

On *Neorapinia* (*Vitex sensu lato*, Labiatae-Viticoideae)

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Abstract

Mabberley, D.J. (Rijksherbarium, University of Leiden, Netherlands and Royal Botanic Gardens, Sydney NSW 2000, Australia) 1998. On Neorapinia (Vitex sensu lato, Labiatae-Viticoideae). Telopea 7(4): 313–317. Neorapinia, currently considered a monotypic genus restricted to New Caledonia, is assessed in the context of Vitex s.l. and, pending a complete survey of that genus, is here referred to it, as V. collina. There is not only one 'Neorapinia' species in New Caledonia (and Vanuatu), but other species also referable to that group in Vitex sensu lato include a second (V. lucens) in New Zealand and a third (V. lignum-vitae, currently called Premna lignum-vitae) in eastern Australia, all of which would be referable to Neorapinia (or an earlier synonym) if Vitex were ever to be split up. Vitex evoluta (New Caledonia), on the other hand, is referred to Gmelina and the new combination, G. evoluta, made.

Introduction

The name *Neorapinia* was published by Moldenke (1955) as a *nomen novum* for the New Caledonian genus, *Rapinia* Montr. (1860, Labiatae (Lamiaceae)-Viticoideae, formerly Verbenaceae, s.l.), non Lour. (1791; = *Sphenoclea* Gaertner, Sphenocleaceae), and its sole species, *R. collina* Montr., became *N. collina* (Montr.) Mold. It is still the only species referred to the genus, which is therefore considered a New Caledonian endemic. This is despite the fact that, almost a century ago, Beauvisage (1901) transferred *R. collina* to *Vitex*, as *V. collina* (Montr.) Beauvisage and raised one of Montrouzier's informal infraspecific variants of it ('*triphylla*') to species rank as *V. rapinii* Beauvisage, which Moldenke and others have accepted as a true *Vitex*. Moreover, Moldenke (1957) has conceded that the flowers of *N. collina* and *V. rapinii* are 'similar'.

In preparation for an account of Labiatae (Lamiaceae) s.l. for *Flore de la Nouvelle-Calédonie et Dépendances*, all the New Caledonian holdings of *Vitex* s.l. in B, BISH, BM, L, K, NSW and P, as well as type material of *V. evoluta* held in Z, were examined.

Vitex collina

Type material (Montrouzier 187, P; the LY sheets of Montrouzier's own set of New Caledonian plants are all destroyed — P. Morat, pers. comm.) of *Vitex (Rapinia) collina* has unifoliolate leaves. Such plants are small shrublets often with small, often 1-flowered inflorescences, apparently restricted to 'maquis' on serpentine. However, there are forms, e.g. *H.S. MacKee 20521* (P) from Poya, Avangui, alt. 100 m, with both unifoliolate ('simple') and trifoliolate leaves, thus intermediate between the type and the plants called *V. rapinii*, which are often sizeable trees in rain forest and have larger many-flowered inflorescences. There are no distinctions in the structures of the flowers or fruits. Leaves on saplings (f. *dentata* Mold.), epicormics and occasionally fertile branches, are lobed. Beauvisage (1901) felt that small-leaved and large-leaved variants might belong to distinct but allied species, but such, e.g. var. *nana* Mold, are merely different developmental stages or from plants from different habitats, notably

depauperate thick-leaved specimens being collected from degraded maquis. The widespread forest plant has leaves with three or five leaflets, corresponding to the two infraspecific variants recognised by Montrouzier in his original publication. In north-west New Caledonia, there is, in addition, a very distinctive local population, characterised by leaves having usually seven leaflets: it is possible that this population should be recognised formally.

Vitex rapinioides Guillaumin, described from Vanuatu, and until now considered endemic there, is indistinguishable from the common forest plant of *V. collina* in New Caledonia. The isotypes (J.P. Wilson in *Kajewski* 992, K, P) perfectly match New Caledonian material, notably *H.S. MacKee* 25014 (P) from Pouembout, alt. 30 m. It has been collected on Aneityum, Efaté and Erromango.

