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Taxonomic notes on New Caledonian Malpighiales: *Acridocarpus*, *Crossostylis*, *Erythroxyllum*,
and *Xylosma*

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Abstract

Taxonomic notes are made on the Malpighiales of New Caledonia. The names *Acridocarpus austrocaledonicus* Baill. (Malpighiaceae), *Crossostylis grandiflora* Brongn. & Gris, *C. multiflora* Brongn. & Gris, *C. sebertii* Pancher ex Brongn. & Gris (Rhizophoraceae), and *Erythroxyllum novocaledonicum* O.E.Schultz (Erythroxyllaceae) are lectotypified. Based on published molecular phylogenetic and morphological evidence, *Lasiochlamys* Pax & K.Hoffm. is better treated as a synonym of *Xylosma* G.Forst. (Salicaceae), and five new combinations and one new name are provided to implement this change.

Keywords: New Caledonia, Erythroxyllaceae, Flacourtiaceae, Malpighiaceae, Rhizophoraceae, Salicaceae

New Caledonia has a rich and unique flora that is still imperfectly known (e.g. Gâteblé *et al.* 2018; Lannuzel *et al.* 2022). A checklist of the native vascular plant species of this archipelago is actively curated (Morat *et al.* 2012; Munzinger *et al.* 2022). Many plant groups have received little attention since the monumental work of André Guillaumin between 1910 and 1974 (Hamel 1978), which included the last complete treatment of the entire New Caledonian flora (Guillaumin 1948), and more specific treatments of the groups dealt with below (Guillaumin 1914, 1932, 1941). Some novel lectotypifications, synonymies, combinations and other nomenclatural matters concerning Malpighiales, a particularly well-represented order on the island (Pillon *et al.* 2010), are presented below. All specimens with (!) have been seen physically at P and elsewhere online.

ACRIDOCARPUS (MALPIGHIACEAE)

Acridocarpus austrocaledonicus Baillon (1874: 248) Lectotype (designated here):—NEW CALEDONIA, versant méridional du Mont-d'Or, 17 May 1969, *Balansa 1475* (P00130332!, iso- : P00537785!, P00537786!). Remaining syntypes: Koé, 14 December 1968, *Balansa 1039* (P00130334!, P00537783!, P00537784!), Bai Lebris, December 1868, *Balansa 1688* (P00130335!), s.loc., s.dat., *Pancher 151* (P00130333!, P05529966!, P05529968!, P05529969!).

Acridocarpus alexandrinae Niedenzu (1928: 262) nomen nud.

When he described *Acridocarpus austrocaledonicus*, Baillon (1874) cited several collections (syntypes): *Balansa* (1039, 1475, 1688), *Vieillard* (s.n.) and *Pancher* (s.n.). One sheet of *Balansa 1475* (P00130332), with Baillon's handwriting, is chosen here as the lectotype. Niedenzu (1928) attributed the unpublished name *Acridocarpus alexandrinae* to Planchon, but this name was probably first coined by Pancher (written by hand on *Vieillard 249*, P05529955!, P05529958!).

CROSSOSTYLIS (RHIZOPHORACEAE)

CROSSOSTYLIS Forster & Forster (1776: 87). Type:—*Crossostylis biflora* Forster & Forster (1776: 87).

Haplopetalon Gray (1854: 608). Type:—*Haplopetalon richii* Gray (1854: 608).

Tomostylis Montrouzier (1860: 201). Type:—*Tomostylis multiflora* Montrouzier (1860: 202).

Crossostylis grandiflora Brongniart & Gris (1861a: 376). Lectotype (designated here):—NEW CALEDONIA, s.loc., 1861, *Pancher & Vieillard 572bis* (P05574247!).

Tomostylis multiflora Montrouzier (1860: 202). Type:—NEW CALEDONIA, *Montrouzier 125* (holo-: MPU312436!).

The name *Crossostylis grandiflora* can be considered to have been validly published by Brongniart & Gris (1861a), who compared this taxon to *C. biflora* J.R. Forst. & G.Forst. They later (1871) provided an expanded description, which has been used as the date of formal description in IPNI (2022). No type was indicated, Brongniart & Gris (1861a) only referring vaguely to collections made by Vieillard and Pancher. One such collection dated 1861 bears the name *C. grandiflora*, presumably in the hand of Brongniart, and it is chosen here as the lectotype.

Tomostylis multiflora Montrouzier (1860: 202) should not be considered as the basionym or as a homotypic synonym of *Crossostylis multiflora* Brongniart & Gris. At the time they published their work, Brongniart & Gris (1861a) were probably unaware of the paper that Montrouzier published the year before. Indeed, they published the genus *Vieillardia* Brongniart & Gris (1861b: 375), now considered as a synonym of *Ceodes* Forster & Forster (1776: 141), while Montrouzier had published the same generic name the year before for a different plant: *Vieillardia* Montrouzier (1860: 196), now considered a synonym of *Castanospermum* A.Cunn ex Mudie (1829: 149). Since the combination with the epithet *multiflora* is pre-empted in *Crossostylis*, the name *Tomostylis multiflora* Montrouzier is treated as a synonym of the junior name *C. grandiflora* Brongniart & Gris.

