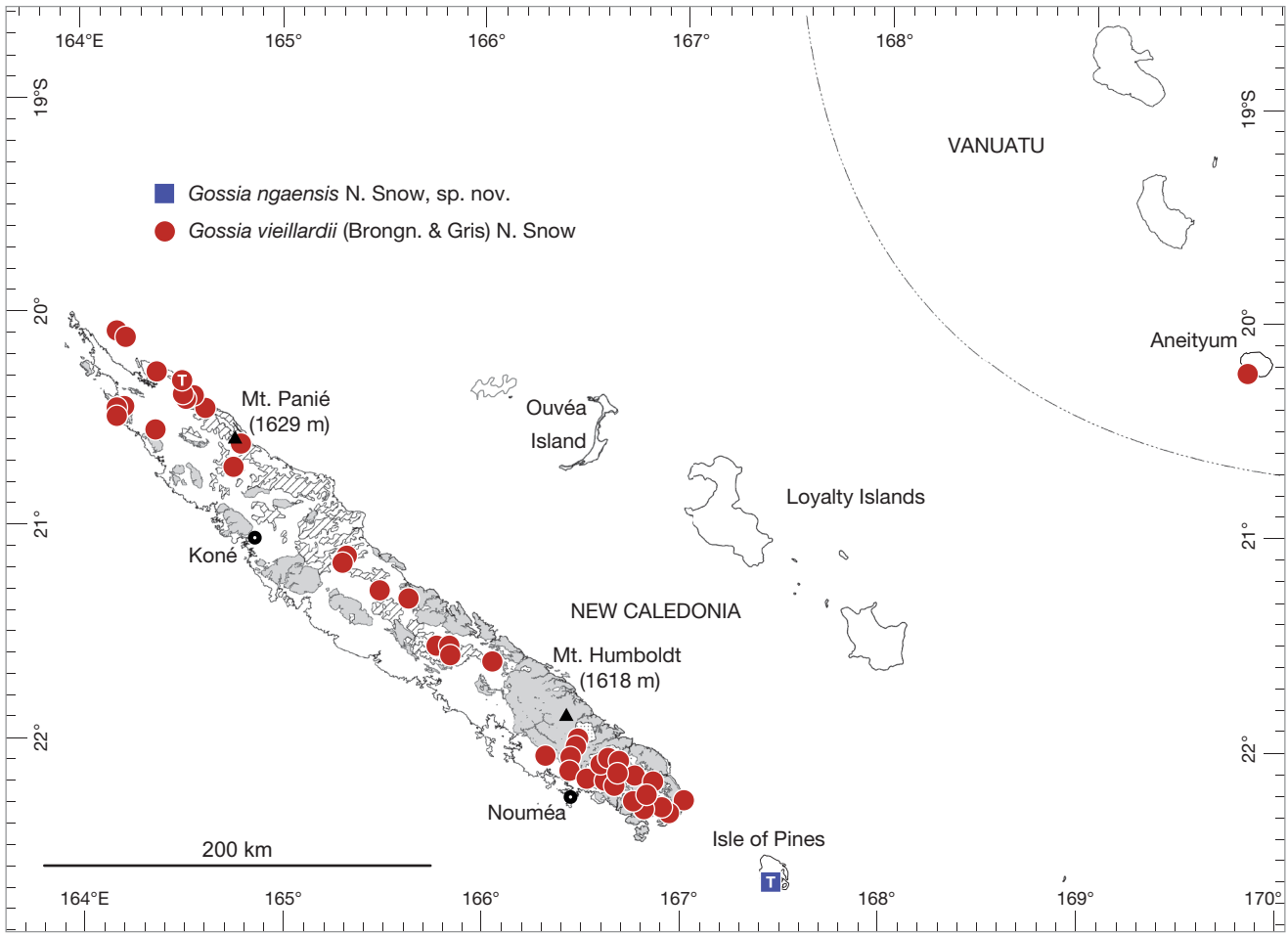

FIG. 19. — Distribution maps of *Gossia ngaensis* N. Snow, sp. nov. and *G. vieillardii* (Brongn. & Gris) N. Snow.

Branchlets
Terete; internodes > 5 mm.

Leaves
Coriaceous, 2 per node; petioles 2.5-4 mm, terete; blades 2.0-4.5(-4.8) × 0.8-1.7(-2.4) cm, narrowly elliptic to narrowly obovate, base narrowly cuneate, surface flat, margin flat, apex obtuse, midnerve above sulcate proximally becoming flush apically, secondary veins not visible above, oil glands of lower surface dense but indistinct.

Inflorescence
Of monads or 3-flowered cymes, axillary, pedicels to 4.5 cm; extrafloral bracts absent.

Bracteoles
c. 2 mm, narrowly ovate to ovate, glabrous.

Hypanthium
2.8-3.2 × *c.* 3 mm, urceolate, surface smooth, glabrous; ovary apex glabrous.

Calyx
Lobes 4 (5 occasionally), 1-2 mm, broadly ovate to rounded, glabrous above and below, green.

Petals
Not seen.

Filaments
3-4.5 mm; anther sacs 0.6-0.8 mm.

Style
4.5-5 mm, hairy to near apex.

Fruits
5-9 × 6-11 mm, subglobular to globular, base rounded, green becoming reddish then bluish-black; seeds 2-3, irregularly hemispherical.

REMARKS
Within *Gossia* the species is distinguished by leaves that are nearly all 4 cm or less long and distinctly yellowish-green, with dark maroon petioles that dry to nearly black.

The species can resemble *Gossia vieillardii*, but that species has longer leaf blades on average, longer inflorescences, and fruits that often taper distinctly at the base. Additional data from flowering material are needed.

Gossia ouazangouensis N. Snow, sp. nov.
(Figs 17; 18F-I)

The species can be distinguished by its thin whitish calyx lobes, glabrous hypanthium, and a mostly terminal to subterminal inflorescence that significantly exceeds the length of the leaves. It somewhat resembles *Gossia kaalaensis* sp. nov., but the adaxial leaf surface of the latter is glossy and has prominently raised secondary veins and an acute apex, and thicker and greenish calyx lobes. In contrast, the adaxial leaf surface of *G. ouazangouensis* sp. nov. is matte with flush secondary veins and an obtuse apex and thin, whitish or whitish-green calyx lobes.

TYPUS. — **New Caledonia.** Grande Terre, North Prov., pente Ouest de Mt Ouazangou, 20°44'47.00"S, 164°27'56.16"E, 19.VI.1967, *MacKee 16927* (holo-, P[P00751831]; iso-, BISH[fragment], NOU[NOU030913]).

PARATYPI. — **New Caledonia.** Grande Terre. North Prov., Poum, 30 m, 27.IV.2004, *G. Dagostini 843 & Nigote* (NOU, P[P05121896, P05121897], WELTU n.v.); Mont Ouazangou Pente Ouest, 20°44'47.00"S, 164°27'56.16"E, 300-500 m, 4.III.1972, *MacKee 25123* (NOU[NOU029637], P[P02089986] with dups [n.v.] to distribute to BISH, CHR, G, MO, NSW, RB, TNS]); Kaala-Gomen, Massif Onajiele, 20°46'07.02"S, 164°27'44.65"E, *c.* 100 m, 16.V.2015, *Munzinger 7592* (*leg.* Scoptera) (MPU[MPU620439]). — South Prov., Vallée de la Tontouta, 21°56'36.99"S, 166°17'35.99"E, 0-50 m, 22.III.2006, *Pillon 329 et al.* (NOU[NOU011598], P[P06668689]).

REPRESENTATIVE HERBARIUM SPECIMEN. — P00751831.

ETYMOLOGY. — From the type locality.

DISTRIBUTION, HABITAT AND PHENOLOGY. — Known from the western peak of Mont Ouazangou (Massif Onajile) and Poum in the northwest, and Tontouta in the southwest (Fig. 17); in maquis on ultramafics from near sea level to 500 m. Flowering approximately April through June; fruiting unknown.

DESCRIPTION
Tree-like shrubs
To 2-5 m.

Bark
Light reddish or grayish and craking longitudinally.

Branchlets
Terete; internodes > 5 mm.

Leaves
Coriaceous, 2 per node; petioles 1.5-3 mm, sulcate; blades (2.5-)6.0-7.5 × 1.2-3.3 cm, ovate, base cuneate, surface flat, margin slightly revolute throughout, apex obtuse, midnerve sulcate in lower half, secondary veins mostly flush above, oil glands of lower surface common but faint.

Inflorescence
1.5-4.5 cm, mostly of 3-flowered cymes (infrequently of monads), axillary or terminal; extrafloral bracts absent or scale-like.

Bracteoles
0.9-1.2 mm, linear to narrowly elliptic, sparsely sericeous.

Hypanthium
2-3 × 2-3.5 mm, obconic, surface smooth, glabrous.

Calyx
Lobes 5, 1.1-2.8 mm, broadly rounded, glabrous above but ciliate on margins, glabrous below, drying whitish.

Petals
6.0-6.5 × 5-6 mm, glabrous above but ciliate on margins, glabrous below, whitish.

Filaments
4-5 mm, pinkish to the base; anther sacs *c.* 0.5 mm.

Style
5-6 mm, sparsely villous, especially in lower half; ovary apex hairy at base of style.

Fruits
Unknown.

REMARKS
The inflorescence branches on *MacKee 25123* are somewhat shorter and more gracile, and the branches more reddish and with a flakier epidermis, but the leaf morphology, locality and substrate of the two collections otherwise match well. An uplaced 4-merous specimen (*Munzinger 7890* [MPU640674; P020290978]) may be this species.

Gossia pancheri (Brongn. & Gris) N. Snow
(Figs 16D; 20; 21A-D)

Austrobaileya 8: 181 (2010). — *Eugenia pancheri* Brongn. & Gris, *Bulletin de la Société botanique de France* 12: 180 (1865). — *Austromyrtus pancheri* (Brongn. & Gris) Burret, *Notizblatt des Botanischen Gartens und Museums zu Berlin-Dahlem* 15: 503 (1941). — Typus: **New Caledonia**. Grande Terre, South Prov., Montagnes de Yaté, *Vieillard 508* (lecto- [designated by Snow & Veldkamp 2010], P[P00462968]; isolecto-, P[P00462969, P00469970, P00602555]). — Snow annotated the lectotype in 2004 but did not specify a barcode number (Snow & Veldkamp 2010: 181), which at that time did not exist. One of the isolectotypes (P00602555) was annotated by the author in 2005 mistakenly as "lectotype", instead (correctly) of "isolectotype".