In his argument, Beauvisage (1901) compared *Rapinia* with *V. littoralis* A.Cunn. (non Decne), i.e. *V. lucens* Kirk (puriri) of northern New Zealand, using their similarity as a major reason for referring *Rapinia* to *Vitex*. There is no doubt that the two species are congeneric, agreeing in vegetative and floral features, though the flowers of *V. lucens* are larger.

Vitex collina and *V. lucens* differ from *Vitex* sensu Munir (1987) in their 4-merous corollas (though the upper corolla lip of *V. lucens* is entire or sometimes bifid according to the literature while Mark Large (pers. comm.) has examined trees at localities in North Island, New Zealand, finding the 'flowers are variable with the corolla having 4–6 lobes. This variation can occur within a single tree': vouchers deposited in NSW) and from *Viticipremna* H.J. Lam (which genus Munir (1985) is one of the few recent authors to recognise), in their lateral inflorescences. With a narrow generic concept, then, the correct name for the Vanuatu and New Caledonia plant is *Neorapinia collina* (Montr.) Mold., but a name in *Neorapinia* has not been coined for puriri. However, *Vitex* sensu Munir includes both species with terminal inflorescences, like the type species, *V. agnus-castus* L. (Mediterranean) and the closely allied *V. trifolia* L. (found in Australia), and those with lateral ones, e.g. *V. glabrata* R.Br. and *V. helogiton* Schumann in Australia. If *V. collina* is retained in the genus, *Viticipremna* should logically be included too: the conclusion of most other authors. From a palynological study, it would appear that the only readily recognisable segregate from *Vitex* is *Chrysomallum* Thouars, centred in Madagascar (Large & Mabberley 1996). Without a complete generic overhaul of *Vitex* throughout its range, however, this matter cannot be resolved further.

Vitex collina (Montr.) Beauvisage, Gen. Montr.: 66 (1901); Guillaumin & Beauvisage, Ann. Soc. Bot. Lyon 38: 105 (1913); Guillaumin, Fl. Anal. Nouv.-Caléd.: 308 (1948).

Rapinia collina Montr., Mém. Acad. Lyon 10: 243 (1860).

Type: New Caledonia: Ile Art, X. *Montrouzier* 187; lectotype (selected here): P; the LY sheet from Montrouzier's own set is lost.

Neorapinia collina (Montr.) Mold., Phytol. 5: 225 (1955); Morat et al., Bull. Mus. Nat. Hist. Nat. Paris 4 ser., 8, sect. B, *Adansonia* 2:175 (1986).

Vitex rapinii Beauvisage, Gen. Montr.: 66, 67 (1901, as '*V. rapini*'); Guillaumin & Beauvisage, Ann. Soc. Bot. Lyon 38: 106 (1913, as '*V. rapini*'); Moore, J. Linn. Soc. Bot. 45: 376 (1921, as '*V. rapini*'); Däniker, Viert. Nat. Ges. Zürich 78, Beibl. 19: 409 (1933); Guillaumin, Fl. Anal. Nouv.-Caléd.: 308 (1948); Mold., Phytol. 6: 108 (1957), 17: 33 (1968), 49: 460 (1981); Morat et al., Bishop Mus. Spec. Publ. 72: 120 (1984), Bull. Mus. Nat. Hist. Nat. Paris 4 ser., 8 sect. B, *Adansonia* 2:175 (1986); **syn. nov.**

Type: New Caledonia: Ile Art, X. *Montrouzier* 280; lectotype (selected here): MPU; the LY sheets cited by Beauvisage from Montrouzier's own herbarium (185, 186) are lost.

[*Rapinia triphylla* Montr. ex Beauvisage, *l.c.*, *nom. in synonym.*]

V. rapinioides Guillaumin, *J. Arn. Arb.* 13: 27 (1932); *Mold., Phytol.* 6: 109 (1957); **syn. nov.**

Type: Vanuatu: Aneityum, Anaunoe, Sept 1929, *J.P. Wilson in Kajewski 992*; holo A, n.v.; iso K, P.

