

## A revision of the genus *Comptonella* (Rutaceæ)

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**Summary :** The genus *Comptonella* Baker f. is endemic to New Caledonia and consists of eight species, two with two varieties. The genus is described, its taxonomic history is discussed, and a key is provided to it and four morphologically similar genera of New Caledonian *Rutaceæ*. The species and varieties are keyed, described, and their apparent relationships are discussed. Two species, *C. glabra* and *C. fruticosa*, are described as new, and new combinations are made for the names of seven taxa, *C. oreophila*, *C. oreophila* var. *longipes*, *C. microcarpa*, *C. baudouinii*, *C. lactea*, *C. lactea* var. *poissonii*, and *C. sessilifoliola*.

**Résumé :** Le genre *Comptonella* Baker f., endémique de la Nouvelle Calédonie, comprend huit espèces, dont deux avec deux variétés. L'auteur décrit ce genre, en discute l'histoire taxonomique et présente une clé permettant de le distinguer de quatre autres genres de *Rutaceæ* néo-calédoniens morphologiquement voisins. Il donne une clé des espèces et des variétés et discute de leurs relations apparentes. Descriptions de deux espèces nouvelles, *C. glabra* et *C. fruticosa* et établissement de nouvelles combinaisons pour sept taxons : *C. oreophila*, *C. oreophila* var. *longipes*, *C. microcarpa*, *C. baudouinii*, *C. lactea*, *C. lactea* var. *poissonii* et *C. sessilifoliola*.

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The genus *Comptonella* Baker f. was established in 1921 and was based on a single New Caledonian species, *C. albiflora* Baker f. In the only subsequent taxonomic studies of the genus, ENGLER (1931) considered it to be monotypic and GUILLAUMIN (1938) added a second New Caledonian species, *C. drupacea* (Labill.) Guillaumin, based on *Euodia drupacea* Labill.

In the study of these and related plants, I have found that ten other previously described New Caledonian species are congeneric with *Comptonella albiflora* and *C. drupacea*. Six of these were described in the rutaceous genus *Euodia* J. R. & G. Forster, namely, *E. baudouinii* Baillon, *E. canalensis* Baker f., *E. lactea* Baker f., *E. oreophila* Guillaumin, *E. fosteri* Guillaumin, and *E. hurlimannii* Guillaumin ; three in the rutaceous genus *Dutailleya* Baillon, namely, *D. sessilifoliola* Guillaumin, *D. poissonii* Guillaumin, and *D. longipes* Guillaumin ; and one in the monimiaceous genus *Hedycarya* J. R. & G. Forster, namely, *H. microcarpa* Perkins. Also, two new species of *Comptonella*, described below as *C. glabra* and *C. fruticosa*, are represented in recent collections from New Caledonia.

*Euodia* ranges from New Guinea and northeastern Australia east to Samoa and consists of about six species (HARTLEY, 1981). It is similar to *Comptonella* in having opposite leaves and 4-merous, 4-staminate flowers, among other characters, but differs significantly



in having follicular, as opposed to drupaceous, fruits. The misplacement of the above six species in *Euodia* was due to their authors not being aware of the nature of the fruit ; five were based solely on flowering specimens, and the sixth, *E. oreophila*, was described as having ... “*coccis 4-1 ovatis (5 × 3 mm) nigris, dehiscentibus?*”

*Dutaillyea*, when rather narrowly interpreted around the type species, *D. trifoliolata* Baillon, consists of two endemic New Caledonian species. These species share a number of morphologic features with the species of *Comptonella*, especially *C. lactea* (Baker f.) Hartley and *C. sessilifoliola* (Guillaumin) Hartley, and in earlier stages of this study I thought the two genera would be best united under the older name *Dutaillyea*. I have recently changed my mind, having decided that such an assemblage of species would be polyphyletic, and must acknowledge having misadvised the authors of a recent phytochemical study (BAUDOUIN & al., 1981) as to the generic identity of their voucher collections of two species which I now consider to belong in *Comptonella*. The main similarities and differences between *Comptonella* and *Dutaillyea* are given in Table 1.

Besides *Comptonella* and *Dutaillyea*, three other recognized genera of New Caledonian *Rutaceae* have opposite leaves, 4-merous flowers, and indehiscent fruits, namely, *Zieridium* Baillon, *Acronychia* J. R. & G. Forster, and *Sarcomelicope* Engler (including *Bauerella* Borzi ; see HARTLEY, 1982). The following key is provided for the identification of these five genera.

1. Indumentum (when present) of simple trichomes.
  2. Ovule 1 per carpel ; stamens 4 ; leaves trifoliolate or unifoliolate ; fruits apocarpous..... *Zieridium*
  - 2'. Ovules 2 per carpel ; stamens 8 ; fruits at least basally syncarpous.
    3. Leaves trifoliolate (not in New Caledonia) or unifoliolate ; flowers bisexual ; petals valvate in bud, deciduous or rarely semi-persistent in fruit ; fruits axially syncarpous (the carpels otherwise separated by septicidal fissures ; this condition not in New Caledonia) to completely syncarpous (the carpels connate throughout their length).. *Acronychia*
    - 3'. Leaves unifoliolate ; flowers unisexual ; petals narrowly imbricate in bud, persistent or rarely semi-persistent in fruit ; fruits nearly apocarpous (the carpels basally connate, otherwise divergent) to completely syncarpous..... *Sarcomelicope*
- 1'. Indumentum (absent in one species of *Comptonella*) of stellate to lepidote trichomes ; stamens 4 (alternating with 4 staminodes in *Dutaillyea* and rarely in *Comptonella*) ; ovules 2 per carpel.
  4. Leaves trifoliolate, with at least the terminal leaflet petiolulate ; flowers bisexual ; placentation mid-axile ; fruits completely syncarpous, with a single stylar scar..... *Dutaillyea*
  - 4'. Leaves trifoliolate (often with occasional unifoliolate leaves) or unifoliolate, leaflets sessile (often attenuate at the base) ; flowers functionally unisexual (rarely bisexual) ; placentation apical-axile ; fruits nearly apocarpous to almost completely syncarpous, with 4 separate stylar scars..... *Comptonella*

These five genera have seeds with spongy tissue in the outer testa and this suggests that they are derived from a dehiscent-fruited group resembling the Indo-Pacific rutaceous genus *Melicope* J. R. & G. Forster (HARTLEY, 1982).

This revision is based on herbarium specimens. The contributing herbaria, with abbreviations from HOLMGREN, KEUKEN & SCHOFIELD's *Index Herbariorum*, Part 1, ed. 7 (Reg. Veg. 106, 1981) are as follows : A, AK, B, BISH, BM, BO, BRI, CANB, E, FI, G, GH, K, L, MEL, NOU, NSW, NY, P, PR, U, UC, US, W, WRSL and Z.



TABLE 1 : Comparative features of the genera **Comptonella** and **Dutailleya**

	<i>Comptonella</i>	<i>Dutailleya</i>
DISTRIBUTION OF SEXES	(apparently) dioecious or rarely monoecious or monoclino- nous	monoclinous
SURFACE FEATURES	indumentum of stellate to lepidote trichomes or rarely absent ; exudate scales absent	indumentum of stellate to lepidote trichomes ; leaflet blades below with white scales formed from exudate
LEAVES	opposite, trifoliolate or unifoliolate ; leaflets sessile (often attenuate at the base)	opposite, trifoliolate ; at least the terminal leaflet petio- lulate
FLOWERS	functionally unisexual or rarely bisexual, 4-merous	bisexual, 4-merous
PETALS	narrowly imbricate in bud, ovate to elliptic or elliptic- oblong	narrowly imbricate in bud, lanceolate
ANDROECIUM	4 antesepalous stamens (or staminodes, in ♀ flowers) ; antepetalous staminodes rarely present	4 antesepalous stamens plus 4 antepetalous staminodes
STAMINAL FILAMENTS	straight and more or less erect	becoming recurved
GYNOECIUM	4-carpellate ; carpels biovulate ; placentation apical-axile	4-carpellate ; carpels biovulate ; placentation mid-axile
FRUITS	drupaceous, grading from nearly apocarpous (the carpels connate just at the base, otherwise divergent) to almost completely syncarpous (the carpels connate for most of their length but with separate styler scars)	drupaceous, completely syncarpous (the carpels connate throughout their length, with a single styler scar)
SEEDS	more or less carunculate ; testa roughened, with a spongy outer layer and bony inner layer ; endosperm copious, fleshy ; embryo straight, cotyledons flattened, elliptic	as in <i>Comptonella</i>



**COMPTONELLA** Baker f.

Journ. Linn. Soc., Bot. 45 : 281, *tab. 15, figs. 1-6* (1921).

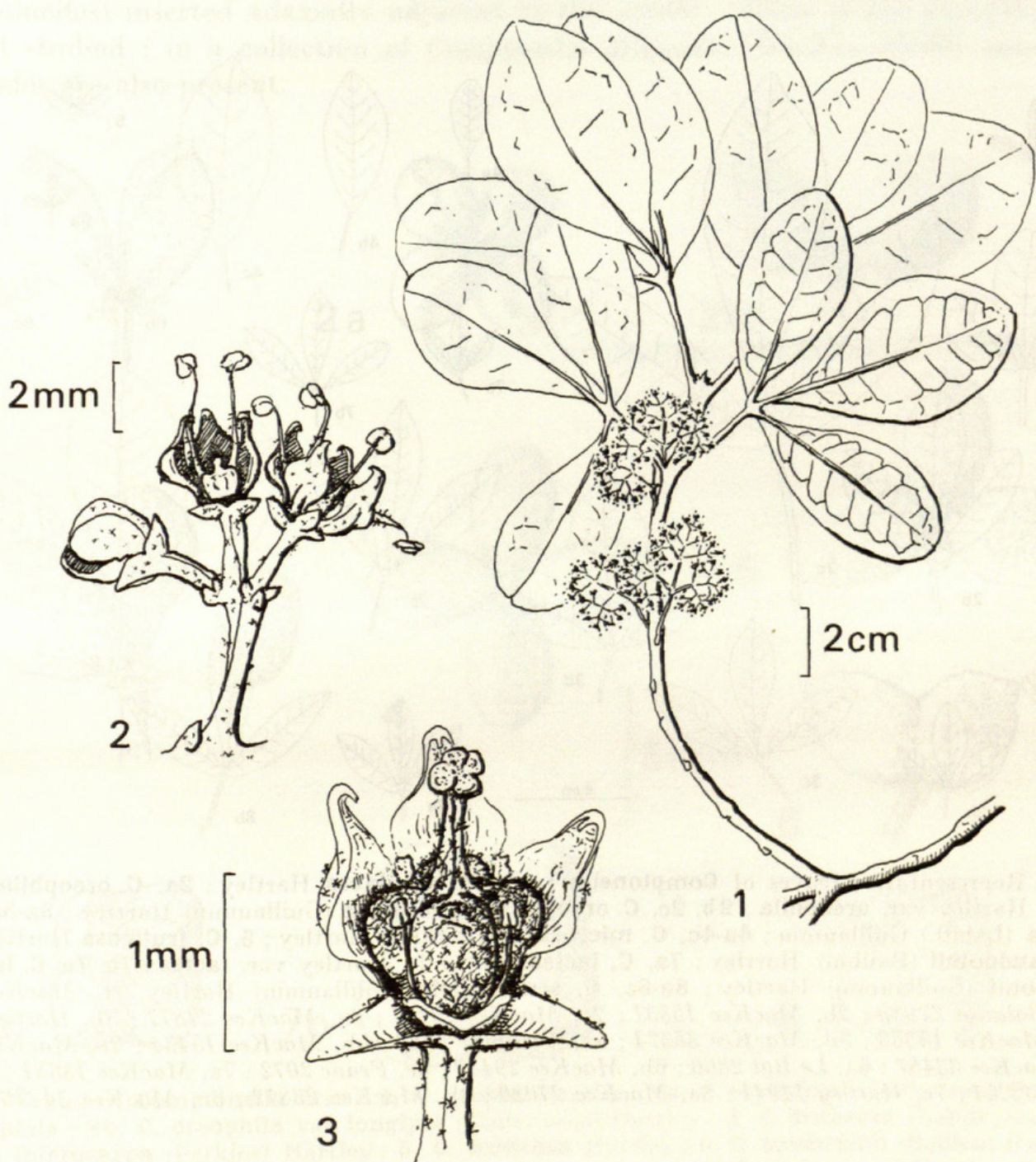
TYPE SPECIES : *Comptonella albiflora* Baker f. (= *C. microcarpa* (Perkins) Hartley).