Myrtus luteo-viridis Baker f., *The Journal of the Linnean Society, Botany* 45: 312 (1921). — *Austromyrtus luteo-viridis* (Baker f.) Burret, *Notizblatt des Botanischen Gartens und Museums zu Berlin-Dahlem* 15: 505 (1941). — Typus: **New Caledonia.** Grande Terre, South Prov., Ngoye Mts. to NW, *Compton 1339* (holo-, BM[BM000581650], photo at BISH]).

Eugenia angustibracteolata Baker f., *The Journal of the Linnean Society, Botany* 45: 313 (1921). — Typus: **New Caledonia.** Grande Terre, South Prov., Presqu'île Bogota, 13.V.1914, *Compton 1002* (holo-, BM[BM000581654], photo at BISH).

SPECIMENS ECAMINED. — **New Caledonia.** North Prov., Boulinda près campement, 500 m, 23.IV.1968, *Jaffré 18* (NOU, P); Massif du Ko-

niambo, 250 m, 18.XI.1971, *Jaffré 516* (NOU[NOU029667]); Massif du Koniambo, 900 m, 20.XII.1972, *Jaffré 1038* (NOU[NOU29662]); Kouaoua: Mea, 12.I.1978, *Jaffré 2275* (NOU[NOU029649]); Mont Boulinda, pente au-dessus de la Oua-Népoua, 750-850 m, 26.VII.1967, *MacKee 17177* (NOU[NOU029683]); Taom, Mt. Homédéboa, 800-900 m, X.1969, *MacKee 20995* (NOU[NOU029680]); Mont Do, 950-1020 m, X.1969, *MacKee 21089* (NOU[NOU029677); Manambo, 500 m, 29.IX.1989, *MacKee 44623* (NOU[NOU0029652], P[P02089832]); Poro, Kaéoua, 500 m, 17.XII.1992, *MacKee 46074* (P[P02089865]); Contrefort Nord-Ouest du Mt. Taom, 5.X.1979, *MacKee 36887* (P); Plateau de Ouazangou, 26.III.1980, *MacKee 37951* (P[P02089833]); Mont Taom (Crête Ouest), 900 m, 8.I.1981, *MacKee 38519* (NOU[NOU029650], P[P02089884]); Mont Taom, 900 m, 31.VII.1981, *MacKee 39418* (MO, NOU[NOU029647], P[P02089883]); Poro, Kaseoua, 500 m, 17.XII.1992, *MacKee 46074* (NOU[NOU029653], P[P02089865]); Mt Koniambo, *c.* 700 m, 13.X.1982, *McPherson 5019* (MO, NOU[NOU053242]); Mt Koniambo, *c.* 550 m, 5.I.1983, *McPherson 5297* (BRI, MO, NOU[-NOU029654], NSW, PTBG, WELTU); Mt. Colnett, 800-925 m, 2.XI.2003, *McPherson 19142* (BISH, MO, NOU[NOU004366], P); Est du Kopeto, 900 m, 28.XI.1980, *Morat 6642* (NOU[NOU029671]); Massif du Tchingou, face est, 950 m, 29.III.2001, *Munzinger 563* (MO, NOU[NOU029668]); Massif du Tchingou, face est, 1000 m, 31.III.2001, *Munzinger 588* (MO); Massif du Tchingou, face est, 1120 m, 31.III.2001, *Munzinger 615* (MO, P); Paéoua Mt, 800-1100 m, 26.X.2010, *Munzinger 6017* (MO, P). — South Prov., Pente brûlée près de la mine du "Mois de Mai", 300 m, 13.VIII.1951, *Baumann-Bodenheim 15115* (A, US, Z); Canala, Presqu'île de Bogota, *c.* 450 m, 3.VII.1997, *Dagostini 120* (NOU[NOU029675]); Goro-Nickel, relevé 34, 20.VI.2002, *Dagostini & Rigault 505* (NOU[NOU029679]); Goro, concession SLN "Camille", 18.V.2002, *Dagostini 615* (MO, NOU[NOU029678]); Col de Mouirange, forêt Desmazure, 10.III.2005, *Dagostini 1050* (NOU[NOU009280]); Montagne des Sources, 3.XII.1992, *Dawson WELTU 16573* (NOU[NOU029676], WELTU); Bord de la Fausse Yaté, 10.VII.1981, *Hoff 3581* (NOU[NOU029659]); Dans la partie supérieure de la vallée de l'Odjijoni, 180 m, 2.VI.1951, *Hürlimann 1463* (US, Z); Vallée latérale de la Pourina, 160 m, 4.VI.1951, *Hürlimann 1482* (US, Z); au-dessus du campement Bernier (Montagne des Sources), 850 m, 13.XI.1951, *Hürlimann 3019* (US, Z); Plaine des Lacs, 15.IV.1969, *Jaffré 18* (NOU[NOU029660]); Plaine des Lacs, 15.IV.1969, *Jaffré 200* (NOU[NOU029658]); Région de Kouaoua, 30.IX.1969, *Jaffré 275* (NOU[NOU29661]); Kouaoua, 30.IX.1969, *Jaffré 294* (NOU[NOU029664]); Mt. Kouakoué, 21°58'43"S, 166°32'15"E, 980-1050 m, 9.X.2004, *Labat 3486* (K n.v., MO, NOU[NOU009917], P[P00454747], WELTU); 12 km S of Riv. des Pirogues, ridge overlooking Prony, 200 m, 15.X.1955, *MacKee 3247* (US); Yaté road near barrage, 150-200 m, 6.V.1956, *MacKee 4494* (L); Route de la Montagne des Sources, 500-700 m, 27.X.1956, *MacKee 5665* (L); Vallée de Mamié, 200 m, 6.X.1966, *MacKee 15740* (NOU[NOU029681]); Ouroué, 21.VII.1967, *MacKee 17148* (P[P02089831]); Rivière du Humboldt, 800-900 m, 29.X.1967, *MacKee 17838* (NOU[NOU029648]); Thio-Mt Nékandi, 1200-1300 m, 7.XI.1967, *MacKee 17925* (NOU[NOUO29862]); Mé Ori, Plateau sommital, 900-1000 m, 3.XII.1969, *MacKee 21205* (NOU[NOU029657]); Vallée de la Ouinnée, 25.V.1974, *MacKee 28691* (NOU[NOU029666]); Yaté, plateau au Sud du village, 300 m, 4.VI.1977, *MacKee 33235* (NOU[NOU029665]); Dalmates Les (Mouirange Col), 150 m, 29.II.1980, *MacKee 37865* (NOU)[NOU029608]); Vallée de la Ni, 100 m, 3.XII.1981, *MacKee 40035* (NOU[NOU029651]); Hauteurs de Yaté, 250 m, 10.III.1985, *MacKee 42493* (MO, NOU[NOU029669], P[P02089882]); Along old lumber road to top of Mt Mé Ori, above Katrikoin, 8.IX.1980, *McPherson 3069* (BRI, MO, NOU[NOU029646], NSW, WELTU); Montagne des Sources, *c.* 700 m, 25.X.1980, *McPherson 3275* (BRI, MO, NOU[NOU029663], NSW, WELTU); Along Nouméa-Yaté road, near descent towards Yaté, 400 m, 8.VII.1981, *McPherson 3894* (MO, NOU[NOU20670], WELTU); Upper reaches of valley Rivière des Pirogues, N of Nouméa-Yaté road, *c.* 300 m, 12.XII.1981, *McPherson 4451* (MO, NOU[NOU029656], NSW, WELTU); by Fausse Yaté River, 23.XI.1982, *McPherson 5185* (BISH, MO); Forested slopes above a tributary of the Rivière Ni, 750-770 m, 12.XI.2003, *McPherson 19230* (BISH, MO, NOU); Me Adeo piste en direction du Menazi, 24.III.1988, *Morat 8008* (NOU[NOU029655]); Sommet du Col de Yaté, 26.VII.1965, *Schmid 506* (NOU[NOU029672]); Mine Pauline, vers 450 m, 18.III.1968, *Veillon 1648* (NOU[NOU029673]); Route vers Prony, après Col de Crève-Coeur, 14.X.1968, *Veillon 1859* (NOU[NOU029674], P[P00462967, P05094569], WELTU). — *Ab loco*. *Deplanche 530*, 1861 (P); *Deplanche 531*, 1861 (P); *Deplanche 641?*, 1861 (P).

REPRESENTATIVE HERBARIUM SPECIMEN. — P02089884.

ETYMOLOGY. — Named for Jean Armand Isidore Pancher (1814–1877), French botanist who worked in New Caledonia.

DISTRIBUTION, HABITAT AND PHENOLOGY. — Widespread on Grande Terre (Fig. 20); in maquis, forsest edges, and humid forests, often on ultramafics, 150-1300 m. Flowering throughout the year; fruiting mostly December through July.

DESCRIPTION

Shrubs or trees
1.5-10 m.

Branchlets
Terete to compressed, surface developing small dark rectangular flakes; internodes > 5 mm.

Leaves
Coriaceous, 2 per node; petioles 2-6.5 mm, sulcate; blades 4.0-8.5 × 1.7-3.8 cm, elliptic, base cuneate, surface flat, margin slightly revolute, apex obtuse or retuse, midnerve above sulcate, secondary veins above raised prominently, oil glands of lower surface dense (and of uniform size), prominent.

Inflorescence
2-5.5(-8) cm, pedicels (1.5-)5-9 mm, a simple cyme, raceme, or panicle, terminal or axillary; extrafloral bracts leafy.

Bracteoles
1.3-2 mm, linear to narrowly elliptic, sparsely to densely sericeous.

Hypanthium
c. 3 mm × 3-3.5 mm, campanulate, surface smooth, sericeous to densely sericeous; ovary apex densely tomentose.

Calyx
Lobes 5, 1.3-2.5 mm, broadly rounded to almost truncate, sericeous to densely sericeous above and below, green.

Petals
4.5-6 × *c.* 5 mm, somewhat tomentose above and below.

Filaments
2.5-4 mm; anther sacs 0.5-0.8 mm.

Style
c. 4 mm, lower half villous.