V. rapinii f. *dentata* Mold., *Phytol.* 22: 126 (1971, as '*V. rapinim* f. *dentata*'), 49: 460 (1981), 52: 139 (1982); **syn. nov.**

Type: New Caledonia: Koghis, Mt Bouo, alt. 700–1000 m, 6 Nov 1951, *Baumann–Bodenheim 15809*; holo NY, n.v.; iso, P (juvenile foliage).

V. rapinii var. *nana* Mold., *Phytol.* 22: 126 (1971, as '*V. rapini*' var. *nana*), *Phytol.* 49: 461 (1981); **syn. nov.**

Type: New Caledonia: Koghis, Mt Moné, alt. 1079m, 18 July 1951, *Hürlimann 1645*; holo NY, n.v.; iso, P.

Distribution: New Caledonia and southern Vanuatu (Aneityum, Efaté, Erromango), 20–1200 m.

Premna lignum-vitae

Whilst examining the New Caledonian taxa, particularly the specimens with unifoliolate leaves, I was strongly reminded of the Australian 'lignum-vitae', a tree of southern Queensland and the North Coast of New South Wales, currently called *Premna lignum-vitae* (Schauer) Pieper (Munir 1984, Conn 1992), the palaeotropical genus *Premna* being otherwise unrepresented in New South Wales. Like *Vitex collina* and *V. lucens*, *P. lignum-vitae* has lateral inflorescences of purplish red to pinkish mauve flowers with a somewhat curved corolla tube to 10 mm long, followed by pink to purple drupes to 15 mm long. It resembles no other *Premna* species, all the rest of which have terminal inflorescences of creamy white flowers with much shorter tubes followed by smaller, black, fruits.

As in *V. collina*, the juvenile foliage is often lobed or incised (see Conn 1992). The 'simple' leaves have misled some workers but the laminae are in fact articulated with the petioles as pointed out by Conn (1992): they are unifoliolate. From the start, the generic position of lignum-vitae has been uncertain, Schauer adding a '?' when publishing Cunningham's manuscript name, *Vitex lignum-vitae*. Pieper (1928), in a paper on *Vitex* in Africa and Madagascar, excluded the Australian (!) species from *Vitex*, putting it in *Premna* without explanation and this disposition seems to have been accepted in recent publications. However, lignum-vitae, *V. lucens* and *V. collina* are clearly congeneric: *P. lignum-vitae* should therefore be excluded from *Premna* and returned to *Vitex*. If *Vitex* is split up and *Neorapinia* recognised, possibly with an earlier name, then lignum-vitae as well as puriri must be moved to that genus.

V. lignum-vitae is easily separated from *V. collina*, even when sterile, not only in its being a tree with constantly unifoliolate leaves, but also because these have domatia not seen in *V. collina*. There is a very interesting parallel in this with *Dysoxylum* (Meliaceae) in that *D. bijugum* (Labill.) Seem. of New Caledonia and Vanuatu (and Norfolk Island), a species without domatia, is very closely allied to *D. fraserianum* (A.Juss.) Benth. of eastern Australia, a species with domatia (Mabberley 1988 and in press).

Vitex lignum-vitae [A. Cunn. ex] Schauer in De Candolle, *Prodr.* 11: 692 (1847); Francis, *Aust. Rain-For. Trees*: 372, tt. 233, 234 (1951).

Type: Australia: Queensland: Brisbane River, A. Cunningham 2 Aug 1829; holo G-DC, fiche seen; iso K. Schauer cites only the G-DC specimen, though Munir (1984), who

considers a sheet at BM ('1642', June & July 1829) an isolectotype, inexplicably calls it a lectotype.

Premna lignum-vitae (Schauer) Pieper in Engl., Bot. Jahrb. 62, Beibl. 142: 80 (1928); Munir, J. Adelaide Bot. Gard. 7: 20, fig. 4 (1984); Stanley & Ross, Fl. S.E. Qd. 2: 374 (1986); Conn in Harden, Fl. NSW 3: 616 cum tt. (1992)

Distribution: Australia (NE New South Wales, Queensland).