Shrubs or small to medium trees ; (apparently) dioecious or rarely monoecious or monoclinal ; indumentum of stellate to lepidote trichomes or rarely absent. Buds naked. Leaves opposite, petiolate, trifoliolate or unifoliolate. Leaflets sessile (often attenuate at the base), articulated with the petiole, usually oil-dotted (often inconspicuously), the venation pinnate, the margin entire, the lateral leaflets in trifoliolate leaves often more or less unequal-sided. Inflorescences paniculate or reduced to few-flowered racemes, fascicles, or solitary flowers, axillary, lateral, on older branches, or on the main stem. Flowers functionally unisexual (rarely bisexual), small and inconspicuous, globose to broadly ellipsoid in bud ; sepals 4, connate toward the base, valvate, persistent to deciduous in fruit ; petals 5, hooked adaxially at the apex, distinct, erect to spreading-ascending or somewhat recurved, narrowly imbricate in bud, persistent to deciduous in fruit ; stamens 4, antepetalous (4 antepetalous staminodes rarely also present), elongating to about 1.5 times the length of the petals in functionally staminate and bisexual flowers, 0.5-1(-1.5) times the length of the petals in functionally carpellate flowers, the filament usually sparsely to densely pubescent from about the middle to the base, adaxially, otherwise glabrous, flattened, gradually tapering from a rather narrow base to a subulate apex, introrsely geniculate at the apex, otherwise straight and more or less erect, the anther ovoid to broadly ellipsoid, obtuse to bluntly mucronate, dorsifixed, without pollen and usually reduced in size and flattened in functionally carpellate flowers ; disc apparently absent ; gynoecium a single, 4-lobed, 4-carpellate, 4-loculate pistil, about 1-1.5 times the length of the petals in functionally carpellate and bisexual flowers, usually somewhat reduced in size and without fully differentiated stigma or fully developed ovules in functionally staminate flowers, pubescent except for the apical portion of the style or rarely entirely glabrous, the carpels joined apically by a single style, otherwise grading from nearly apocarpous (connate just at the base but otherwise contiguous) to almost completely syncarpous (connate for most of their length), the placentation apical-axile, the ovules 2 per locule, subcollateral, the style more or less straight, composed of 4 contiguous styler elements, the stigma capitate, 4-lobed. Fruits drupaceous, 4-carpellate, 1-4 carpels developing (the undeveloped carpels usually persistent), grading from nearly apocarpous (carpels connate just at the base) to almost completely syncarpous (carpels connate for most of their length but with separate styler scars) ; exocarp more or less fleshy, drying subcoriaceous ; mesocarp drying spongy ; endocarp pergamentaceous. Seeds dark reddish brown to blackish, more or less carunculate, obovoid to ellipsoid, 1 (by abortion) or occasionally 2 per locule ; testa roughened, with a spongy to rather fleshy outer layer and a bony inner layer ; endosperm copious, fleshy ; embryo straight, the cotyledons flattened, elliptic, the hypocotyl terminal.



**DISTRIBUTION :** Essentially restricted to mainland New Caledonia (one collection, of *Comptonella drupacea*, from Ile Casy, Baie du Prony).

With only rare exceptions, plants of *Comptonella* appear to be dioecious : one collection of *C. oreophila* (Guillaumin) Hartley var. *longipes* (Guillaumin) Hartley (*MacKee 12692*) has functionally staminate and functionally carpellate flowers on the same branchlet and was probably taken from a monoecious plant, and two collections of *C. drupacea* (*MacKee 17072* and *28815*) and one of *C. microcarpa* (*MacKee 25047*) have flowers that are all bisexual and were probably taken from monoclinal plants.



Pl. 1. — Representative species of *Comptonella* (*C. drupacea* (Labill.) Guillaumin) : 1, flowering branchlet ; 2, functionally staminate flowers ; 3, functionally carpellate flower. (1 & 2, *MacKee 15353* ; 3, *MacKee 16954*).



The indumentum in *Comptonella*, when present, occurs mainly on the young branchlets, buds, young leaves, and inflorescences, and is probably an adaptive feature, providing the more tender parts of the plant with needed protection against dessiccation and/or predation. It is composed of small to minute, stellate to lepidote trichomes, and only in *C. lactea* var. *poissonii* (Guillaumin) Hartley and in some specimens of *C. lactea* var. *lactea* and *C. sessilifoliola* is it very obvious to the naked eye. As is the case in the Malesian-Australian rutaceous genus *Lunasia* Blanco (HARTLEY, 1967), the two types of trichomes tend to intergrade clinally on single specimens, the more stellate ones occurring on the youngest vegetative growth and inflorescences, and the more lepidote ones occurring on slightly older branchlets and leaves.



Pl. 2. — Representative leaves of *Comptonella* taxa : 1, *C. glabra* Hartley ; 2a, *C. oreophila* (Guillaumin) Hartley var. *oreophila* ; 2b, 2c, *C. oreophila* var. *longipes* (Guillaumin) Hartley ; 3a-3d, *C. drupacea* (Labill.) Guillaumin ; 4a-4c, *C. microcarpa* (Perkins) Hartley ; 5, *C. fruticosa* Hartley ; 6a-6c, *C. baudouinii* (Baillon) Hartley ; 7a, *C. lactea* (Baker f.) Hartley var. *lactea* ; 7b, 7c, *C. lactea* var. *poissonii* (Guillaumin) Hartley ; 8a-8c, *C. sessilifoliola* (Guillaumin) Hartley. (1, MacKee 20961 ; 2a, Balansa 2798a ; 2b, MacKee 15331 ; 2c, MacKee 29241 ; 3a, MacKee 27877 ; 3b, Hartley 14853 ; 3c, MacKee 15353 ; 3d, MacKee 35374 ; 4a, Vieillard 2482 ; 4b, MacKee 15434 ; 4c, MacKee 27982 ; 5, MacKee 33487 ; 6a, Le Rat 2866 ; 6b, MacKee 29450 ; 6c, Franc 2072 ; 7a, MacKee 18681 ; 7b, MacKee 32257 ; 7c, Hartley 14941 ; 8a, MacKee 27030 ; 8b, MacKee 23872 ; 8c, MacKee 34226).

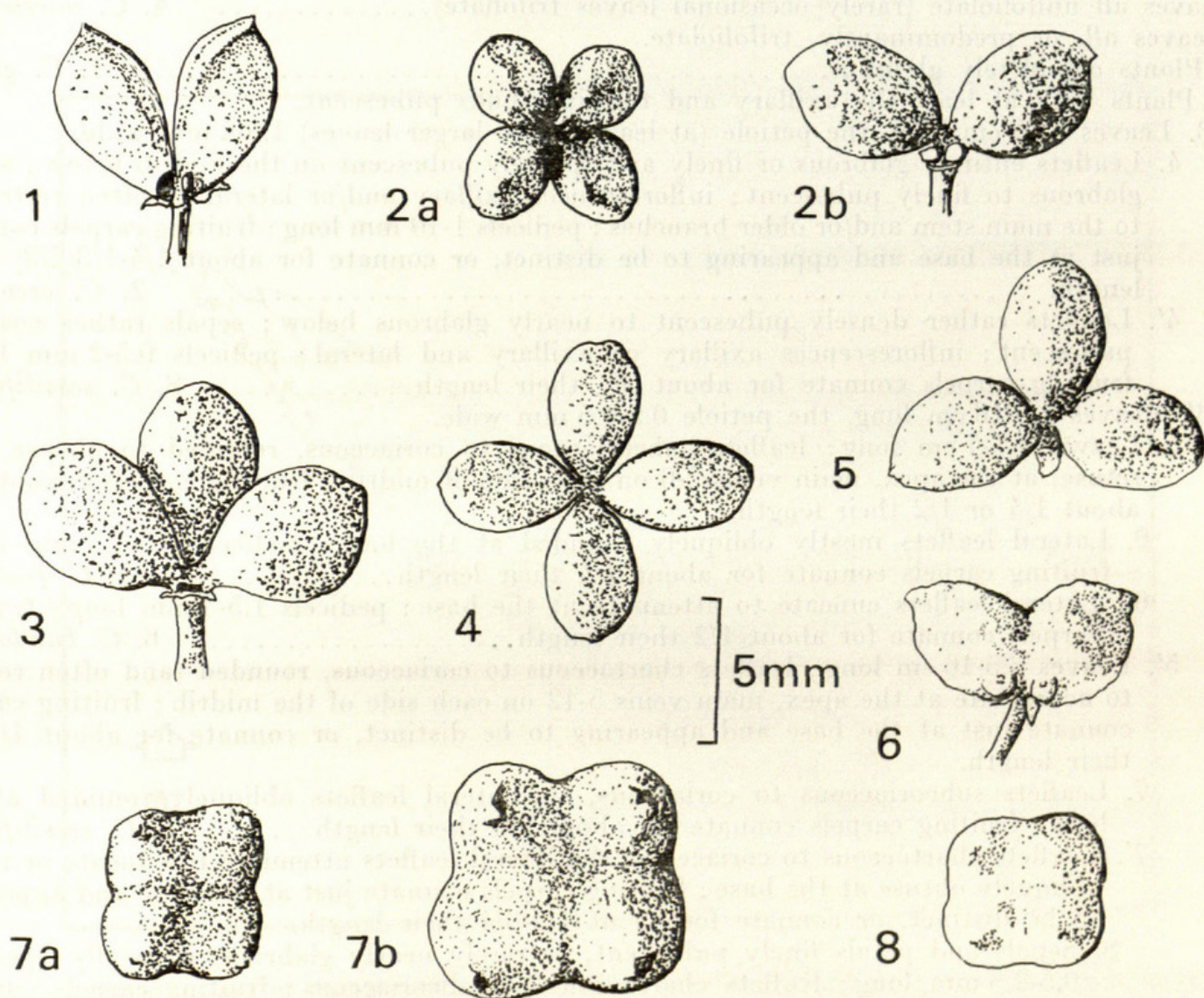
Throughout the genus each leaflet is articulated with the petiole, the articulation being represented by a transverse fissure on the adaxial side of the petiole-leaflet junction. Because they possess this articulation, leaves with a single blade are described as being



unifoliate, rather than simple, and are considered to be derived from trifoliate leaves (see HARTLEY, 1977).