Fruits (material scant)
5-6 × 5-6 mm, dark blue-black, globose, base rounded; seeds 1-2.

REMARKS
Gossia pancheri is the second most common member of the genus in New Caledonia after *Gossia vieillardii*. It is common in the southern part of Grande Terre but ranges north to Mt. Colnett.

The best distinguishing characters include the raised secondary and tertiary venation of the leaves, the thickly coriaceous texture and often glossy sheen of the upper leaf surface.

The species most closely resembles *Gossia kaalaensis* sp. nov., but that species has narrower leaves, a more acute leaf apex, and a glabrous ovary apex. Some specimens (e.g., *MacKee 28691* and *42493*) have more densely pubescent and somewhat smaller flowers, but these differences are merely quantitative.

Gossia ramiflora N. Snow, sp. nov.
(Figs 20; 21E-I)

Diagnosed by others in the genus by the prominently undulating leaf margins and (mostly) ramiflorous inflorescences.

TYPUS. — **New Caledonia.** Grande Terre, South Prov., Farino: Forêt Mépéou, [21°37'5.016"S, 165°46'35.004"E], 500 m, 22.II.1966, *MacKee 14417* (holo-, P[P00462973]; iso-, CANB, K n.v., L n.v., MO[MO2907912], NOU[NOU029712], P[P00462974], WELTU).

PARATYPI. — **New Caledonia.** Grande Terre, North Prov., Route Tiwaka Kono, 150 m, 30.I.1987, *Jaffré 2844* (NOU[NOU029710], P[P00462983]); Western slope of Plateau de Dogny, 600-900 m, 10.XI.1958, *MacKee 6537* (P[P00462984]); Along trail from Sarraméa toward Plateau de Dogny, *c.* 450 m, 1.IX.1982, *McPherson 4924* (BISH[fragment], BRI, MO[MO-3211402], NOU[-NOU029702], P[P00462975]. — South Prov., Col d'Amieu, 500-600 m, 13.VII.1965, *Bernardi 9611* (NOU[NOU029711], P[P00462982]); Col d'Amieu, Vallé de Toili, 350-400 m, 19.I.1965, *MacKee 12002* (NOU[NOU029705], WELTU); Farino, Forêt du Pic Noir, 250 m, 21.I.1965, *MacKee 12034* (WELTU); Col d'Amieu, 350 m, 17.III.1965, *MacKee 12272* (BISH, CANB, K[K001000422], MO, NOU[NOU029716], P[P00462985, P02088629], WELTU); Col d'Amieu, Route du Col Toma, 400 m, 31.III.1965, *MacKee 12342* (BISH, CAN-B[CANB00593372], K[K001000420], P[P00462986], WEL-TU); Mont Nakada pente Sud, 600 m, XI.1979, *MacKee 37618* (MO[MO-6751048], NOU[NOU029714], P[P02089879]); N.C. Mont Yora (Pente Sud), 700 m, 4.XII.1980, *MacKee 38405* (NOU[NOU029560], MO[MO-6751050], P[P02089962, P02089963, P05094544]); Mont Rembai, 700 m, 31.V.1990, *MacKee 44919* (NOU[NOU029706]); Col d'Amieu, versant Canala, 350 m, 9.XII.1992, *MacKee 46043* (NOU[NOU029557], P[P02089842]); Forested slopes near Mt Rembai, south of Col d'Amieu, *c.* 500 m, 7.XI.1982, *McPherson 5089* (BRI, MO[-MO-3218924], NOU[NOU029704], P[P00462976]); Mt Rembai region, above Col d'Amieu, *c.* 575 m, 7.VI.1983, *McPherson 5734* (MO[MO-3211387], NOU[NOU029703], P[P00462977], PTNB, WELTU); Mt Rembai, N of Col d'Amieu, in the forest reserve SW of Canala-La Foa Rd, 650 m, 26.VII.1978, *Phillips & Schmid 3205* (NOU[NOU53251], P[P00462978]); Col d'Amieu, Forêt de Rembai, 500 m, 12.XI.1980, *Suprin 876* (NOU[NOU029709]); Région de Pouembout, au n. de "Forêt-Plate", 26.III.1981, *Suprin 1087* (BISH fragment, NOU[NOU029708]); Col d'Amieu, horaire de la Foa, *c.* 350 m, V.1973, *Veillon 2894* (NOU[NOU029713], P[P00462979, P00462980, P00462981]; Col d'Amieu, Forêt Per-san, vers 400 m, 15.IV.1993, *Veillon 7654* (NOU[NOU029707]).

REPRESENTATIVE HERBARIUM SPECIMEN. — P00462973.

ETYMOLOGY. — From the Latin *ramus* (branch) and *flos* (flower), in reference to the flowers mostly arising from naked branches (before new leaves appear on young branches or proximal along branches to existing leaves).

DISTRIBUTION, HABITAT AND PHENOLOGY. — Central Grande Terre, especially in the area of Col d'Amieu (Fig. 20); in humid forests over ultramafics and schistes, 150-700 m. Flowering October through April; fruiting November through September.

DESCRIPTION
Shrubs and trees
3.5-10 m.

Branchlets
Terete; internodes > 5 mm.

Leaves
Coriaceous, 2 per node; petioles (1.5-)3-6 mm, sometimes slightly sulcate; blades (4.5-)6.5-10.5 × (-2.0)3.0-5.0(-6.0) cm, elliptic to occasionally ovate, base mostly cuneate to occasionally rounded, surface undulate, margin moderately to strongly and irregularly undulate throughout, apex acute, midnerve above sulcate, secondary veins flush above and below, oil glands of lower surface dense and prominent.

Inflorescence
1.0-4.5 cm, pedicels 0.2-0.8 cm, racemes or panicles, mostly naked on branches proximal to leaves or axillary, extrafloral bracts absent or scale-like.

Bracteoles
1-2 mm, narrowly elliptic or (less so) narrowly triangular, sparsely sericeous.

Hypanthium
(1.5-)2-4.5 × 2-3 mm, campanulate or rarely obconic, surface smooth, sparsely to moderately sericeous; ovary apex sparsely hairy.

Calyx
Lobes 5, 1.5-2.0 mm, broadly rounded, glabrous above, glabrous to sparsely sericeous below, green.

Petals
3.5-4.5 × 3.5-4 mm, ciliate but otherwise glabrous.

Filaments
3-5 mm; anther sacs 0.3-0.4 mm.

Style
4.5-6 mm, sparsely sericeous.

Fruits
8-12 × 6.5-12 mm, subglobular to globular, base rounded, maturing yellow-green to reddish to reddish-black; seeds 4-12.

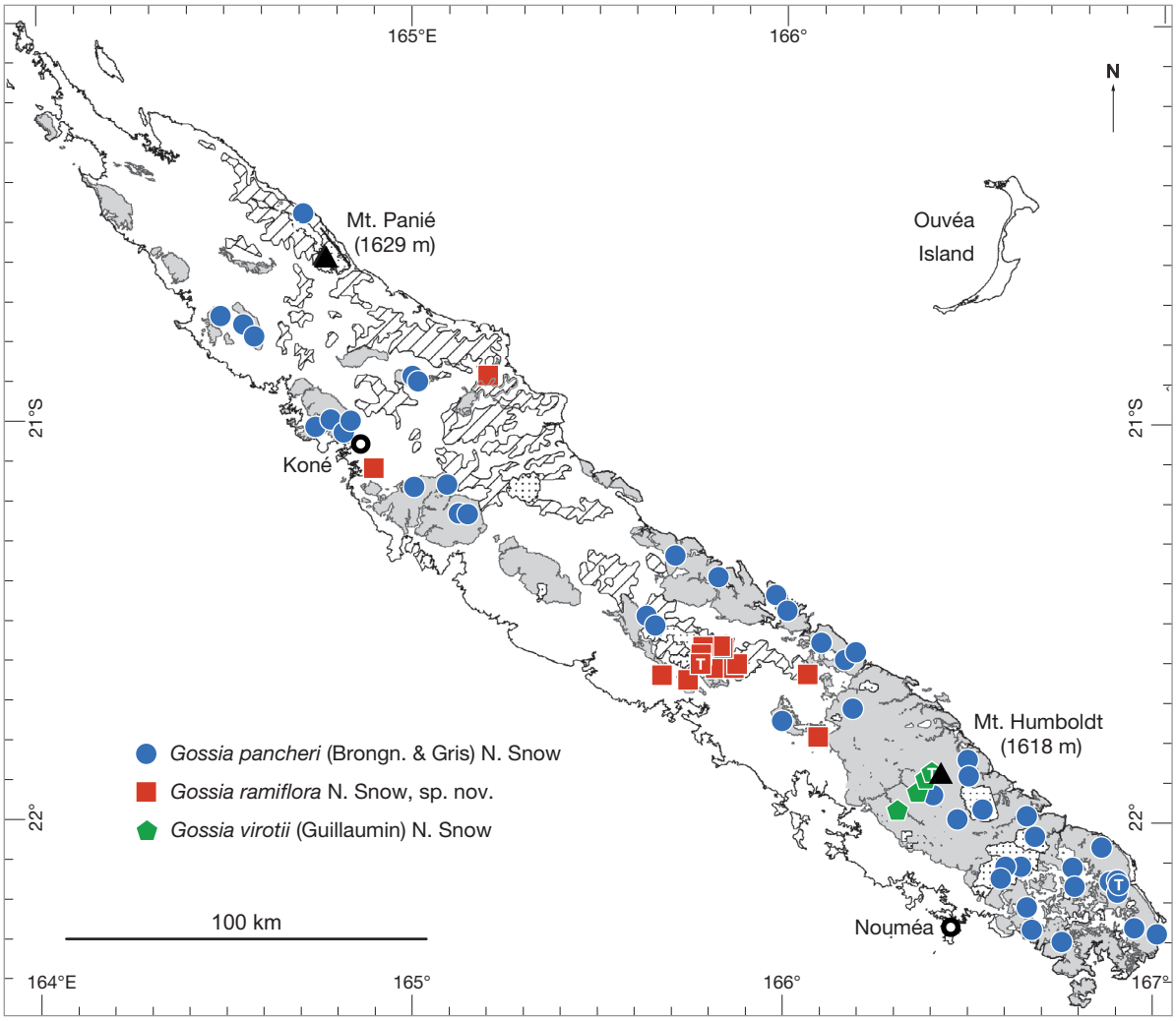

Fig. 20. — Distribution maps of *Gossia pancheri* (Brongn. & Gris) N. Snow, *G. ramiflora* N. Snow, sp. nov. and *G. virotii* (Guillaumin) N. Snow.