Vitex evoluta

All the rest of the true *Vitex* material seen from New Caledonia is quite different from *V. collina*, *V. lucens* and *V. lignum-vitae* and is referable to typical *V. trifolia* L. or its maritime subsp. *littoralis* Steenis (*V. rotundifolia* L.f.). However, plants currently under the name *V. evoluta* Däniker have the corolla shape (bilobed upper lip and trilobed lower one with tube narrowed at base), stamens inserted in the lower part of corolla tube, unequally lobed stylehead and succulent drupe with tough endocarp typical of the genus *Gmelina* L. Indeed this tree seems closely allied to the other four (two so far undescribed) *Gmelina* species of the island: all are endemic.

***Gmelina evoluta* (Däniker) Mabb., comb. nova**

Vitex evoluta Däniker, Vierteljahrsschr. Naturf. Ges. Zürich 78, Beibl. 19: 408 (1933).

Type: New Caledonia: Koumac, foot of Mt Kaala, 25 February 1925, A.U. Däniker 1228; holo Z; iso Z, Z.

Conclusions

1. The '*Neorapinia* group', if recognised as a genus distinct from *Vitex*, is neither monotypic nor a New Caledonian endemic; in the western Pacific alone there are three species — in Vanuatu and New Caledonia (1), eastern Australia (1) and northern New Zealand (1).
2. An investigation of generic limits in the Viticoideae is a prerequisite for definitive ranking of the '*Neorapinia*' group, which, pending that review, is returned to *Vitex*.
3. There are only two *Vitex* (including the '*Neorapinia* group') species native in New Caledonia (*V. collina* and *V. trifolia*), *V. evoluta* being referred to *Gmelina*.
4. The Latin name for the lignum-vitae of Eastern Australia is, once more, *Vitex lignum-vitae*: hence the genus *Premna* is not represented in New South Wales.

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References

- Beauvisage, G. (1901) *Genera Montrouzieriana plantarum Novae Caledoniae*. (Baillièrè: Paris).
 Conn, B.J. (1992) Verbenaceae. Pp. 611–618 in G. J. Harden (ed.), *Flora of New South Wales*, vol. 3. (NSW University Press: Kensington NSW).

- Large, M.F. and Mabberley, D.J. (1996) An assessment of pollen morphology in the genus *Vitex* (Labiatae). *Grana* 35: 291–299.
- Mabberley, D.J. (1988) Meliaceae. Pp. 17–89 in P. Morat & H.S. MacKee (eds), *Flore de la Nouvelle-Calédonie et Dépendances*, vol. 15. (Muséum National d'Histoire Naturelle: Paris).
- Mabberley, D.J. (in press) *Dysoxylum*. In *Flora of Australia*, vol. 26.
- Moldenke, H.N. (1955) Notes on new and noteworthy plants. XX. *Phytologia* 5: 225–230.
- Moldenke, H.N. (1957) Materials towards a monograph of the genus *Vitex*. IX. *Phytologia* 6: 70–128.
- Munir, A.A. (1984) A taxonomic revision of the genus *Premna* L. (Verbenaceae) in Australia. *Journal of the Adelaide Botanic Gardens* 7: 1–43.
- Munir, A.A. (1985) A taxonomic revision of the genus *Viticipremna* H.J. Lam (Verbenaceae). *Journal of the Adelaide Botanic Gardens* 7: 181–200.
- Munir, A.A. (1987) A taxonomic revision of the genus *Vitex* L. (Verbenaceae) in Australia. *Journal of the Adelaide Botanic Gardens* 10: 31–79.
- Pieper, W. (1928) Beiträge zur Flora von Africa. LV. Vorarbeiten zu einer Revision der afrikanischen *Vitex*-arten mit Berücksichtigung des übrigen. *Botanischer Jahrbucher* 62, Beibl. 142: 1–89.

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