In most of the species, and especially in *Comptonella drupacea* and *C. microcarpa*, the functionally unisexual flowers are variable in their expression of the carpellate and staminate states. In functionally carpellate flowers the stamens may be as large as in functionally staminate flowers, but lacking pollen, or they may be reduced to subligulate staminodes; and in functionally staminate flowers the pistil may be as large as in functionally carpellate flowers, but lacking fully developed ovules and fully differentiated stigma, or it may be somewhat reduced in size.

Throughout the genus flowers are characteristically 4-staminate with the stamens (or staminodes) inserted adaxially adjacent to the sepals. There is one exception in the material studied: in a collection of *Comptonella drupacea* (MacKee 35789) antepetalous staminodes are also present.



Pl. 3. — Fruits of *Comptonella* taxa: 1, *C. glabra* Hartley; 2a, *C. oreophila* (Guillaumin) Hartley var. *oreophila*; 2b, *C. oreophila* var. *longipes* (Guillaumin) Hartley; 3, *C. drupacea* (Labill.) Guillaumin; 4, *C. microcarpa* (Perkins) Hartley; 5, *C. fruticosa* Hartley; 6, *C. baudouinii* (Baillon) Hartley; 7a, *C. lactea* (Baker f.) Hartley var. *lactea*; 7b, *C. lactea* var. *poissonii* (Guillaumin) Hartley; 8, *C. sessilifoliola* (Guillaumin) Hartley. (1, MacKee 20961; 2a, McPherson 2303; 2b, MacKee 35086; 3, MacKee 22252; 4, MacKee 13631; 5, MacKee 18630; 6, MacKee 14484; 7a, MacKee 16434; 7b, MacKee 14875; 8, MacKee 3986).



The progressive coalescence of the fruiting carpels demonstrated in *Comptonella*, from nearly apocarpous to almost completely syncarpous, is roughly paralleled in *Sarcomelicope*, and, as I have pointed out to be the case in the latter genus (HARTLEY, 1982), probably represents specialization for dispersal.

The most basic variable characters in *Comptonella*, listed in apparent order of decreasing evolutionary significance, are : 1) degree of fusion of the carpels ; 2) leaf complexity ; 3) presence or absence of indumentum. The present classification of the species is based on these characters and on the assumption that nearly free carpels, trifoliolate leaves, and absence of indumentum are more primitive character states than almost completely connate carpels, unifoliolate leaves, and presence of indumentum.

#### KEY TO THE SPECIES

1. Leaves all unifoliolate (rarely occasional leaves trifoliolate)..... 4. *C. microcarpa*
- 1'. Leaves all, or predominantly, trifoliolate.
2. Plants completely glabrous. .... 1. *C. glabra*
- 2'. Plants with at least the axillary and terminal buds pubescent.
3. Leaves 5-37 cm long, the petiole (at least in the larger leaves) 1.5-4 mm wide.
4. Leaflets entirely glabrous or finely and sparsely pubescent on the midrib below ; sepals glabrous to finely pubescent ; inflorescences axillary and/or lateral or often restricted to the main stem and/or older branches ; pedicels 1-10 mm long ; fruiting carpels connate just at the base and appearing to be distinct, or connate for about  $1/4$ - $1/3$ ( $2/3$ ) their length. .... 2. *C. oreophila*
- 4'. Leaflets rather densely pubescent to nearly glabrous below ; sepals rather coarsely pubescent ; inflorescences axillary or axillary and lateral ; pedicels 0.5-2 mm long ; fruiting carpels connate for about  $3/4$  their length..... 8. *C. sessilifoliola*
- 3'. Leaves 1.5-16 cm long, the petiole 0.5-1.5 mm wide.
5. Leaves 1.5-7 cm long ; leaflets subcoriaceous to coriaceous, rounded to obtuse (and retuse) at the apex, main veins 3-6 on each side of midrib ; fruiting carpels connate for about  $1/4$  or  $1/2$  their length.
6. Lateral leaflets mostly obliquely rounded at the base ; pedicels 0.5-1.5 mm long ; fruiting carpels connate for about  $1/4$  their length..... 5. *C. fruticosa*
- 6'. Lateral leaflets cuneate to attenuate at the base ; pedicels 1.5-4 mm long ; fruiting carpels connate for about  $1/2$  their length..... 6. *C. baudouinii*
- 5'. Leaves 3.5-16 cm long ; leaflets chartaceous to coriaceous, rounded (and often retuse) to acuminate at the apex, main veins 5-12 on each side of the midrib ; fruiting carpels connate just at the base and appearing to be distinct, or connate for about  $1/2$ - $3/4$  their length.
7. Leaflets subcoriaceous to coriaceous, the lateral leaflets obliquely rounded at the base ; fruiting carpels connate for about  $3/4$  their length..... 8. *C. sessilifoliola*
- 7'. Leaflets chartaceous to coriaceous, the lateral leaflets attenuate to cuneate or rarely obliquely obtuse at the base ; fruiting carpels connate just at the base and appearing to be distinct, or connate for about  $1/2$ - $3/4$  their length.
8. Sepals and petals finely pubescent, or rarely nearly glabrous, abaxially ; pedicels 0.5-2.5 mm long ; leaflets chartaceous to subcoriaceous ; fruiting carpels connate just at the base..... 3. *C. drupacea*
- 8'. Sepals and petals coarsely to rather finely pubescent abaxially ; pedicels obsolete to 1.5 mm long ; leaflets subcoriaceous to coriaceous ; fruiting carpels connate for about  $1/2$ - $3/4$  their length..... 7. *C. lactea*

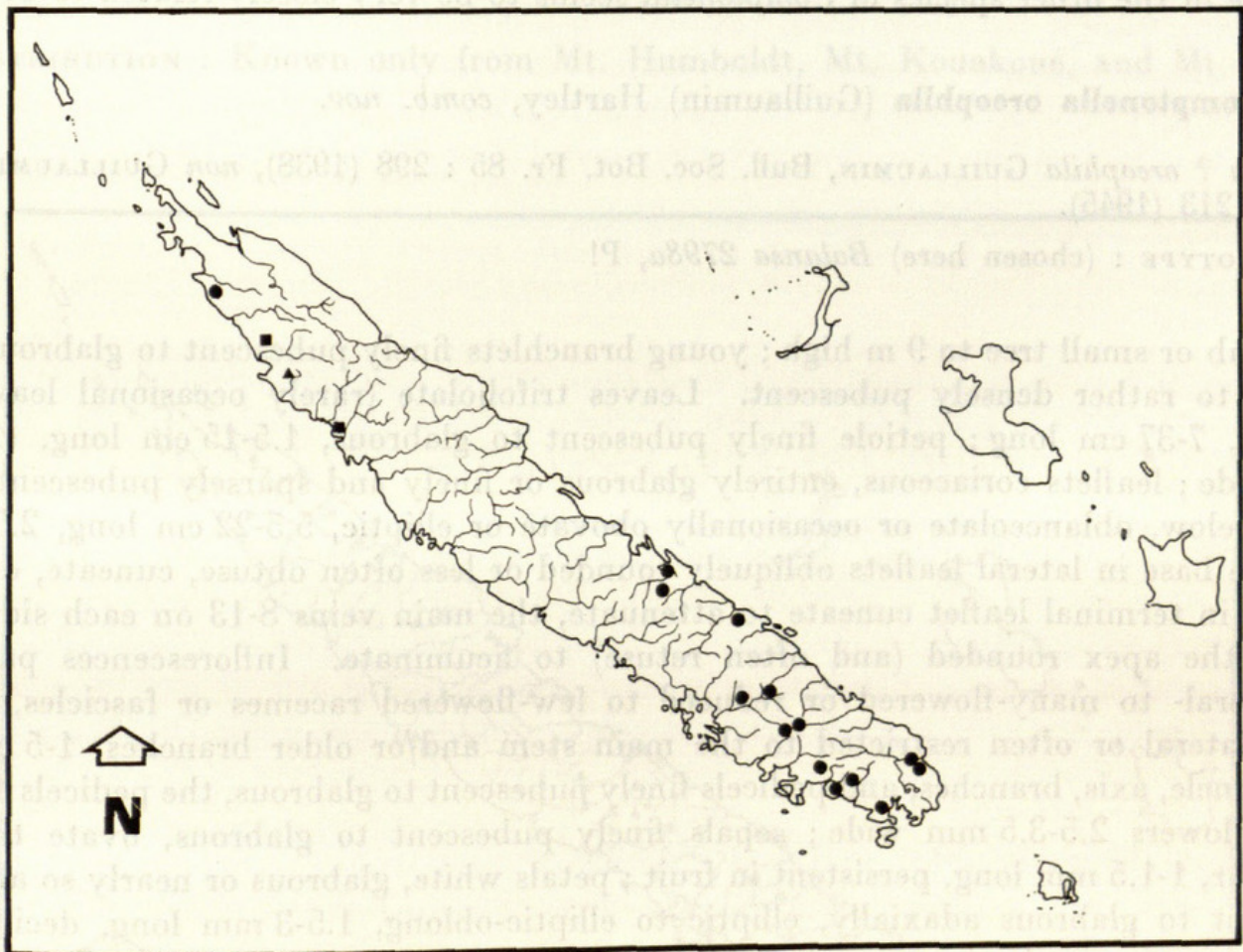


1. **Comptonella glabra** Hartley, sp. nov.

*Frutex usque 1 m altus ; ramulis et gemmis glabris ; foliis trifoliolatis (foliis infrequentibus unifoliolatis), 2.5-5 cm longis ; petiolo glabro, 0.5-1.5 cm longo, 0.8-1 mm lato ; foliolis subcoriaceis, glabris, elliptico-oblongis vel anguste oblanceolatis, 1.5-3.5 cm longis, 0.6-0.9 cm latis, basi oblique rotundatis vel cuneatis in foliolis lateralibus, cuneatis in foliolo terminali, venis primariis utrinsecus costæ 6-8, apice rotundatis vel obtusis, sæpe retusis ; inflorescentiis racemosis et paucifloris vel unifloris, axillaribus, 0.5-1 cm longis, glabris, pedicellis 1.5-2 mm longis ; floribus (tantum ♀ visis) ca. 1.5 mm latis ; sepalis glabris, obovatis vel ellipticis, ca. 1 mm longis, in fructu persistentibus ; petalis glabris, ellipticis, 2-2.5 mm longis, in fructu semipersistentibus ; gynoecio glabro, carpellis modo basi connatis ; fructibus glabris, carpellis evolutis 1 vel 2, modo basi connatis, aliter divergentibus, obovoideis, ca. 6 mm longis ; seminibus ca. 5 mm longis.*

TYPE : MacKee 20961, Taom, Mt. Homédeboa, 800-900 m, fr., 16.10.1969 (holo-, P!).

PARATYPE : MacKee 20973, Taom, Mt. Homédeboa, 800-900 m, fl. ♀ and young fr., 16.10.1969, P!