Remarks

The species is easily diagnosed by the inflorescences on naked branches and elliptic, acute leaves with undulate margins. The bark of branchlets often breaks into small rectangular flakes. *Gossia ramiflora* sp. nov. somewhat resembles *G. clusioides*, but the latter has a flat leaf margin, lowermost inflorescences axillary, and petals that are tomentose below. The species also resembles *G. vieillardii*, but leaves of the latter mostly have flat margins, are a lighter shade of green, and the fruit often tapers at the base.

Specimens from Pic Noir north of Farino have shorter petioles, more rounded leaf bases, somewhat shorter inflorescences, and slightly smaller flowers than average. The collection from Pouembout is a shrub with more diminutive leaves. The margins of the leaves of *Munzinger 7207* are atypical in being sinuous only distally.

Two specimens previously identified as *G. ramiflora* sp. nov. may represent an undescribed species. They include *Munzinger 7207 & Cantrill* (MPU395687, P01031545) and *Munzinger et al. 7261* (CANB n.v., MO-6630977, MPU028536, P01044671). They resemble *G. ramiflora* sp. nov., but their leaf blades are larger than normal with margins barely if at all irregular, and the blades of the former are slightly bullate in some areas. These specimens also occur over sedimentary volcanics, in contrast to the more typical substrates of volcanics and schists; the latter specimen also is south of the known range of *G. ramiflora* sp. nov.

Gossia vieillardii (Brongn. & Gris) N. Snow
(Figs 19; 22; 23)

Austrobaileya 8 (2): 181 (2010). — *Eugenia vieillardi* Brong. & Gris, *Bulletin de la Société botanique de France* 12: 180 (1865). — *Austromyrtus vieillardii* (Brongn. & Gris) Burret, *Notizblatt des Botanischen Gartens und Museums zu Berlin-Dahlem* 15: 503 (1941). — Typus: **New Caledonia**. Grande Terre, South Prov., Montagnes de Balade, 21°56'36.9960"S, 166°17'35.9880"E, *Vieillard 484* (lecto-, P[P00463006], designated by Snow (Snow & Veldkamp 2010: 181); isolecto-, G[G00340962], P[P00463007 specimen on left, P00463008]; see comments below).

Myrtus prolixa Baker f., *The Journal of the Linnean Society, Botany* 45: 311 (1921). — *Austromyrtus prolixa* (Baker f.) Burret, *Notizblatt des Botanischen Gartens und Museums zu Berlin-Dahlem* 15: 505 (1941). — Typus: **New Caledonia**. Grande Terre, South Prov., Kaori forest in sheltered valley, *Compton 393* (holo-, BM[BM000581653], photo BISH).

Myrtus aneityensis Guillaumin, *Journal of the Arnold Arboretum* 12: 254 (1931). — *Austromyrtus aneityensis* (Guillaumin) Burret, *Notizblatt des Botanischen Gartens und Museums zu Berlin-Dahlem* 15: 506 (1941). — *Gossia aneityensis* (Guillaumin) N. Snow, *Novon* 15: 478 (2005). — Typus: **New Caledonia**. Grande Terre, South Prov., *S. J. Kajewski 810* (lecto- [designated by Snow 2005: 181], P[P0646116]). — A later worker incorrectly annotated the lectotype in 2011 as a syntype.

Eugenia heckelii Pancher & Sebert., *Notice sur les Bois de la Nouvelle Calédonie*: 259 (1874). — Typus: **New Caledonia**. *Ab. loco*, *Petit 52* (lectotype here designated, P[P004629880]). — Another collection, *Fournie 52* (P00462997) has "type?" written in the upper right-hand corner of a label, but a later worker added "(no)" without further explanation.

Representative herbarium specimen. — P06668679.

Etymology. — Named for the French surgeon and botanist Eugène Vieillard (1816-1896), who spent many years in New Caledonia.

Distribution, habitat and phenology. — Common across much of Grande Terre and some islands (Fig. 19); in maquis of humid forests or sometimes along streams, mostly over schists, micaschistes, graywackes or serpentines, (5-)150-1000 m. Flowering January through June; fruiting known year-round.

Specimens examined. — **New Caledonia.** North Prov., Silva Peala, ad occidentem Pouebo, 500-600 m, 6.IV.1968, *Bernardi 12609* (P, US, Z); *ibid. loco*, 200 m, 27-28.III.1968, *Bernardi 12412* (L, P); La Guen, refuge Blaffart, 25.II.2013, *Hequet 4055* (NOU, MO); Ouest de la Tiebaghi, 9.XI.1980, *Hoff 3089* (NOU[NOU029575]); Ouest de la Tiebaghi, 9.XI.1980, *Hoff 3108* (NOU); Ouraï, IX.1876, *Lécard 45* (P[P05094057]); Forêt de Tendé (Haute Diahot), 500-600 m, 12.IX.1967, *MacKee 17547* (NOU[NOU029597], WELTU; Haut Diahot – Tendé, Expl. Frouin, 500 m, 31.III.1969, *MacKee 20456* (NOU[NOU029567]); Pouebo, crête entre Mandjélia et Salandané, 600 m, 11.X.1969, *MacKee 20819* (NOU[NOU029626]); Haute vallée d'Houailou, 350 m, 14.XI.1969, *MacKee 21184* (NOU[NOU029715], P[P02089836]); Pouebo, crête entre Mandjélia et Salandané, 15.XII.1969, *MacKee 21303* (NOU[NOU029568]); Pouebo, 600-700 m, 12.IV.1972, *MacKee 25216* (BISH, NOU[NOU029625]); Col d'Amos, Haute Mayavetch, 500 m, 10.VII.1972, *MacKee 25688* (P[P00463024, P05094542, P05094543]); Col d'Amoss, Haute Mayavetch, 500 m, 24.III.1973, *MacKee 26472* (P[P02089835]); Aoupinié, 27.VII.1974, *MacKee 29030* (NOU[NOU029614], P[P02089834]); [Île] Balabio, Baie de Capitaine, 10-150 m, 17.IX.1974, *MacKee 29317* (NOU[NOU029599]; P[P02089839]); Pouébo, Mandjélia, 26.IV.1976, *MacKee 31172* (NOU[NOU029607], P[P02089880]); Haut Diahot, Paala, 400 m, 1.VI.1976, *MacKee 31296* (NOU[NOU029615]); Haut Diahot, Tendé, 600 m, 16.V.1981, *MacKee 39055* (MO, NOU[NOU029605], P[P02089876]); Ponérihouen, Mont Aoupinié, 700 m, 18.VIII.1981, *MacKee 39468* (MO, NOU[NOU029558], [P02089881]); Houailou, Néaoua, 450 m, 26.VI.1982, *MacKee 40496* (MO, NOU[NOU029596], P[P02089877, P02089878]); Vallée de Bua Hio, 22.XII.1966, *Schmid 1929* (NOU[NOU029573], P[P00462994]); Mt. Mandjélia from Ouéga, *c.* 650 m, 11.VIII.2003, *Snow 9214 et al.* (ASU, BISH, BRI, CANB, MO, NOU[NOU000646], NY, P[P00459486], WELTU); Along streambed below and W of Col d'Amos, 22.X.1959, *Thorne 28143* (P[P00462999]); Massif Ignambi, 600 m, 28.XI.1967, *Veillon 1513* (NOU[NOU053250], P[P00463000], Z); Paagoumène, face site de l'usine, 13.V.1981, *Veillon 4479* (NOU[NOU029600], P[P00463003]); Île Balabio, extremité sud, Bweroro, 5 m, 30.IX.1997, *Veillon 8035* (BISH, NOU[NOU029602], P[P00463004]); Wagape, 1867, *Vieillard s.n.* (NSW). — South Prov., Prony, *Balansa 90* (P[P05094056], Z[Z-000092713, Z-000092714, Z-000092718]); Mois de May, 300 m, 25.VI.1951, *Baumann-Bodenheim 14281* (A, Z); Pte Panèta – Kouré, 10.V.1951, *Baumann-Bodenheim 13274* (P); The Rivière Blanche, Forêt du Mois de Mai, 25.VI.1951, *Baumann-Bodenheim 14254* (MO, P, Z); région Rivière Bleue, 200 m, 27-28.III.1968, *Bernardi 12412* (MO, US, Z); Thy House platform, 200 m, 26.II.1980, *Brinon 549* (NOU[NOU029564]); Thy, upper eastern track, 290 m, 27.IV.1980, *Brinon 646*, (NOU[NOU029563]); Thy, quarry track, 200 m, 23.X.1982, *Brinon 1401* (NOU[NOU029562]); Plaine des Lacs, *c.* 245 m, *Compton 393* (BM); Goro, entre Forêt Nord et le route Inco, 20.III.2002, *Dagostini & Rigault 457* (NOU[NOU029618]); Goro-Inco, relevé R8, 20.IV.2002, *Dagostini et al. 471* (NOU[NOU029612]); Goro-nickel, 20.XI.2002, *Dagostini & Rigault 602* (NOU[NOU029610]); Montagne des Sources, 1000 m, 3.XII.1992, *Dawson WELTU16579* (NOU[NOU029591], WELTU); Col. d'Amieu, 7.XI.1982, *Dawson WELTU16600* (WELTU); Port Boisé, 18.XI.1982, *Dawson WELTU16604* (WELTU); Prony, 25.XI.1974, *Favier 5195* (NOU[NOU029601]); Prony, II.1914, *Franc 1689* (L, P[P005094037, P005094042, P005094047], US); Prony, II.1914, *Franc 1689a* (P[P05094043, P05094045]); vallée supériure de la Pouéta-Kouré, 200 m, 20.V.1951, *Guillaumin & Baumann-Bodenheim 13274* (P[P00463019], Z); Montagne des Sources, 22.VIII.1951, *Hürlimann 1799* (P[P00463020], Z); vallée latérale de lat Riv. Blanche sur la route aux "Électriques", 165 m, 25.VIII.1958, *Hürlimann 3377* (Z); Ouenarou Forest Reserve, 280 m, 26.II.1992, *Koyama 8185* (P[P00463022]); Prony, *Le Rat 306* (P[P05094051]); Baie de Sud [Baie de Prony], entre Baie N'Go et Touaorou, 12.VIII.1903, *Le Rat 600* (P[P05094046]); Mt. Dzumac, IV.1905, *Le Rat 2659* (P[P05094048]); Haute Rivière Bleue, 200 m, 8.IV.1965, *MacKee 12396* (NOU[NOU029598], P[P00463023], WELTU); Route de Yaté – Les Dalmates, 150 m, 8.III.1969, *MacKee 20272* (NOU[NOU029613]); Col d'Amieu: Toili, 600 m, 22.IX.1970, *MacKee 22546* (NOU[NOU029561], P[P02089837]); Montagne des Sources, 23.X.1974, 800 m, *MacKee 29417* (P[P02089841]); Forêt Cachée, 250 m, VII.1973, *MacKee 26947* (NOU[NOU029617]); Prony, Forêt Nord, 200 m, 6.V.1975, *MacKee 30090* (NOU[NOU029616]); Forêt Faux Bon Secours, 1.V.1978, *MacKee 35083* (NOU[NOU029570]); Pente Sud du Mt Nakada, 600 m, 18.XI.1979, *MacKee 37618* (P[P02089879]); Forêt Faux Bon Secours, 300 m, 17.III.1980, *MacKee 37905* (NOU, P[P02089885]); Forêt Faux Bon Secours, 300 m, 25.II.1981, *MacKee 38772* (NOU[NOU029571], P[P02089840]); Rivière Bleue, 150 m, 1.IV.1981, *MacKee 38890* (NOU[NOU029569]); Vallee de la Ni, 100 m, 3.XII.1981, *MacKee 40035* (MO, P[P02089886]); Rivière des Lacs 5 km aval de la Chute, 200 m, 24.I.1987, *MacKee 43426* (NOU[NOU029604]); Ouénarou, 150 m, 29.VIII.1987, *MacKee 43668* (NOU[NOU029603]); *ibid. loco*, 150 m, 7.III.1988, *MacKee 43923* (BRI, MO, NOU[NOU029609], P[P02089874]); Pic du Pin, 200 m, 27.IX.1988, *MacKee 44106* (P); Thy River valley, *c.* 12 air-km NE of Nouméa, 200 m, 9.IV.1979, *McPherson 1539* (BISH, MO, NSW, NOU[NOU029620], PTBG); Thy River valley, *c.* 12 air-km NE of Nouméa, *c.* 400 m, 25.IV.1979, *McPherson 1567* (BISH, NOU[NOU029592], P[P00463027]); Along road from Dumbéa River valley towards Mt Dzumac, *c.* 25 air-km N of Nouméa, 24.II.1980, *McPherson 2472* (MO, NOU[NOU029565], P[P00463028]); Rivière Bleue reserve, *c.* 30 air-km NE of Nouméa, 30.VII.1980, *McPherson 2894* (MO, NOU[NOU029619], NSW, P[P00463029], WELTU); Rivière Bleue reserve, *c.* 200 m, 25.III.1981, *McPherson 3648* (MO, NOU[NOU029621], P[P00463030], WELTU); Thy River Valley, *c.* 12 air-km NE of Nouméa, 25.III.1981, *McPherson 3685d* (MO); Rivière des Pirogues, N of Nouméa-Yaté road, 16.I.1982, *McPherson 4553* (MO, NOU[NOU029593], WELTU); Forested slopes near Mt Rembai, south of Col d'Amieu, 600 m, 6.XI.1982, *McPherson 5064* (MO, NOU[NOU029623], P[P05094540]); Bay of Prony, 19.XI.1982, *McPherson 5160* (MO, NOU[NOU029566], P[P00463030], PTBG) ; Forested slopes above a tributary of the Rivière Ni, 950-1000 m, 10.XI.2003, *McPherson 19212 et al.* (BISH, NOU[NOU004200], MO, P[P06668679]); Exploitation Forestière Guiraud à l'est de Bourail, Me Adeo, piste en direction du Menazi, 600-700 m, 24.III.1988, *Morat 8008* (P[P00462987]); Pic du Pin, 7.XI.2002, *Munzinger 1745* (MO, NOU[NOU012263], P[P00354256]); Haute Dumbéa, 25.V.1967,