Map 1. — Distributions of **Comptonella glabra** Hartley (▲), **C. fruticosa** Hartley (■) and **C. baudouinii** (Baillon) Hartley (●).

Shrub to 1 m high ; branchlets and buds glabrous. Leaves trifoliolate (occasional leaves unifoliolate), 2.5-5 cm long ; petiole glabrous, 0.5-1.5 cm long, 0.8-1 mm wide ; leaflets subcoriaceous, glabrous, elliptic-oblong to narrowly oblanceolate, 1.5-3.5 cm long,



0.6-0.9 cm wide, the base in lateral leaflets obliquely obtuse to cuneate, in terminal leaflet cuneate, the main veins 6-8 on each side of the midrib, the apex rounded to obtuse, often retuse. Inflorescences racemose and few-flowered or reduced to single flowers, axillary, 0.5-1 cm long, glabrous, the pedicels 1.5-2 mm long. Flowers (only functionally carpellate seen) about 1.5 mm wide; sepals glabrous, obovate to elliptic, about 1 mm long, persistent in fruit; petals glabrous, elliptic, 2-2.5 mm long, semi-persistent in fruit; gynoecium glabrous, the carpels connate just at the base. Fruits glabrous; developed carpels 1 or 2, connate just at the base, otherwise divergent, obovoid, about 6 mm long. Seeds about 5 mm long. — Pl. 2, 1; 3, 1.

DISTRIBUTION : Known only from Mt. Homédeboa. — Map 1.

ECOLOGY : Maquis on serpentine soil; 800-900 m alt. Flowering and fruiting in October.

None of the other species of *Comptonella* seems to be very closely related to *C. glabra*.

## 2. *Comptonella oreophila* (Guillaumin) Hartley, *comb. nov.*

— *Evodia* ? *oreophila* GUILLAUMIN, Bull. Soc. Bot. Fr. 85 : 298 (1938), *non* GUILLAUMIN, *ibid.*, 91 : 213 (1945).

LECTOTYPE : (chosen here) *Balansa* 2798a, P!

Shrub or small tree to 9 m high; young branchlets finely pubescent to glabrous; buds sparsely to rather densely pubescent. Leaves trifoliolate (rarely occasional leaves unifoliolate), 7-37 cm long; petiole finely pubescent to glabrous, 1.5-15 cm long, (1.2-)-1.5-4 mm wide; leaflets coriaceous, entirely glabrous or finely and sparsely pubescent on the midrib below, oblanceolate or occasionally obovate or elliptic, 5.5-22 cm long, 2.5-8.5 cm wide, the base in lateral leaflets obliquely rounded or less often obtuse, cuneate, or subattenuate, in terminal leaflet cuneate to attenuate, the main veins 8-13 on each side of the midrib, the apex rounded (and often retuse) to acuminate. Inflorescences paniculate and several- to many-flowered or reduced to few-flowered racemes or fascicles, axillary and/or lateral or often restricted to the main stem and/or older branches, 1-5 cm long, the peduncle, axis, branches, and pedicels finely pubescent to glabrous, the pedicels 1-10 mm long. Flowers 2.5-3.5 mm wide; sepals finely pubescent to glabrous, ovate to ovate-triangular, 1-1.5 mm long, persistent in fruit; petals white, glabrous or nearly so abaxially, pubescent to glabrous adaxially, elliptic to elliptic-oblong, 1.5-3 mm long, deciduous in fruit; gynoecium pubescent to nearly glabrous, the carpels connate just at the base (functional carpels of var. *oreophila* not seen). Fruits glabrous or nearly so; developed carpels 1-4, connate just at the base or for  $1/4$ - $1/3$ -( $2/3$ ) their length, otherwise divergent or suberect, subobovoid, 5-6.5 mm long. Seeds about 5 mm long.



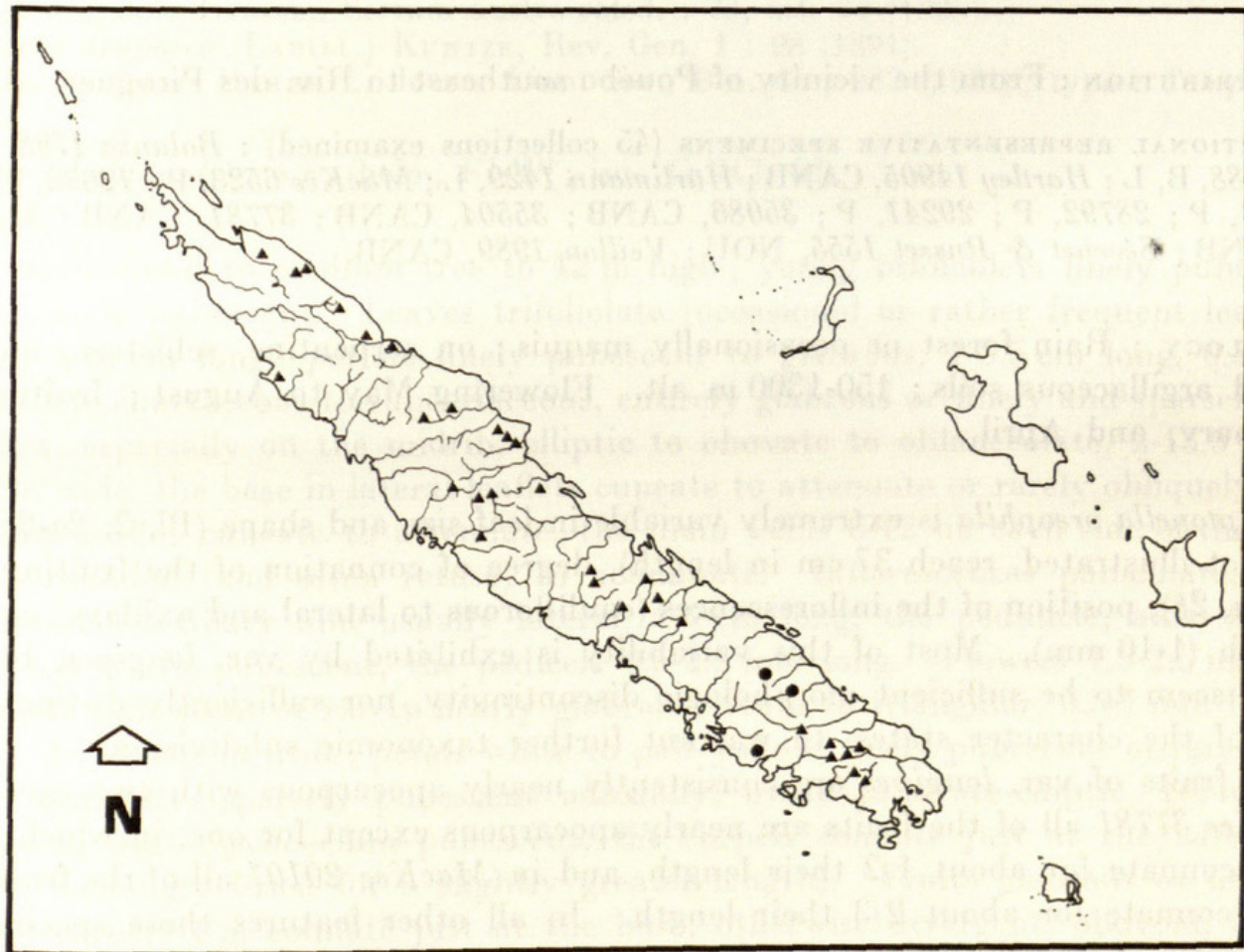
Key to the varieties of *Comptonella oreophila*

1. Leaves 7-11.5 cm long ; lateral leaflets subattenuate to cuneate at the base ; inflorescences axillary and/or lateral ; pedicels 2-3.5 mm long ; fruiting carpels connate for  $1/4$ - $1/3$  their length. .... 2a. var. *oreophila*
- 1'. Leaves 7-37 cm long ; lateral leaflets obliquely rounded or less often obtuse to cuneate at the base ; inflorescences axillary and/or lateral or often restricted to the main stem and/or older branches ; pedicels 1-10 mm long ; fruiting carpels connate just at the base or rarely for about  $1/2$  or  $2/3$  their length. .... 2b. var. *longipes*

2a. ***Comptonella oreophila*** (Guillaumin) Hartley var. ***oreophila***

Small tree about 6 m high. Leaves 7-11.5 cm long ; petiole 2-3.5 cm long, (1.2-) 1.5-2 mm wide ; leaflets 4.5-8 cm long, the base in lateral leaflets subattenuate to cuneate. Inflorescences axillary and/or lateral, the pedicels 2-3.5 mm long. Fruiting carpels about 5 mm long, connate for  $1/4$ - $1/3$  their length. — Pl. 2, 2a ; 3, 2a.

DISTRIBUTION : Known only from Mt. Humboldt, Mt. Kouakoué, and Mt. Mou. — Map 2.



Map 2. — Distributions of ***Comptonella oreophila*** (Guillaumin) Hartley var. ***oreophila*** (●) and ***C. oreophila*** var. ***longipes*** (Guillaumin) Hartley (▲).



ADDITIONAL SPECIMENS EXAMINED : *Balansa* 2798, A ; *MacKee*, leg. *Cherrier*, 39719, CANB ; *McPherson* 2303, CANB ; 3121, CANB.

ECOLOGY : Rain forest on serpentine soil ; 600-1450 m alt. Fruiting in September and January.

2b. ***Comptonella oreophila*** (Guillaumin) Hartley var. ***longipes*** (Guillaumin) Hartley, *comb. & stat. nov.*

- *Dutaillyea* ? *longipes* GUILLAUMIN, Mém. Mus. natn. Hist. nat., sér. B, Bot. 8 : 63 (1957).
- *Dutaillyea* ? *longipes* GUILLAUMIN var. — GUILLAUMIN, *ibid.* ; type : *Hurlimann* 1990, P!, Z!
- *Evodia* ? *fosteri* GUILLAUMIN, Bull. Mus. natn. Hist. nat., sér. 2, 29 : 261 (1957) ; type : *Foster* 79, UC!

LECTOTYPE (chosen here) : *Baumann-Bodenheim* 14252, P!

Shrub or small tree to 9 m high. Leaves 7-37 cm long ; petiole 1.5-15 cm long, 1.5-4 mm wide ; leaflets 5.5-22 cm long, the base in lateral leaflets obliquely rounded or less often obtuse to cuneate. Inflorescences axillary and/or lateral or often restricted to the main stem and/or older branches, the pedicels 1-10 mm long. Fruiting carpels 5-6.5 mm long, connate just at the base or rarely for about 1/2 or 2/3 their length. — Pl. 2, 2b, 2c ; 3, 2b.

DISTRIBUTION : From the vicinity of Pouébo southeast to Riv. des Pirogues. — Map 2.

ADDITIONAL REPRESENTATIVE SPECIMENS (45 collections examined) : *Balansa* 1798, A ; *Bernardi* 10188, B, L ; *Hartley* 14905, CANB ; *Hurlimann* 1429, L ; *MacKee* 6523, P ; 12692, P ; 15331, P ; 20107, P ; 28792, P ; 29241, P ; 35086, CANB ; 35504, CANB ; 37781, CANB ; *McPherson* 3134, CANB ; *Sévenet & Pusset* 1555, NOU ; *Veillon* 1989, CANB.

ECOLOGY : Rain forest or occasionally maquis ; on serpentine, schistose, micaschistose, and argillaceous soils ; 150-1300 m alt. Flowering May to August ; fruiting June to February, and April.

*Comptonella oreophila* is extremely variable in leaf size and shape (Pl. 2, 2a-2c ; larger leaves, not illustrated, reach 37 cm in length), degree of connation of the fruiting carpels (Pl. 3, 2a, 2b), position of the inflorescences (cauliflorous to lateral and axillary), and pedicel length (1-10 mm). Most of this variability is exhibited by var. *longipes*, but there does not seem to be sufficient morphologic discontinuity, nor sufficiently distinct combinations of the character states, to warrant further taxonomic subdivision.

The fruits of var. *longipes* are consistently nearly apocarpous with two exceptions : in *MacKee* 37781 all of the fruits are nearly apocarpous except for one, in which the carpels are connate for about 1/2 their length, and in *MacKee* 20107 all of the fruiting carpels are connate for about 2/3 their length. In all other features these specimens are characteristic of large-leaved plants of var. *longipes*.

The fruiting carpels of one collection of var. *longipes* (*McPherson* 3134) each have an adaxial-apical longitudinal fissure in the outer pericarp. This feature has not been



noted elsewhere in the genus and is probably atavic, reflecting dehiscent-fruited ancestry.

GUILLAUMIN based *Euodia oreophila* on three BALANSA collections, namely, 1798, from Mt. Arago, 2798 and 2798a (the latter chosen here as the lectotype), both from Mt. Mou. The latter two collections are nearly identical, morphologically; 1798 matches more closely the lectotype of *Dutailleya longipes*.

*Dutailleya longipes* was based on five collections, namely, *Baumann-Bodenheim* 14015, 14089, and 14252 (the last chosen here as the lectotype), all from Mois de Mai, *Hürlimann* 429, from Ouinné-Sakel, and *Hürlimann* 982, from Mgne. des Sources. I have seen only the lectotype. It seems likely that the Ouinné-Sakel collection was misquoted; the sheet of *Hürlimann* 1429 cited above under var. *longipes* was distributed as a type of *Dutailleya longipes*.

Small-leaved specimens of *Comptonella oreophila* var. *longipes* are morphologically quite similar to many specimens of *C. drupacea* (except that the former have thicker-textured leaflets, lateral leaflets usually obliquely rounded — as opposed to usually cuneate to attenuate — at the base, and wider petioles); it seems probable that the two taxa are quite closely related.

### 3. *Comptonella drupacea* (Labill.) Guillaumin

Bull. Soc. Bot. Fr. 85 : 298, 299 (1938).

— *Evodia drupacea* LABILL., *Sertum austro-caled.* : 73, *tab.* 74 (1825).

— *Ampacus drupacea* (LABILL.) KUNTZE, *Rev. Gen.* 1 : 98 (1891).

— *Evodia canalensis* BAKER f., *Journ. Linn. Soc., Bot.* 45 : 282 (1921); type : *Compton* 1196, BM!

TYPE : *Labillardière* s.n. (holo-, FI-W!; iso-, G-DC!, G!).

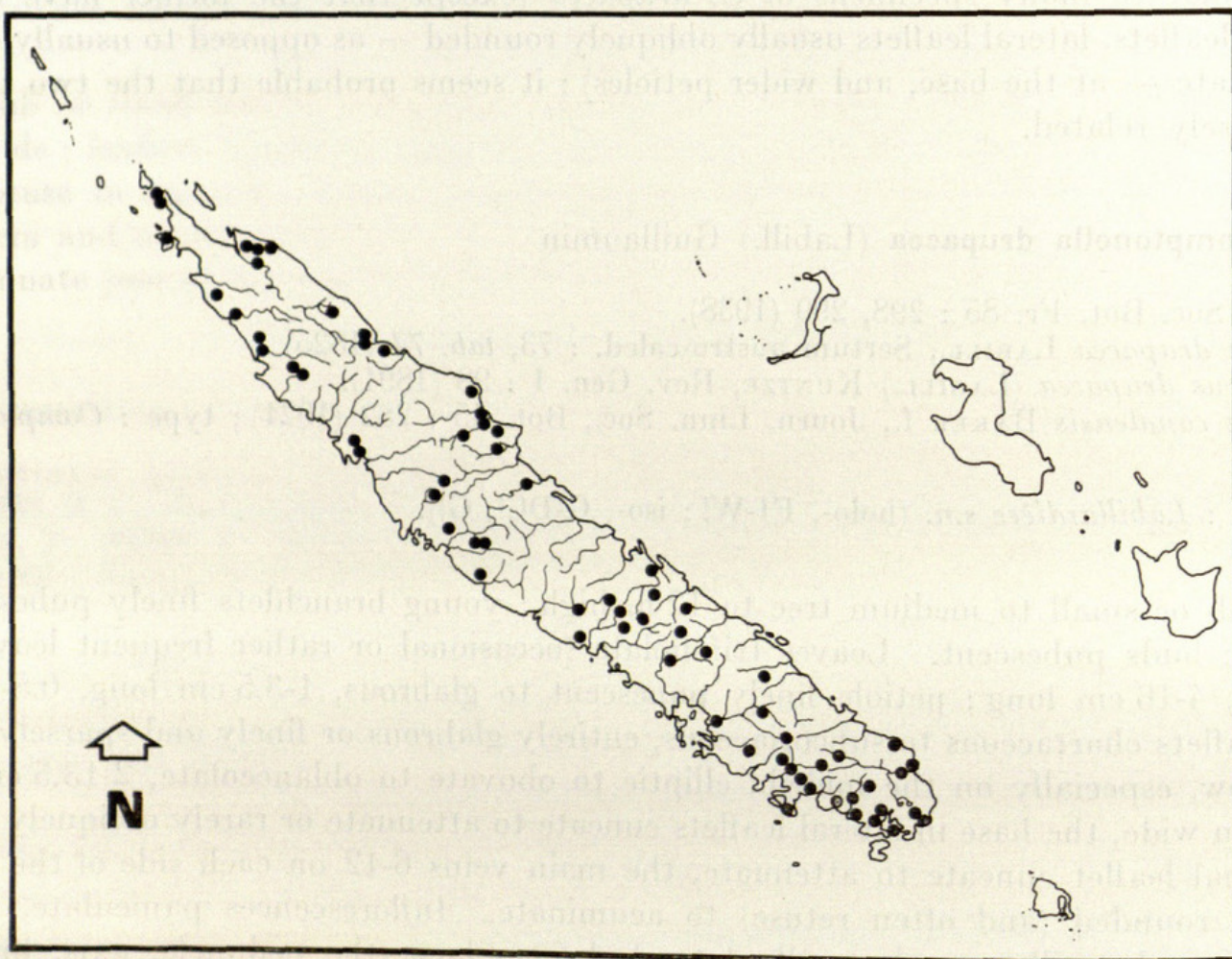
Shrub or small to medium tree to 12 m high; young branchlets finely pubescent to glabrous; buds pubescent. Leaves trifoliate (occasional or rather frequent leaves unifoliate), 4-16 cm long; petiole finely pubescent to glabrous, 1-3.5 cm long, 0.8-1.5 mm wide; leaflets chartaceous to subcoriaceous, entirely glabrous or finely and sparsely pubescent below, especially on the midrib, elliptic to obovate to oblanceolate, 2-13.5 cm long, 0.8-5.5 cm wide, the base in lateral leaflets cuneate to attenuate or rarely obliquely obtuse, in terminal leaflet cuneate to attenuate, the main veins 6-12 on each side of the midrib, the apex rounded (and often retuse) to acuminate. Inflorescences paniculate, few- to many-flowered, axillary and usually lateral, 1-4 cm long, the peduncle, axis, branches, and pedicels finely pubescent, the pedicels 0.5-2.5 mm long. Flowers 1.5-2.5 mm wide; sepals finely pubescent or rarely nearly glabrous, ovate to triangular, 0.5-1 mm long, persistent or deciduous in fruit; petals white to pale yellow, finely pubescent or rarely nearly glabrous abaxially, sparsely pubescent adaxially, ovate to ovate-elliptic, 1-2 mm long, deciduous in fruit; gynoeceium pubescent, the carpels connate just at the base (in one collection seemingly fused for a slightly greater length). Fruits glabrous or nearly so; developed carpels 1-3, connate just at the base, otherwise divergent, obovoid, 5.5-8 mm long. Seeds 4.5-6.5 mm long. — Pl. 1; 2, 3a-3d; 3, 3.

DISTRIBUTION : Throughout the island. — Map 3.



ADDITIONAL REPRESENTATIVE SPECIMENS (113 collections examined) : *Balansa* 1020, A, B, L, NY, P, UC ; *Bernardi* 9798, A, B, L, NY, P ; *Cabalion* 409, CANB ; *Däniker* 1553b, U ; *Foster* 151, BISH, UC ; *Franc* 1707, A, BRI, NY, UC ; *Guillaumin & Baumann-Bodenheim* 13284, NY ; *Hartley* 14853, CANB ; *MacKee* 15353, P ; 17072, P ; 20729, P ; 22252, P ; 27877, P ; 28815, P ; 35374, CANB ; *McMillan* 5005, BISH, UC ; *McPherson* 3750, CANB ; *Morat* 6572, CANB ; *Schodde* 5198, CANB ; *Veillon* 2470, CANB ; *Vieillard* 303, 307 p.p., GH ; *Webster & Hildreth* 14870, GH ; *White* 2233, A, BRI.

ECOLOGY : Maquis, rain forest, gallery forest, littoral forest, and dry scrub ; on serpentine, schistose, micaschistose, and alluvial soils ; sea level to 1500 m alt. Flowering April to August, and rarely October (five collections, see below) and December (two FRANC collections) ; fruiting throughout the year.



Map 3. — Distribution of *Comptonella drupacea* (Labill.) Guillaumin.

Apart from considerable variability in leaf size (Pl. 2, 3a-3d), most of the material examined of *Comptonella drupacea* is morphologically quite homogeneous. There is one fairly distinct variant, however, and it may prove to merit formal taxonomic recognition when complete material is known. It is represented by five flowering collections from the northwestern part of the island (*MacKee* 5532 and 13570, and *Thorne* 28225, all from Mt. Kaala ; *MacKee* 21001, from Mt. Homédeboa ; and *MacKee* 35789, from Mt. Taom)



and differs from other material of the species in flowering time (October, as opposed to April to August, and rarely December) and in having sepals and petals nearly glabrous (as opposed to finely pubescent) abaxially. Also, in the one collection with functionally carpellate flowers (*Thorne 28225*), its carpels seem to be fused for a slightly greater length than in other material of *C. drupacea*, but fruiting material is needed to substantiate this.

*Comptonella drupacea* is clearly most closely related to *C. microcarpa*, from which it differs essentially only in leaf complexity (predominantly trifoliolate as opposed to predominantly unifoliolate). It also appears to be quite closely related to *C. oreophila* var. *longipes* (see there).