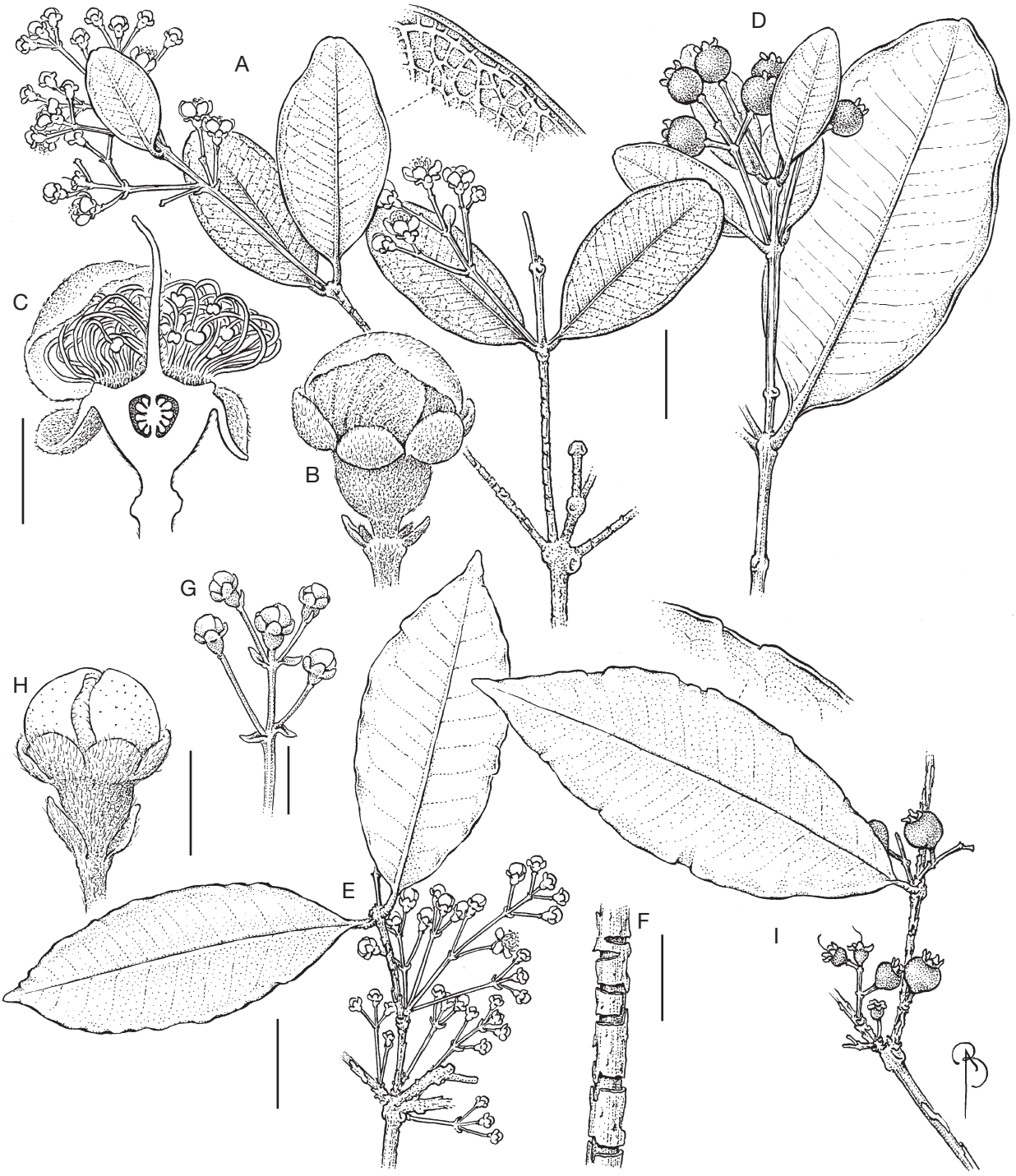

FIG. 21. — **A**-**D**, *Gossia pancheri* (Brongn. & Gris) N. Snow: **A**, flowering branch with details of abaxial leaf venation (**offset on right**); **B**, detail of flower prior to anthesis; **C**, longitudinal section of flower bud showing bilocular ovary with axile placentation; **D**, leaf and fruits; **E**-**I**, *Gossia ramiflora* N. Snow, sp. nov.: **E**, flowering branch; **F**, details of more or less rectangular flaking bark; **G**, flowers prior to anthesis; **H**, detail of flower bud; **I**, another view of leaf (with detail of sinuous margin) with young fruits. Vouchers: **A**-**C**, *McPherson 3275* (WELTU); **D**, *McPherson 5019* (NOU); **E**-**H**, *MacKee 12272* (WELTU); **I**, *Phillips 2105* (NOU). Scale bars: A, D, I, 2 cm; B, C, H, 3 mm; E, 2 mm; F, G, 5 mm.

Nothis 373 (NOU[NOU029576]); Wagap, au-dessus de "Chapeau", *Pancher s.n.* (P[P05094053]); Süd-Bai, zwischen der Bai N'Go und Touaourou, 1903, *Rohrdorf 12* (Z); Rivière Bleue, 11.III.1966, *Schmid 1097* (NOU[NOU029594], P[P005094538]); Rivière Bleue, IV.1970, *Schmid 3086* (NOU[NOU029574], P[P05094541, P00462995]); Route du Dzumac, 600 m, 24.IV.1974, *Schmid 5000* (NOU[NOU029572], P[P00462996]); Prony, 25.XI.1974, *Schmid 5195* (P[P05094539], WELTU); Secteur du col d'Amieu, 700 m, 7.IV.1981, *Suprin 1122* (NOU[NOU029595]); Monts Dzumac, 26.XI.1981, *Suprin 1542* (P[P00462998]); La Rivière Blanche, V.1973, *Veillon 2873* (NOU[NOU029622, NOU029599], P[P00463001, P00463002]). — *Province unknown/Ab loco. Franc s.n.* (P[P05094044]); *Lécard s.n.* (P[P05094055]); *Sébert 74* (Herb. Pancher) (P[P05094052])).

DESCRIPTION
Shrubs or trees
2-8(-18) m.

Branchlets
Terete, surface smooth; internodes > 5 mm.