#### 4. *Comptonella microcarpa* (Perkins) Hartley, *comb. nov.*

— *Hedycarya microcarpa* PERKINS in ENGLER, *Pflanzenreich* 4, 101, Nachträge (Heft 49) : 4 (1911) ; JÉRÉMIE, *Adansonia*, ser. 2, 18 : 44, *tab. 8, figs. 11-14* (1978) ; JÉRÉMIE, *Fl. Nouvelle-Calédonie* 11 : 150 (1982), a *Hedycarya* sp. *excl.*

— *Comptonella albiflora* BAKER f., *Journ. Linn. Soc., Bot.* 45 : 281, *tab. 15, figs. 1-6* (1921) ; type : *Compton 1542*, BM!

TYPE : *Caldwell s.n.* (holo-, K — only a photograph seen).

Shrub or small tree to 10 m high ; young branchlets finely pubescent to glabrous ; buds pubescent. Leaves unifoliolate (rarely occasional leaves trifoliolate), 3-11.5(-17) cm long ; petiole finely pubescent to glabrous, 0.7-2(-5) cm long, 0.6-1.5 mm wide ; leaflet chartaceous to subcoriaceous, entirely glabrous or finely and sparsely pubescent on the midrib below, elliptic to obovate or occasionally oblanceolate, 2.3-9.5(-12.5) cm long, 1.3-5(-7) cm wide, the base rounded to attenuate, the main veins 6-12 on each side of the midrib, the apex rounded (and often retuse) to acuminate. Inflorescences paniculate, few- to several-flowered, axillary and usually lateral, 0.5-2.5 cm long, the peduncle, axis, branches, and pedicels finely pubescent, the pedicels 1-2.5(-3.5) mm long. Flowers 2-3 mm wide ; sepals finely pubescent, ovate-triangular, 0.5-0.8 mm long, persistent or deciduous in fruit ; petals white to pale yellow, finely pubescent abaxially, sparsely pubescent to nearly glabrous adaxially, ovate to elliptic, 1-2.5 mm long, deciduous in fruit ; gynoecium pubescent, the carpels connate just at the base. Fruits finely and sparsely pubescent to glabrous ; developed carpels 1-4, connate just at the base, otherwise divergent, obovoid, 5-6 mm long. Seeds 3.5-4 mm long. — Pl. 2, 4a-4c ; 3, 4.

DISTRIBUTION : Scattered throughout the island. — Map 4.

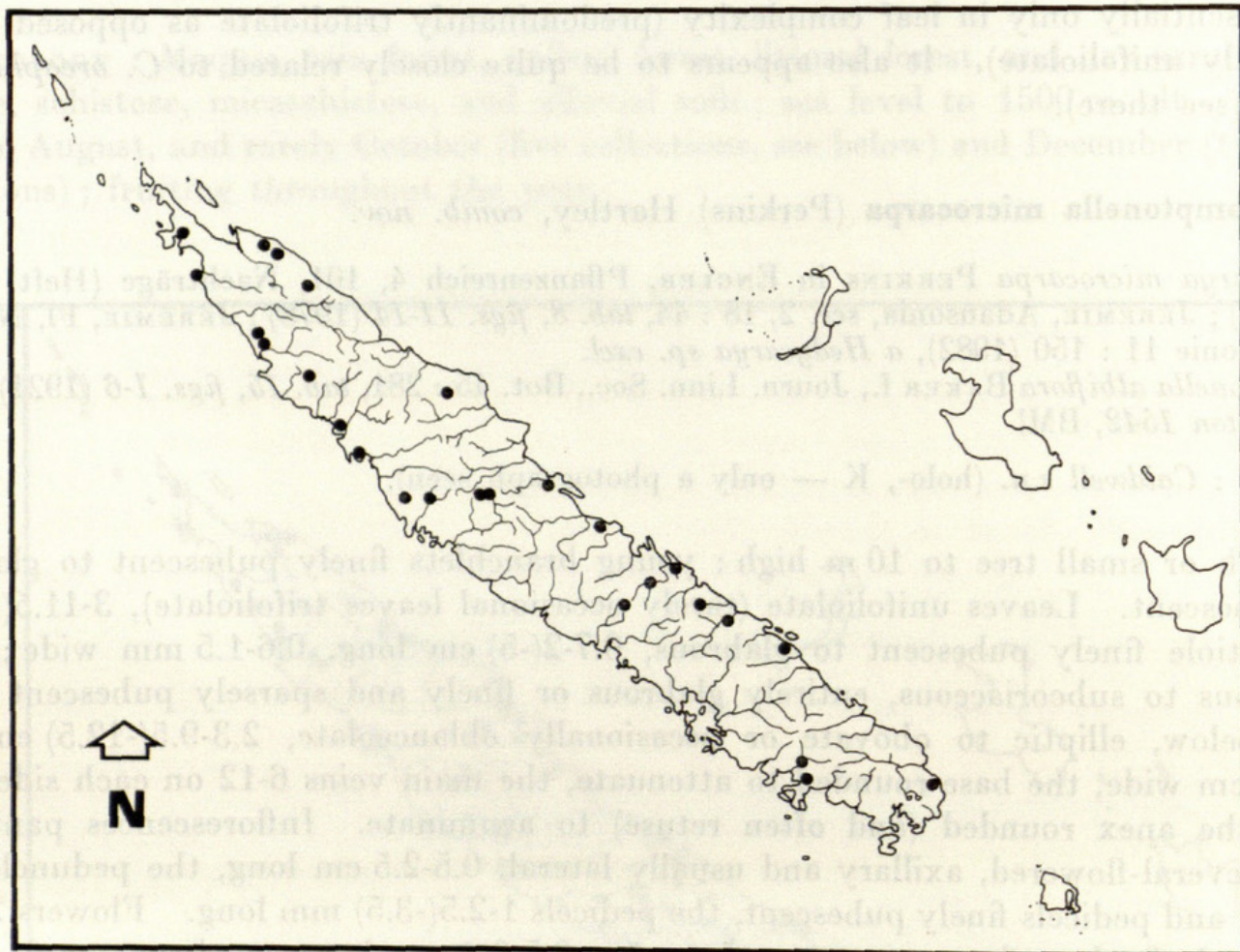
ADDITIONAL REPRESENTATIVE SPECIMENS (47 collections examined) : *Balansa 1796* p.p., A, B, L ; *Deplanche 308*, P ; *Franc 2474*, A, L, NSW, NY, UC, W ; *Le Rat 2424*, A, L, P ; *MacKee 13631*, P ; *15434*, P ; *18585*, P ; *25047*, P ; *27982*, P ; *35206*, CANB ; *McMillan 5203*, A, BISH, L, UC ; *McPherson 2547*, CANB ; *Schodde 5259*, CANB ; *Thorne 28128*, GH, L ; *Veillon 1990*, CANB ; *Vieillard 2482*, P.

ECOLOGY : Maquis, rain forest, gallery forest, and dry scrub ; on serpentine, or, less often, schistose, gneissic, argillaceous, or alluvial soils ; sea level to 1000 m alt. Flowering in February, March, and May to August ; fruiting in January, April, June, July, September, October, and December.



Except for considerable variability in size and shape of leaves, *Comptonella microcarpa* is remarkably homogeneous morphologically. It is most closely related to *C. drupacea* (see there).

As J. JÉRÉMIE has noted (1982, p. 150, and *in litt.*), Dr. H. S. MacKEE was the first to discover that *Hedycarya microcarpa* is conspecific with *Comptonella albiflora*.



Map 4. — Distribution of *Comptonella microcarpa* (Perkins) Hartley.

#### 5. *Comptonella fruticosa* Hartley, *sp. nov.*

*Frutex humilis usque 0.5 m altus ; ramulis novellis subtiliter pubescentibus ; gemmis pubescentibus ; foliis trifoliolatis (foliis infrequentibus unifoliolatis), 1.5-5 cm longis ; petiolo subtiliter pubescenti, mox glabro, 0.4-1.5 cm longo, 0.6-1 mm lato ; foliolis subcoriaceis, omnino glabris vel subtus in costa subtiliter et sparse pubescentibus, ellipticis vel obovatis, 1.2-3 cm longis, 0.4-1.2 cm latis, basi oblique rotundatis vel interdum oblique obtusis in foliolis lateralibus, cuneatis in foliolo terminali, venis primariis utrinsecus costae 5-6, apice obtusis vel rotundatis, retusis. Inflorescentiis paniculatis et plurifloris vel racemosis et paucifloris, axillaribus, 0.7-1.5 cm longis, pedunculo, axe, ramis, et pedicellis subtiliter pubescentibus, pedicellis 0.5-1.5 mm longis ; floribus 2-2.5 mm latis ; sepalis subtiliter pubescentibus, ovato-triangularibus, 1-1.5 mm longis, in fructu persistentibus ; petalis albis vel luteolis, abaxialiter subtiliter pubescentibus, adaxialiter sparse pubescentibus, ovatis, 1.5-2 mm longis ; gynoecio pubescenti, carpellis ca. 1/4 longitudine connatis ; fructibus subtiliter et sparse pubescentibus, carpellis evolutis 2 vel 3, ca. 1/4 longitudine connatis, aliter divergentibus, ellipsoideis, 5-5.5 mm longis ; seminibus ca. 4.5 mm longis.*

TYPE : MacKee 18630, Voh, Mt. Katépahié, 600 m, fr., 5.4.1968 (holo-, P!)



PARATYPES : *MacKee 15293*, Mt. Kaala, 1050 m, fl. ♂ & fl. ♀ (on separate specimens), 9.7.1966, P! ; *33487, ibid.*, pente N, 800 m, fl. ♂, 16.7.1977, CANB!

Low shrub to 0.5 m high ; young branchlets finely pubescent ; buds pubescent. Leaves trifoliolate (occasional leaves unifoliolate), 1.5-5 cm long ; petiole finely pubescent, becoming glabrous, 0.4-1.5 cm long, 0.6-1 mm wide ; leaflets subcoriaceous, entirely glabrous or finely and sparsely pubescent on the midrib below, elliptic to obovate, 1.2-3 cm long, 0.4-1.2 cm wide, the base in lateral leaflets obliquely rounded or occasionally obliquely obtuse, in terminal leaflet cuneate, the main veins 5-6 on each side of the midrib, the apex obtuse to rounded, retuse. Inflorescences paniculate and several-flowered or reduced to few-flowered racemes, axillary, 0.7-1.5 cm long, the peduncle, axis, branches, and pedicels finely pubescent, the pedicels 0.5-1.5 mm long. Flowers 2-2.5 mm wide ; sepals finely pubescent, ovate-triangular, 1-1.5 mm long, persistent in fruit ; petals white or pale yellow, finely pubescent abaxially, sparsely pubescent adaxially, ovate, 1.5-2 mm long ; gynoecium pubescent, the carpels connate for about 1/4 their length. Fruits finely and sparsely pubescent ; developed carpels 2 or 3, connate for about 1/4 their length, otherwise divergent, ellipsoid, 5-5.5 mm long. Seeds about 4.5 mm long. — Pl. 2, 5 ; 3, 5.

DISTRIBUTION : Known only from Mts. Kaala and Katépahié. — Map 1.

ECOLOGY : Maquis on serpentine soil ; 600-1050 m alt. Flowering in July ; fruiting in April.

*Comptonella fruticosa* is probably most closely related to *C. baudouinii*, from which it differs in having lateral leaflets usually obliquely rounded (as opposed to cuneate to attenuate) at the base, shorter pedicels, and slightly less syncarpous fruits.

#### 6. *Comptonella baudouinii* (Baillon) Hartley, *comb. nov.*

— *Evodia* ? *baudouinii* BAILLON, *Adansonia* 10 : 326 (1871-1873).

— *Evodia* ? *hurlimannii* GUILLAUMIN, *Mém. Mus. natn. Hist. nat., sér. B, Bot.* 8 : 62 (1957) ; type : *Hürlimann 664*, P!, Z!

TYPE : *Baudouin s.n.* (holo-, P!).

Low shrub to small tree 4 m high ; young branchlets finely pubescent to glabrous ; buds pubescent. Leaves trifoliolate (occasional leaves unifoliolate), 1.5-7 cm long ; petiole finely pubescent to glabrous, 0.5-3 cm long, 0.5-1 mm wide ; leaflets subcoriaceous, entirely glabrous or occasionally finely and sparsely pubescent below, elliptic-oblong to obovate, oblanceolate, or spatulate, 1-4.5 cm long, 0.5-2.5 cm wide, the base cuneate to attenuate in lateral and terminal leaflets, the main veins 3-6 on each side of the midrib, the apex obtuse to rounded, usually retuse. Inflorescences paniculate and several-flowered or reduced to few-flowered racemes, axillary, 0.5-3 cm long, the peduncle, axis, branches, and pedicels finely pubescent to nearly glabrous, the pedicels 1.5-4 mm long. Flowers 2-2.5 mm wide ; sepals finely pubescent to glabrous, ovate-triangular to rounded, 0.5-1 mm long, persistent in fruit ; petals white, greenish white, or pale rose, finely pubescent to glabrous abaxially, sparsely to rather densely pubescent adaxially, ovate to elliptic,



1.5-2 mm long, persistent or semi-persistent in fruit; gynoeceum pubescent, the carpels connate for about 1/2 their length. Fruits finely and sparsely pubescent; developed carpels 1-4, connate for about 1/2 their length, otherwise divergent, ellipsoid, 5-5.5 mm long. Seeds 3.5-4.5 mm long. — Pl. 2, 6a-6c; 3, 6.

DISTRIBUTION : Mainly in the south and south-central part of the island; rare in the north. — Map. 1

ADDITIONAL SPECIMENS EXAMINED : *Balansa* 1795, P; 1795a, BO; *Deplanche* 306 (Vieillard 292), GH; *Franc* 2072, A, BRI, MEL, NY, UC, US; *Green* 1259, A, L; *Guillaumin & Baumann-Bodenheim* 11350, P; *Le Rat* 2866, P; *MacKee* 4409, L; 4983A, A, L; 14484, P; 15471, P; 17255, P; 29450, leg. Veillon, P; 39596, CANB; *McMillan* 5057, A, BISH, L, UC; 5191, A, BISH, L, UC.

ECOLOGY : Maquis and occasionally gallery forest; apparently restricted to serpentine soil; sea level to about 1000 m alt. Flowering in February, July, August, and October; fruiting in March, October, and November.

The two northern collections of *Comptonella baudouinii*, *MacKee* 39596, from Mt. Koniambo, and *McMillan* 5057, from Dôme de Tiébaghi, tend to have leaves in the small size range (down to 1.5 cm long) and unusually short pedicels (down to 1.5 mm), but they do not appear to be morphologically distinct from the other material of the species.

In his original description of *Euodia hurlimannii*, GUILLAUMIN noted that it approaches *Euodia baudouinii* but is distinguished... « par ses feuilles moins épaisses et ses filets staminaux glabres et très aplatis. » In the type collections of these two species (respectively, *Hürlimann* 664, which is in bud only and is functionally carpellate, and *Baudouin s.n.*, which is in flower and is functionally staminate) there is only a slight (and insignificant, in the context of *Comptonella baudouinii* as the species is interpreted here) difference in leaflet texture. The immature staminal filaments of the former type have, in fact, some trichomes on their adaxial surface (pubescence of staminal filaments does not reach its full development in *Comptonella* until anthesis), and it is characteristic in the genus for non-functional stamens, as they are in the HÜRLIMANN collection, to have filaments more flattened than in functional stamens.

*Comptonella baudouinii* is probably most closely related to *C. fruticosa* (see there).

#### 7. *Comptonella lactea* (Baker f.) Hartley, *comb. nov.*

— *Evodia lactea* BAKER f., Journ. Linn. Soc., Bot. 45 : 282 (1921).

TYPE : *Compton* 2122 (holo-, BM!).

Shrub or occasionally small tree to 6 m high; young branchlets rather coarsely to finely pubescent; buds pubescent. Leaves trifoliolate (occasional leaves unifoliolate), 3.5-9.5 cm long; petiole rather coarsely to finely pubescent, usually becoming glabrous, 1-3 cm long, 1-1.5 mm wide; leaflets subcoriaceous to coriaceous, entirely glabrous or finely and sparsely pubescent below, especially on the midrib, obovate to oblanceolate or occasionally elliptic, 2.5-7.5 cm long, 1-2.5 cm wide, the base in lateral leaflets cuneate



to attenuate, in terminal leaflet attenuate, the main veins 5-7(-8) on each side of the midrib, the apex rounded (and usually retuse) to acuminate. Inflorescences paniculate, few- to several-flowered, axillary and often lateral, 0.7-2 cm long, the peduncle, axis, branches, and pedicels rather coarsely to finely pubescent, the pedicels obsolete to 1.5 mm long. Flowers 2-3 mm wide; sepals rather finely to coarsely pubescent, ovate-triangular to rounded, 0.7-1 mm long, persistent in fruit; petals pale yellow, yellow, or greenish yellow, rather finely to coarsely pubescent abaxially, pubescent adaxially, ovate, 1.5-2.5 mm long, persistent or semi-persistent in fruit; gynoecium pubescent, the carpels connate for about  $1\frac{1}{2}$ - $\frac{3}{4}$  their length. Fruits pubescent to nearly glabrous; developed carpels 1-4, connate for about  $1\frac{1}{2}$ - $\frac{3}{4}$  their length, 3.5-7 mm long. Seeds 3-4 mm long.

Key to the varieties of *Comptonella lactea*

1. Flowers 2-2.5 mm wide; perianth rather finely to coarsely pubescent abaxially, the petals 1.5-2 mm long; fruiting carpels sparsely pubescent, 3.5-4 mm long, connate for about  $1\frac{1}{2}$ - $\frac{3}{4}$  their length. .... 7a. var. *lactea*
- 1'. Flowers 2.5-3 mm wide; perianth coarsely pubescent abaxially, the petals 2-2.5 mm long; fruiting carpels densely to rather sparsely pubescent, 5.5-7 mm long, connate for about  $\frac{3}{4}$  their length. .... 7b. var. *poissonii*

7a. ***Comptonella lactea*** (Baker f.) Hartley var. *lactea*

Shrub 1-4 m high. Leaves 3.5-8 cm long. Flowers 2-2.5 mm wide; perianth rather finely to coarsely pubescent abaxially, the sepals 0.7-1 mm long; the petals 1.5-2 mm long. Fruiting carpels sparsely pubescent, connate for about  $1\frac{1}{2}$ - $\frac{3}{4}$  their length, 3.5-4 mm long. — Pl. 2, 7a; 3, 7a.

DISTRIBUTION : Balade southeast to Mt. Nékando. — Map 5.

ADDITIONAL REPRESENTATIVE SPECIMENS (16 collections examined) : MacKee 14875, P; 18681, P; 20061, P; 21568, P; McPherson 3445, CANB; Veillon 2041, CANB; Vieillard 307 p.p., L.

ECOLOGY : Maquis or occasionally rain forest or open forest; on serpentine or schistose soil; 200-1600 m alt. Flowering in October and December; fruiting January to June, and September.

7b. ***Comptonella lactea*** (Baker f.) Hartley var. *poissonii* (Guillaumin) Hartley, *comb. & stat. nov.*

— *Dutailliea poissonii* GUILLAUMIN, Bull. Soc. Bot. Fr. 85 : 300 (1938).

TYPE : Pancher 275 (Vieillard 2454) (iso-, MEL!, NY!, P!).

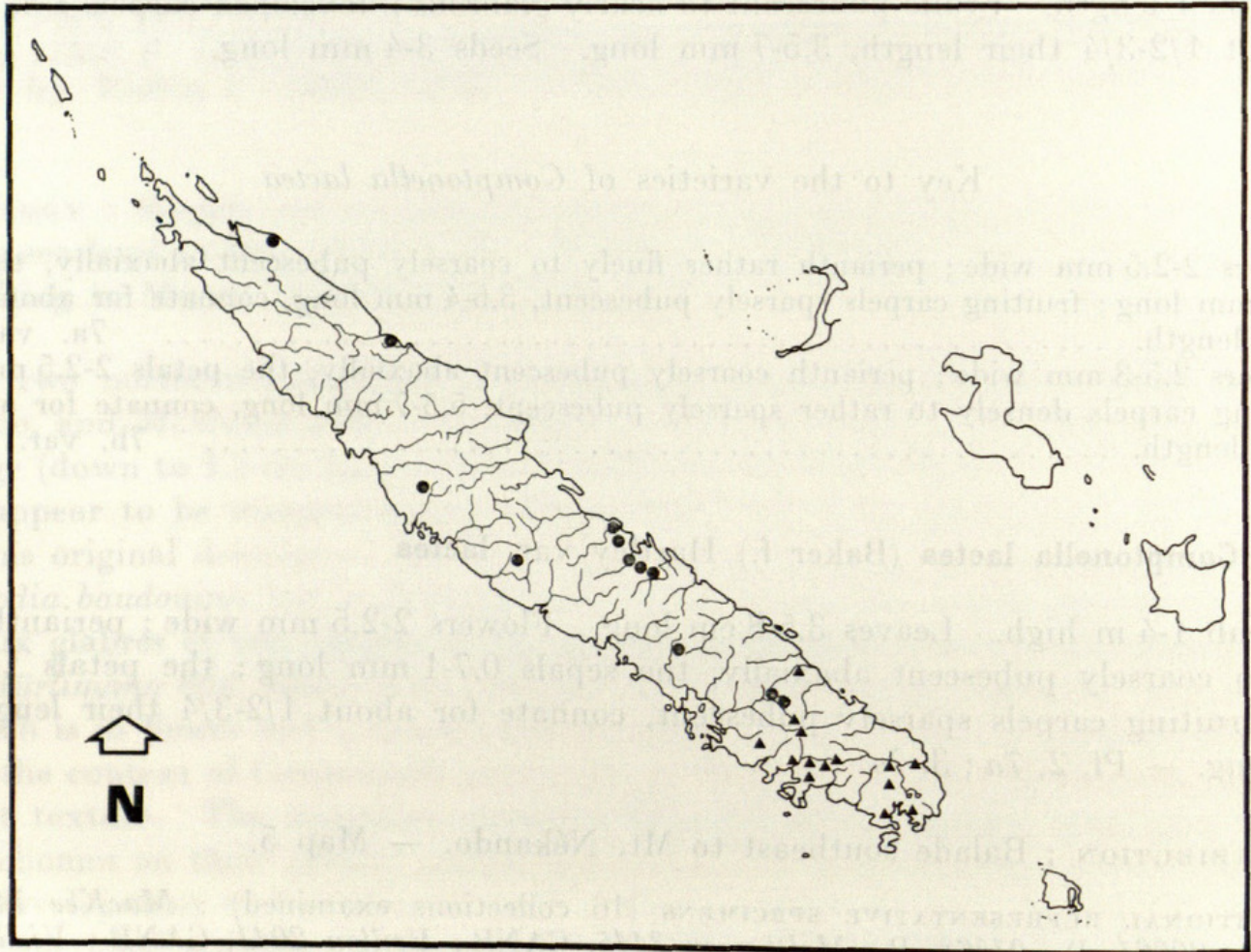
Shrub or small tree to 6 m high. Leaves 4.5-9.5 cm long. Flowers 2.5-3 mm wide; perianth coarsely pubescent abaxially, the sepals about 1 mm long, the petals 2-2.5 mm



long. Fruiting carpels densely to rather sparsely pubescent, connate for about  $3/4$  their length, 5.5-7 mm long. — Pl. 2, 7b, 7c; 3, 7b.