Leaves
Coriaceous, 2 per node; petioles 2.5-6.5 mm; blades (2.0-)3.5-8.0(-9.5) × (1.3-)1.8-3.5(-5.2) cm, narrowly elliptic to mostly elliptic or broadly elliptic, base cuneate (rarely rounded), surface flat, margin flat, apex obtuse to acute, midnerve above flush or sulcate, secondary veins above flush, oil glands of lower surface absent or sparse, indistinct.

Inflorescence
1.5-5.0 cm, pedicels (1-)6-15(-30) mm; of monads, 3-flowered cymes, or racemes, terminal or axillary, extrafloral bracts absent or scale-like.

Bracteoles
0.5-1.4 mm, narrowly triangular, sparsely sericeous.

Hypanthium
(2.5-)5-5.5 × 3.5-6 mm, obconic, surface smooth, sparsely sericeous; ovary apex glabrous to sparsely hairy.

Calyx
Lobes 5, 1.4-2.7 mm, broadly ovate or rounded, ciliate on margins, glabrous above, glabrous to sparsely sericeous below, green.

Petals
(4-)5-7 × 3-4 mm, glabrous above and below, ciliate on margins.

Filaments
3-5 mm; anther sacs 0.4-0.6 mm.

Style
4-5 mm, sparsely (or rarely densely) villous on lower ½-¾.

Fruits
(5-)7-10(-12) × 6.5-10 mm, subglobular to globular, base rounded or often prominently tapered, red to dark red; seeds 1-2.

REMARKS
Gossia vieillardii is the most widespread species of the genus in New Caledonia. As presently understood, it is the only species of *Gossia* of New Caledonia that is not strictly endemic, occurring also in Vanuatu (Snow & Veldkamp 2010).

I annotated a specimen as the lectotype at P in August of 2004 but suggested later (Snow & Veldkamp 2010: 181) that it could be considered the holotype. Digital access to specimens at P, unavailable in 2004 and 2010, now reveals twelve specimens under *Vieillard 484*, representing at least four genera (*Gossia*, *Decasperum* J.R. Forst. & G. Forst., *Uromyrtus* Burret and *Archirhodomyrtus* [Nied.] Burret). In contrast to my suggestion in 2010, the specimen should be considered the lectotype (as still annotated).

Gossia vieillardii shows considerable variation in its morphology, but no character differences warranted splitting the species. For example, a few specimens have slightly bullate leaves (e.g., *Mackee 21184* and *22546*). The species is the only one observed thus far in New Caledonia with occasionally tri-locular ovaries (Baker 1921). The petioles of *G. vieillardii* are bright pink or magenta. The base of the fruit on specimens is either rounded or noticeably tapered. The petals are whitish and said to be sweetly scented (Baker 1921). The flowers of some specimens are relatively small and have a densely pubescent hypanthium (e.g., *MacKee 25216*), whereas others are glabrous. The species can resemble *G. diversifolia*, but the latter has 4-angled branchlets. *Gossia pancheri* is similar but has a longer and more densely hairy hypanthium.

Gossia virotii (Guillaumin) N. Snow
(Fig. 20)

Austrobaileya 8 (2): 192 (2010). — *Myrtus virotii* Guillaumin, *Mémoires du Muséum national d'Histoire naturelle, Paris*, sér. B, *Bot.* 4: 33 (1953). — Typus: **New Caledonia.** Grande Terre, South Prov., Vallée de la Rivière de Humboldt, environs de la Case Marc (ancien campement pages), 130 m, 13.XI.1940, *Virot 411* (holo-, P[P00602573]; iso-, A[00255457], NOU[NOU006235], NY, P[P00462850], Z).

SPECIMENS EXAMINED. — **New Caledonia.** South Prov., *Baumann-Bodenheim 8119*, Col de Vulcain, 11.XI.1950, (P[P00459517], US, Z); Col de Vulcain, 900 m, 11.XI.1951, *Baumann-Bodenheim 8184* (P[P00459519], US); Col de Vulcain, 11.XI.1951, *Bauman 8209* (A, P[P00459520], US); Vale des von Mts Humboldt, 3.XI.1924, *Däniker 459* (Z[Z-000050488]; Vallée Koéalagoguamba, 9.X.1977, *MacKee 34057* (NOU[NOU028911], P[P00462841]); Hte vallée de la Tontouta, 22.X.1968, *Veillon 1857* (NOU[NOU028913], P[P00462844]).

REPRESENTATIVE HERBARIUM SPECIMEN. — P00462850.

ETYMOLOGY. — After Robert Virot (1915-2002), French botanist and collector of the holotype.

DISTRIBUTION, ECOLOGY AND PHENOLOGY. —Southern Grande Terre in maquis over ultramafics (Fig. 20), to *c.* 130 m. Flowering August through February; fruiting September through March.

DESCRIPTION
Shrubs
To 1 m tall.

Branchlets
Round, internodes mostly greater than 5 mm long, emerging pubescent becoming glabrous and grayish.

Petioles
0.5-2 mm, emerging hairy becoming glabrous.

Leaves
Coriaceous, 2-4 per node.

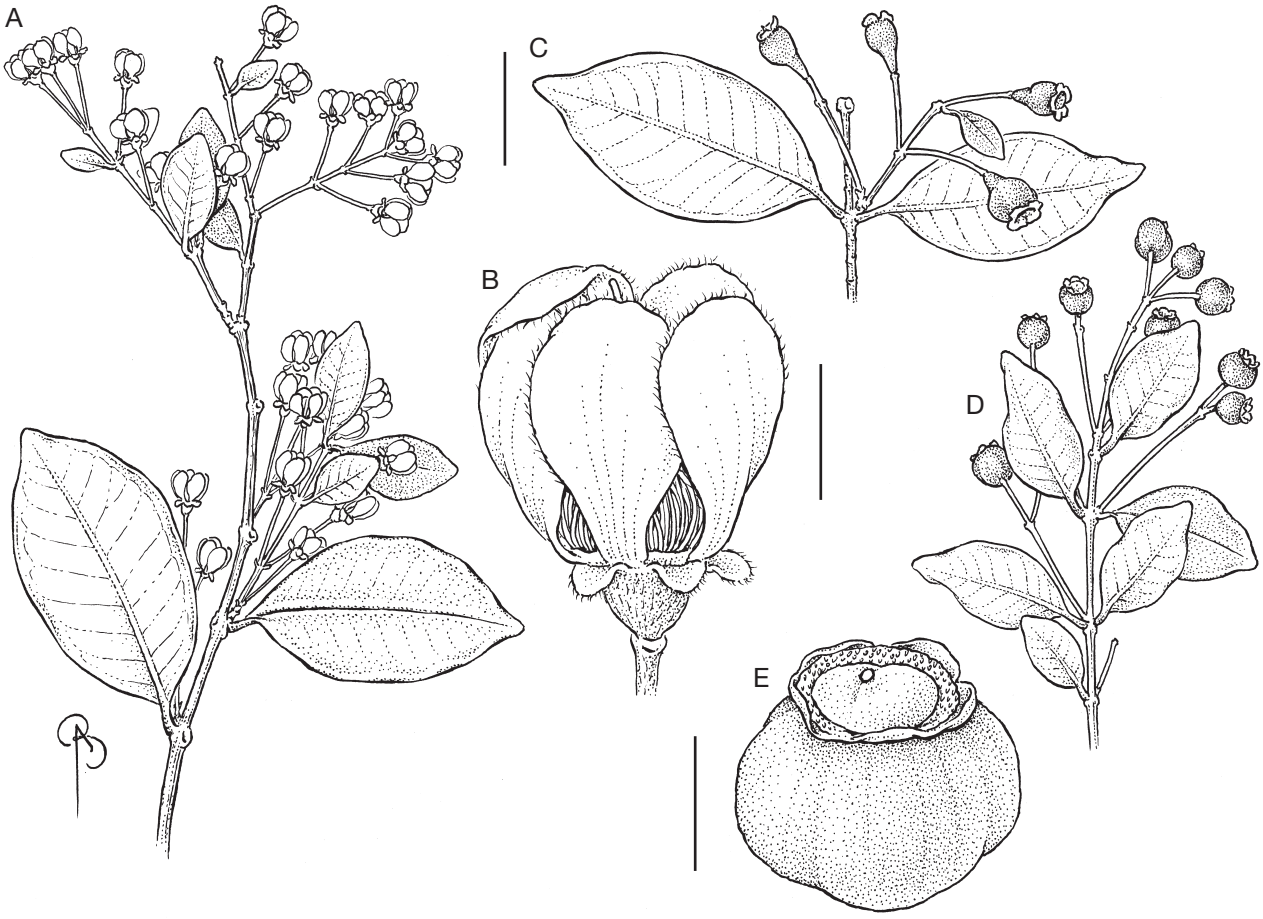

FIG. 22. — *Gossia vieillardii* (Brongn. & Gris) N. Snow: **A**, branch and inflorescences; **B**, flower just prior to anthesis; **C**, leaves and young fruits; **D**, leaves and young fruits; **E**, young fruit. Vouchers: **A**, **B**, *McPherson 1567* (WELTU); **C**, *Veillon 1513* (NOU); **D**-**E**, (*MacKee 40566* [P]). Scale bars: A, C, D, 2 cm; B, 3 mm; E, 4 mm.

Petioles
Less than 2 mm long.

Blades
1.5-3.0 × 0.2-0.6 cm, broadly linear to very narrowly obovate, base cuneate, margins slightly recurved, apex retuse, sparsely hairy becoming more or less glabrous below, midvein sulcate above throughout, venation inconspicuous but secondary veins slightly raised above, inconspicuous to not visible below.

Inflorescences
Of ascending axillary monads, infrequent, pedicels less than 5 mm.

Calyx
Lobes 4, whitish pubescent above.

Petals
Said to be whitish (none seen).

Stamen disk
Pubescent.

Anthers
Said to be ovate (none seen).

Fruit
Unknown.

REMARKS
The species is recognizable by its frequent occurrence of 3-4 narrow leaves per node with their retuse tips. The species resembles *Gossia conspicua* comb. nov., but *G. virotii* differs by its thinner textured, narrower and less strongly recurved leaf blades. In addition, the leaves of *G. virotii* are aggregated less densely at the tips of branchlets compared to *G. conspicua* comb. nov. The leaves of *Baumann-Bodenheim 8184* are suggestive of *Gossia alaternoides*, given their greater width than other specimens of *G. virotii*. Recent checks (August 2019) indicate that one specimen still is annotated (incorrectly) as *G. alaternoides* (P[P00462841]) and another (incorrectly) as *G. conspicua* comb. nov. (P[P00462844]).

Additional descriptive data are needed for fertile material, but despite the inadequate description of flowers (and none yet for fruits), the species is easily distinguished from *G. conspicua* comb. nov.

FIG. 23. — *Gossia vieillardii* (Brongn. & Gris) N. Snow: **A**, branchlets in flower; **B**, mature (**left**) and immature (**right**) fruit and adaxial leaf surfaces. Vouchers: ©Hervé Vandrot, with permission; from forêt du Massif du Oua-Tilou (http://endemia.nc).

SYNONYMIZATION OF *GOSSIA BYRNESII* UNDER *EUGENIA REINWARDTIANA*

Described from a single specimen from northeastern Australia (Snow *et al.* 2003), *Gossia byrnesii* N. Snow & Guymer here is reduced to synonymy under *Eugenia reinwardtiana* (Blume) DC., given its 4-merous flowers and dibrachiate trichomes, the latter being common in *Eugenia* but unknown for *Gossia*. Fruiting material, absent from the holotype, would have clarified unambiguously its generic placement, given the pronounced differences in seed number and testal texture (seeds few and with a soft or leathery testa in *Eugenia*).

The taxonomy of *E. reinwardtiana* itself is complex and in need of further study, summarized recently by Veldkamp (2013). Moreover, Bernardini *et al.* (2014) used maximum likelihood analysis of combined nuclear (ITS and ETS) and plastid (*ndh*F, *mat*K, and *rpl*16) on six accessions of *E. reinwardtiana* from across a broad geographical area (Philippines south to Australia and east to Hawaii). The sampled specimens were found to be closely related to, or perhaps conspecific with, *Eugenia bryanii* Kaneh., *E. palumbis* Merr., *E. confusa* DC., and *E. koolauensis* O. Deg. (Bernardini *et al.* 2014).

DISCUSSION

Gossia is one of eight New Caledonian genera of Myrtaceae with baccate fruits. *Syzygium* Gaertn. (Dawson 1999) and *Eugenia* L. (flowers mostly 4-merous) are the most diverse, but both have relatively large, globular embryos with a membranous to leathery testa. In addition, fruits of *Syzygium* and *Eugenia* in New Caledonia typically have three or fewer seeds. In New Caledonia, *Syzygium* is most easily distinguished from *Eugenia* in having mostly paniculate inflorescences (Dawson 1999).

Identification of sterile specimens of Myrtaceae typically is challenging, given that the family is species-rich in many of the places where it occurs (e.g., Holst *et al.* 2014; Sobral & De Souza 2015; Sobral *et al.* 2015; Snow *et al.* 2015; Landrum 2017), which unfortunately also makes distinguishing between different genera in the field and herbarium difficult. Flowering material also may be difficult to identify at the generic level given that flowers of two or more genera can be remarkably similar (e.g., *Gossia*, *Eugenia, Archirhodomyrtus*). In such cases fruits and mature seeds typically are necessary to determine generic placement and to make specific identifications. This conundrum is most pronounced in New Caledonia between species of *Eugenia* and *Gossia*. Whereas members of *Eugenia* typically have 4-merous flowers, some species of *Gossia* do as well (Snow *et al.* 2003). However, the hardened and relatively small, usually somewhat compressed and irregularly angled seeds of *Gossia* are distinguished easily from the relatively large, globular, and soft-textured seeds of *Eugenia*. If a specimen bears dibrachiate (branched once near the base) trichomes, then it is *Eugenia*. If the trichomes are of other types, then *Gossia* is the more likely genus among the 4-merous baccate Myrtaceae in New Caledonia. However, some species of *Eugenia* in New Caledonia have other types of trichomes (but see for example Snow *et al.* 2016a) in addition to the dibrachiate type (see also Snow *et al.*, in prep.).

The other baccate genera in New Caledonia that share the hardened and relatively small seeds of *Gossia* include (by decreasing levels of specific diversity): *Uromyrtus* (*c.* 8-10 species in New Caledonia; a widespread genus still badly in need of revision), which has solitary and strongly pendulous flowers with basifixed (non-versatile) anthers and distinctly prolonged connectives on the filaments; *Kanakomyrtus* N. Snow, a dioecious genus of six species with lobed stigmas (Snow 2009); *Archirhodomyrtus* (Nied.) Burret, a genus of

three species (in N.C.) with a peltate stigma and numerous seeds stacked horizontally like poker chips in 2-3 well-defined locules (vs stigmas narrow and terete and seeds typically five or fewer arranged irregularly on shield-shaped placenta in *Gossia*), *Rhodomyrtus locellata* (Guillaumin) Burret, with large whitish-pinkish flowers and acrodromous leaf venation (vs shorter, whitish-pinkish petals and brochidodromous venation in *Gossia*); *Rhodamnia andromedoides* Guillaumin (with [uniquely for the genus] 5-merous flowers, parietal placentation, and acrodromous venation on leaves that bear a short but stiff mucro); the monotypic *Myrtastrum rufopunctatum* (Panch. ex Brongn. & Gris) Burret, a widespread, densely branched shrub (0.5-3 m) with unisexual flowers (plants evidently usually dioecious; Snow in prep.) and with densely ferrugineous-punctate leaves only *c.* 5-12 mm long; and *Xanthomyrtus kanalaensis* (Hoch.) N. Snow, with 4-merous flowers (in New Caledonia) and a leathery and wrinkled mature fruit that resembles a raisin (Snow & Veldkamp 2010: 179).

As currently understood, *Gossia* in New Caledonia now includes twenty species and ten subspecies. Together with species from Australia (nineteen species [now excluding *G. byrnesi*]) and elsewhere in Melanesia (six species), the genus now includes forty-five species and ten subspecies (Snow *et al.* 2003; Snow 2005, 2006; Snow & Wilson 2010; Snow & Veldkamp 2010). Apart from *G. vieillardii*, which also occurs in Vanuatu, all taxa of New Caledonian *Gossia* are endemic. *Gossia vieillardii* also is by far the most common member of the genus on Grande Terre; its absence from the Loyalty Islands (between Grande Terre and Vanuatu) is puzzling, given that it has reached Balabio Island to the north of Grande Terre. Members of *Gossia* in New Caledonia occur mostly in forests, but over a wide range of substrates, precipitation regimes, and elevations.

Several species of *Gossia* are quite common (>10 collections), including *G. alaternoides*, *G. conspicua* comb. nov., *G. diversifolia*, *G. kaalaensis* sp. nov., *G. pancheri*, *G. ramiflora* sp. nov. and *G. vieillardii*; all likely will be designated as Least Concern following IUCN Red List Categories (IUCN 2012).

The first preliminary and partial phylogeny of *Gossia*, based on nuclear ribosomal and plastid spacer DNA sequence data, suggests the genus arose in Australia but radiated soon thereafter both in New Caledonia and Australia (McLay *et al.* 2018). The eight taxa sampled for New Caledonia were monophyletic, although their data set did indicate equivocal support for the separation of *Austromyrtus* from *Gossia* (McLay *et al.* 2018), despite consistent differences in floral morphology between the two genera (Snow *et al.* 2003).

An interesting ecological aspect of *Gossia* is the ability of several species to hyperaccumulate manganese (Fernando *et al.* 2009, 2013; McLay *et al.* 2018). This ability may have helped broaden it ecological range in New Caledonia, given the widespread presence of ultramafic substrates.

Priorities for future work should focus on obtaining more collections of the relatively uncommon taxa, and more of the subspecies of *Gossia clusioides*. Given the rapid pace of collecting in recent years, the many specimens that remain indetermined across various herbaria (pers. obs.), and the accumulation of large numbers of digital images, the descriptive and distributional information in this treatment may need substantial updating. The author requests that new, vouchered data be sent via email, preferably with detailed observations and digital images, which will be incorporated (with acknowledgments) into the third volume of Myrtaceae of the *Flore de la Nouvelle-Calédonie*.

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REFERENCES

Baker E. G. 1921. — Plants from New Caledonia. Dicotyledons. Polypetalae. *The Journal of the Linnaean Society, Botany* 45: 264-323. https://www.biodiversitylibrary.org/page/171160

Beentje H. 2010. — *The Kew Plant Glossary*. Royal Botanic Gardens, Kew, 184 p.

Bernardini B., Byng J. W. & Snow N. 2014. — Phylogeny, biogeographic origins, and convergent evolution in Old World *Eugenia* (Myrtaceae), with a focus on African species. *Botany*. Boise, Idaho, United States, poster with published abstract.

Brongniart A. & Gris A. 1865. — Observations sur les Myrtacées sarcocarpées de la Nouvelle-Calédonie, et sur le nouveau genre *Piliocalyx*. *Bulletin de la Société botanique de France* 12: 174-187. https://doi.org/10.1080/00378941.1865.10825005

Brown R. W. 1956. — *Composition of Scientific Words*. 2nd ed. Smithsonian Institution Press, Washington, 882 p.

Burret M. 1941. — Myrtaceen-Studien. *Notizblatt Botanische Gartens Berlin-Dahlem* 15: 479-550. https://doi.org/10.2307/3995084

Cañadas E. M., Fenu G., Peñas J., Lorite J., Mattana E. & Bacchetta G. 2014. — Hotspots within hotspots: Endemic plant richness, environmental drivers, and implications for conservation. *Biological Conservation* 170: 282-291. https://doi.org/10.1016/j.biocon.2013.12.007

Däniker A. U. von 1933. — Katalog der Pteridophyta und Embryophyta siphonogama. III. Teil. *Beiblatt zur Vierteljahrsschriftder Naturforschenden Gesellschaft in Zürich*, Jahrg. 78, 19: 237-338.

Dawson J. W. 1992. — Myrtaceae: Leptospermoideae, *in* Morat P. & MacKee H. S. (eds), *Flore de Nouvelle-Calédonie et Dépendances,* Vol. 18. Muséum national d'Histoire naturelle, Paris: 1-251.