**DISTRIBUTION** : Restricted to the southern part of the island. — Map 5.

**ADDITIONAL REPRESENTATIVE SPECIMENS** (23 collections examined) : *Franc 1907a*, A, E, UC ; *Hartley 14941*, CANB ; *MacKee 16434*, P ; *22866*, P ; *32257*, CANB ; *McPherson 2338*, CANB ; *Schlechter 15186*, BO, GH, L, NSW, PR, W, WRSL ; *Thorne 28709*, GH, L ; *Veillon 1070*, CANB.



Map 5. — Distributions of *Comptonella lactea* (Baker f.) Hartley var. *lactea* (●) and *C. lactea* var. *poissonii* (Guillaumin) Hartley (▲).

**ECOLOGY** : Maquis, rain forest, and open forest ; on serpentine soil ; near sea level to 1100 m alt. Flowering August to January, and June ; fruiting in November, January, and February.

Chalcid wasps were found in seeds of both varieties of *Comptonella lactea*, for example in *MacKee 14875* (var. *lactea*) and *Veillon 1070* (var. *poissonii*), and in nearly every fruiting specimen of the species at least some of the fruits show evidence (a hole in the pericarp and an empty seed in the corresponding locule) of the emergence of these insects. The comparatively larger fruits of var. *poissonii* may be the result of a galling effect (a proliferation of the mesocarp tissue) which does not occur in var. *lactea* ; in both varieties the locules and seeds are about the same size.

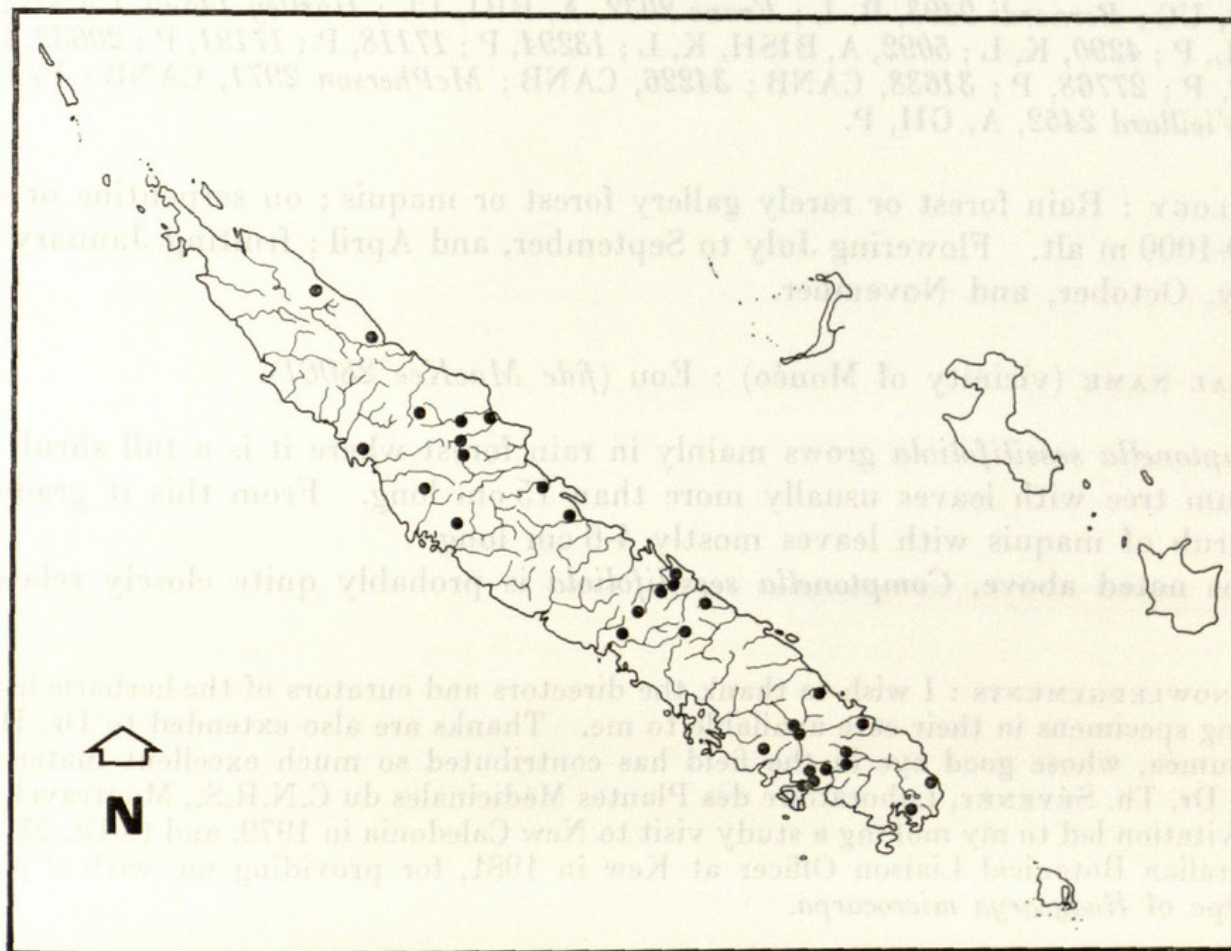


The flowers and fruits of *Comptonella lactea* match most closely those of *C. sessilifoliola*, and the two species are probably quite closely related. They differ markedly on the leaves, however, those of the latter having lateral leaflets obliquely rounded or occasionally obliquely obtuse (as opposed to cuneate or attenuate) at the base.

8. ***Comptonella sessilifoliola*** (Guillaumin) Hartley, *comb. nov.*

— *Dutailleya sessilifoliola* GUILLAUMIN, Bull. Mus. natn. Hist. nat., sér. 2, 4 : 690 (1932).

TYPE : *Franc s.n.* (holo-, P!).



Map 6. — Distribution of ***Comptonella sessilifoliola*** (Guillaumin) Hartley.

Shrub or small to medium tree to 15 m high ; young branchlets rather coarsely to finely pubescent ; buds pubescent. Leaves trifoliolate (occasional leaves unifoliolate), 4-29 cm long ; petiole rather coarsely to finely pubescent, often becoming glabrous, 1-10 cm long, (1-)1.5-4 mm wide ; leaflets subcoriaceous to coriaceous, rather densely pubescent to nearly glabrous below, sparsely pubescent to glabrous above, elliptic to obovate to oblanceolate, 3-19 cm long, 1-10 cm wide, the base in lateral leaflets obliquely rounded or occasionally obliquely obtuse, in terminal leaflet cuneate to attenuate, the main veins 7-16 on each side of the midrib, the apex rounded (and usually retuse) to acuminate. Inflorescences paniculate, several- to many-flowered, axillary and often lateral, 1-4 cm long,



the peduncle, axis, branches, and pedicels rather coarsely to finely pubescent, the pedicels 0.5-2 mm long. Flowers 2-2.5 mm wide ; sepals rather coarsely to finely pubescent, ovate-triangular, 0.5-1 mm long, persistent in fruit ; petals white to pale yellow, rather coarsely to finely pubescent abaxially, pubescent to nearly glabrous adaxially, ovate, (1-)1.5-2.5 mm long, deciduous or semi-persistent in fruit ; gynoecium pubescent, the carpels connate for about 3/4 their length. Fruits glabrous or nearly so ; developed carpels 1-4, connate for about 3/4 their length, 4-5 mm long. Seeds 3-4 mm long. — Pl. 2, 8a-8c ; 3, 8.

DISTRIBUTION : Mt. Ignambi southeast to Mt. Oungoné. — Map 6.

ADDITIONAL REPRESENTATIVE SPECIMENS (56 collections examined) : *Balansa* 1017a, A, B, L, NY, P, UC ; *Bernardi* 9493, B, L ; *Franc* 2032, A, BRI, UC ; *Hartley* 14845, CANB ; *MacKee* 3986, K, L, P ; 4290, K, L ; 5092, A, BISH, K, L ; 13294, P ; 17118, P ; 17191, P ; 20632, P ; 23872, P ; 27030, P ; 27768, P ; 31638, CANB ; 34226, CANB ; *McPherson* 2971, CANB ; *Veillon* 3816, CANB ; *Viellard* 2452, A, GH, P.

ECOLOGY : Rain forest or rarely gallery forest or maquis ; on serpentine or schistose soil ; 100-1000 m alt. Flowering July to September, and April ; fruiting January to May, and July, October, and November.

LOCAL NAME (vicinity of Monéo) : Eou (*vide MacKee* 28061).

*Comptonella sessilifoliola* grows mainly in rain forest where it is a tall shrub or small to medium tree with leaves usually more than 15 cm long. From this it grades into a small shrub of maquis with leaves mostly 4-6 cm long.

As is noted above, *Comptonella sessilifoliola* is probably quite closely related to *C. lactea*.

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# de la zone des papilles du genre *Minuartia* (Caryophyllaceae)

L. F. F. F.

T. C.

Resumé : La zone des papilles des espèces du genre *Minuartia* (Caryophyllaceae) est étudiée chez certaines variétés d'une dizaine d'espèces appartenant à deux lignées de cette espèce. Les caractéristiques de l'ornementation des cellules épidermiques, la forme des papilles, et le degré de développement de ces papilles semblent avoir une importance dans la détermination de certaines espèces. Les auteurs proposent une clé de détermination pour les genres *Minuartia*, *Monarda* et *Chamaenerion*.

Summary : The seed coat of species of the genus *Minuartia* (Caryophyllaceae) is studied in each species, and some characteristics are noted. The following are the results of the study : the ornamentation of the cells of the seed coat and the ornamentation of the cells of the seed coat in the median zone. These results are used to determine the species. Whereas the seed coat of *Minuartia* is in the seed coat, in the seed coat, in the seed coat, a large range of ornamentation is observed in the seed coat into the subseed coat.

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## INTRODUCTION

Depuis une douzaine d'années, l'analyse des caractères de la zone des papilles (Z.P.M.) comme technique systématique est en vogue. Son importance en systématique est évidente. Les informations obtenues sur la zone des papilles





Hartley, T G. 1983. "A revision of the genus *Comptonella* (Rutaceae)." *Bulletin du Muséum National d'Histoire Naturelle Section B, Adansonia, botanique, phytochimie* 5(4), 391–413.

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