Dawson J. W. 1999. — Myrtaceae, Myrtoideae (I): Syzygium, *in* Morat P. & MacKee H. S. (eds), *Flore de Nouvelle-Calédonie et Dépendances*. Vol. 23. Muséum national d'Histoire naturelle, Paris: 1-144.

De Queiroz K. 1998. — The general lineage species concept of species, species criteria, and the process of speciation: A conceptual unification and terminological recommendations, *in* Howard D. J. & Berlocher S. H. (eds), *Endless Forms: Species and Speciation*. Oxford University Press: 57-75.

Fenu G., Mattana E., Congiu A., Bacchetta G. 2010. — The endemic vascular flora of Supramontes (Sardinia), a priority plant conservation area. *Candollea* 65: 347-358. https://doi.org/10.15553/c2010v652a10

Fernando D. R., Guymer G., Reeves R. D., Woodrow I. E., Baker A. J. & Batianoff G. 2009. — Foliar Mn accumulation in eastern Australian herbarium specimens: prospecting for 'new' Mn hyperaccumulators and its potential application in taxonomy. *Annals of Botany* 103: 931-939. https://doi.org/10.1093/aob/mcp013

Fernando D. R., Marshall A. T., Forster P. I., Hoebee S. E. & Siegele R. 2013. — Multiple metal accumulation within a manganese-specific genus. *American Journal of Botany* 100: 690-700. https://doi.org/10.1071/SB18016

Gâteblé G., Barrabé L., McPherson G., Munzinger J., Snow N. & Swenson U. 2018. — One new endemic plant species on average per month in New Caledonia, including eight more new species from Île Art (Belep Islands), a major micro-hotspot in need of protection. *Australian Systematic Botany* 31: 448-480. https://doi.org/10.1071/SB18016

Guillaumin A. 1911. — Histoire des explorations botaniques ex Nouvelle-Calédonie et aux Îles Loyalty. *Annales du Musée colonial de Marseille*, sér. 2, 9: 83-290.

Guillaumin A. 1931. — Contribution to the flora of the New Hebrides: Plants collected by S.F. Kajewski in 1928 and 1929. *Journal of the Arnold Arboretum* 12: 221-264. https://www.jstor.org/stable/43780599

Guillaumin A. 1938. — Contributions à la Flore de la Nouvelle-Calédonie. LXVII. Plantes récoltées par M. et Mme Le Rat de 1900 à 1910 (10e supplement). *Mémoires du Muséum national d'histoire naturelle*, sér. 2, *Botanique*, 10: 433-434.

Guillaumin A. 1939. — Matériaux pour la flore de la Nouvelle-Calédonie. LIII. Revision des Myrtacées à fruit charnu précédée de quelques notes supplémentaires sur les Myrtacées à fruit sec. *Bulletin de la Société botanique de France* 8: 626-653. https://doi.org/10.1080/00378941.1938.10837451

Guillaumin A. 1959. — Contributions à la Flore de la Nouvelle-Calédonie. CXVI. Plantes recueilles par MacKee (suite) 4e liste (1). *Mémoires du Muséum national d'histoire naturelle*, sér. B, *Botanique* 8 (2): 121-192. https://www.biodiversitylibrary.org/page/58047634

Guillaumin A. 1962 (ed.). — Myrtacees, in Résultats scientifiques de la mission Franco-Suisse de botanique en Nouvelle-Calédonie. II. *Mémoires du Muséum national d'histoire naturelle*, sér. B, *Botanique* 8 (3): 274-301. https://www.biodiversitylibrary.org/page/58053474

Guillaumin A. & Virot R. 1953. — Contributions à la Flore de la Nouvelle-Calédonie. CII. Plantes récoltées par M. R. Virot. *Mémoires du Muséum national d'Histoire naturelle*, sér. B, *Botanique*, 4: 1-82. https://www.biodiversitylibrary.org/page/58015325

Holst B. K., Serrano M., Snow N. W., Kawasaki L. & Jorgensen P. M. 2014. — Myrtaceae, *in* Jørgensen P. M., Michael Harley Nee M. H. & Beck S. G. (eds), *Catálago de las Plantas Vasculares de Bolivia.* Missouri Botanical Garden Press, St. Louis: 870-880.

Hopkins H. C. F. & Bradford J. C. 2009. — Nomenclature and typification of names in the endemic genus *Pancheria* (Cunonianceae) from New Caledonia. *Adansonia*, sér. 3, 31: 103-135. https://doi.org/10.5252/a2009n1a6

IUCN 2012. — *IUCN Red List Categories and Criteria: version 3.1.* 2nd ed. IUCN Species Survival Commission, Gland & Cambridge.

Johnson L. A. & Johnson R. L. 2006. — Morphological delineation and molecular evidence for allopolyploidy in *Collomia wilkenii* (Polemoniaceae), a new species from northern Nevada. *Systematic Botany* 31: 349-360. https://doi.org/10.1600/036364406777585865

Johnson L. A., Chan L. M., Burr K. & Hendrickson D. 2012. — *Navarettia furnisii* (Polemoniaceae), a new diploid species from the intermountain western United States distinguished from tetraploid *Navarettia saximontana*. *Phytotaxa* 42: 51-62. https://doi.org/10.11646/phytotaxa.42.1.7

Landrum L. R. 2017. — The genus *Psidium* (Myrtaceae) in the State of Bahia, Brazil. *Canotia* 13: 1-101.

McLay T., Holmes G. D, Forster P. I., Hoebee S. E., & Fernando D. R. 2018. — Phylogeny, biogeography and foliar manganese accumulation of *Gossia* (Myrtaceae). *Australian Systematic Botany* 31: 374-388. https://doi.org/10.1071/SB18018

Morat P., Jaffré T., Tronchet F., Munzinger J., Pillon Y., Veillon J.-M. & Chalopin M. 2012. — Le référentiel taxonomique FLORICAL et les caractéristiques de la flore vasculaire indigène de la Nouvelle-Calédonie. *Adansonia*, sér. 3, 34 (2): 177-219. https://doi.org/10.5252/a2012n2a1

Myers N. 1988. — Threatened biotas: "hot spots" in tropical forests. *Environmentalist* 8: 187-208. https://doi.org/10.1007/BF02240252

Schlechter R. 1908. — Beitrage zur Kenntnis der Flora von Neu-Kaledonien. *Botanische Jarbücher fur Systematik, Pflanzengeschicte, und Pflanzengeographie,* Beibl. 92, 40 (3): 22-45.

Sebert H. 1874. — *Notice sur les bois de la Nouvelle Calédonie*. Arthus Bertrand, Paris, viii + 275 p. https://doi.org/10.5962/bhl.title.69241

Snow N. 1997. — Application of the phylogenetic species concept: a botanical monographic perspective. *Austrobaileya* 5: 1-8. https://www.jstor.org/stable/41729913

Snow N. 2005. — Five new combinations of *Gossia* in the Myrtle Family (Myrtaceae) from Australasia. *Novon* 15: 477-478.

Snow N. 2006. — New species of *Gossia* N. Snow & Guymer and *Rhodomyrtus* (DC.) Hassk. (Myrtaceae) from Papua New Guinea. *Austrobaileya* 7 (2): 325-340. https://www.jstor.org/stable/41739039

Snow N. 2009. — *Kanakomyrtus* (Myrtaceae): A new endemic genus from New Caledonia with linear stigma lobes and baccate fruits. *Systematic Botany* 34: 330-344. https://doi.org/10.1600/036364409788606253

Snow N. & Veldkamp J. F. 2010. — Miscellaneous taxonomic and nomenclatural notes for Myrtaceae. *Austrobaileya* 8 (1): 177-186. https://www.jstor.org/stable/41739132

Snow N. & Wilson P. G. 2010. — New species of *Eugenia* and *Gossia* (Myrtaceae: Myrteae) from Papua New Guinea. *Telopea* 12 (3): 453-461. https://doi.org/10.7751/telopea20105835

Snow N., Guymer G. P. & Sawvel G. 2003. — Systematics of *Austromyrtus, Lenwebbia,* and the Australian species of *Gossia* (Myrtaceae). *Systematic Botany Monographs* Vol. 65. https://doi.org/10.2307/25027907

Snow N., Callmander M. C. & Phillipson P. 2015. — Studies of Malagasy *Eugenia* – IV: Seventeen new endemic species, one new combination, and three lectotypifications; with comments on emerging distributional, ecological and evolutionary patterns. *PhytoKeys* 49: 59-121. https://doi.org/10.3897/phytokeys.49.9003

Snow N., Dawson J. W., Callmander M. W., Gandhi K. & Munzinger J. 2016a. — New species, new combinations, and lectotypifications in New Caledonian *Eugenia* L. (Myrtaceae). *Candollea* 71: 67-81. https://doi.org/10.15553/c2016v711a9

Snow N., Munzinger J. & Callmander M. W. 2016b. — Novitates neocaledonicae V: *Eugenia plurinervia* (Myrtaceae): a Critically Endangered new species with distinct leaves. *Candollea* 71: 201-205. https://doi.org/10.15553/c2016v712a7

Sobral M. & de Souza M. A. D. 2015. — Thirteen new Amazonian Myrtaceae. *Phytotaxa* 238: 201-229. https://doi.org/10.11646/phytotaxa.238.3.1

Sobral M., Faria Jr. J. E. Q., Ibrahim M. U., Lucas E. J., Riguiera D., Stadnik A. & Villaroel D. 2015. — Thirteen new Myrtaceae from Bahia, Brazil. *Phytotaxa* 224: 201-231. https://doi.org/10.11646/phytotaxa.224.3.1

Thiers B. 2019 (and updated continuously). — Index Herbariorum: A global directory of public herbaria and associated staff. New York Botanical Garden's Virtual Herbarium. http://sweetgum.nybg.org/ih/

Turland N. J., Wiersema J. H., Barrie F. R., Greuter W., Hawksworth D. L., Herendeen P. S., Knapp S., Kusber W.-F., Li D.-Z., Marhold K., May T.W., McNeill J., Monro A.M., Prado J., Price M. & Smith G. F. 2018. — *International Code of Nomenclature for Algae, Fungi and Plants (Shenzen Code)*. Koeltz Scientific Books, Königstein.

Veldkamp J. F. 2013. — Nomenclatural notes on *Eugenia reinwardtiana* (Myrtaceae) and more or less associated names. *Garden's Bulletin Singapore* 65: 117-134. http://www.biodiversitylibrary.org/page/43642528

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