Crossostylis multiflora Brongniart & Gris (1861a: 378). *Haplopetalon multiflorum* (Brongn. & Gris) Baillon (1862: 40) as 'Haplopetalum multiflorum'. Lectotype (designated here):—NEW CALEDONIA, Balade, 1855-1860, *Vieillard 43* (P00402853!).

The name *Crossostylis multiflora* was validly published by Brongniart & Gris (1861a) in a footnote added in press with the citation of a specimen, *Vieillard 43*, and a comparison with *C. biflora* and *C. grandiflora*, which can be considered as a diagnosis. It was therefore already a valid name when Sebert & Pancher (1874) published a description of the species. Only one sheet of this number at P appears to bear Brongniart's original handwriting and it is treated here as the lectotype (P00402853!). Another sheet of *Vieillard 43* (P05574280!), has a different locality (Wagap) and cannot be considered as an isolectotype.

Crossostylis sebertii Pancher ex Brongniart & Gris (1871: 396). Lectotype (designated here):—NEW CALEDONIA, Baie du Sud, s.dat., *Sebert & Fournier 42* (P00645338!, iso-: P00645339!).

When they published the name *Crossostylis sebertii* Pancher ex Brongniart & Gris, Brongniart & Gris (1871) mentioned a collection made by Sebert. Only a single gathering at P of *Crossostylis* was collected by Sebert & Fournier; one of the two sheets has the name *Crossostylis sebertii* handwritten by Pancher and is chosen here as the lectotype.

ERYTHROXYLUM (ERYTHROXYLACEAE)

Erythroxylum novocaledonicum Schultz (1907: 140). Lectotype (designated here):—NEW CALEDONIA, Pum [=Poum], Nené [or Neué], 1861-1867, *Deplanche 275* (K000700853!, iso-: P00547149!, P00547150!, P05486501!). Remaining syntypes: *Caldwell s.n.* (K000700852!), Gatope, 1861-1867, *Vieillard 2572* (K000700851!, P00547147!, P00547148!, P05486498!).

Erythroxylum couveleense Guillaumin (1964: 56) nomen inval.

When he described *Erythroxyllum novocaledonicum*, Shultz (1907) cited three collections, all from the herbarium at K: *Caldwell* s.n. (without locality), *Vieillard 2572* (“Gatop”), and *Deplanche 275* (“Pum, Nené”). It is likely that Schultz misinterpreted the handwriting on the label of *Deplanche 275*, which is more likely to be from “Neué”, corresponding to current day Néhoué, south of Poum. The sheet of *Deplanche 275* at K is chosen as the lectotype. A number of specimens labelled *Vieillard 2572* (K000700854!, P05486499!, P05486060! P00723580!), with the locality Neué, instead of Gatope (as cited in the protologue), and not annotated by Shultz, are excluded from the types. The name *Erythroxyllum couveleense* Guillaumin (1964: 56) was not validly published according to article 40.1 (Turland *et al.* 2018) because Guillaumin (1964) cited two collections, *Guillaumin & Baumann 13189* (P00522302!), and *Baumann 15303* (P00522301!), but he did not designate either explicitly as the type.

XYLOSMA (SALICACEAE)

Xylosma Forster (1786: 22). Lectotype:—*Xylosma orbiculata* (Forster & Forster) Forster (1786: 22).

Lasiochlamys Pax & Hoffmann (1922: 17). Type:—*Lasiochlamys reticulata* (Schlechter) Pax & Hoffmann (1922: 17), **syn nov.**

Within his treatment of New Caledonian Euphorbiaceae, Schlechter described *Cyclostemon reticulatus* Schlechter (1906: 148); at the time, his knowledge of the genus *Cyclostemon* Blume (1826: 597) suggested that it occurred only as far west as New Guinea. Today, *Cyclostemon* is treated as a synonym of the pantropical genus *Drypetes* Vahl (1796: 49) (Putranjivaceae). Pax & Hoffmann considered that *C. reticulatus* was misplaced in *Cyclostemon*, and described the novel genus *Lasiochlamys* Pax & Hoffmann (1922: 17) to accommodate it within the tribe Antidesmaceae of Euphorbiaceae-Phyllanthoideae (now Phyllanthaceae). Guillaumin was apparently unaware of the description of the genus *Lasiochlamys*, which does not appear in the name index of his flora of New Caledonia (Guillaumin 1948). He recognized *Cyclostemon reticulatus*, the sole species of the genus in New Caledonia, which he placed in Euphorbiaceae subfamily Phyllanthoideae. At that time,

he recognized *Xylosma* as the sole native genus of Flacourtiaceae, while placing *Homalium* in Homaliaceae, and *Casearia* in Samydeaceae. He subsequently described several species of *Xylosma*, including *X. fasciculata* Guillaumin (1953a: 414), *X. koghiensis* (1953a: 415), *X. planchonellifolia* (1953a: 415), *X. hurlimannii* Guillaumin (1953b: 505), and *X. trichostemona* Guillaumin (1959: 124).

Sleumer (1974) published a concise revision of New Caledonian Flacourtiaceae, in which he included *Casearia*, *Homalium*, *Xylosma*, and *Lasiochlamys*. He was apparently the first author to place *Lasiochlamys* in Flacourtiaceae, although he did not go as far as providing a critical comparison with *Xylosma*, except in his generic key. According to the latter, *Lasiochlamys* has two whorls of tepals, whereas *Xylosma* has only one. He nevertheless combined in *Lasiochlamys* several species of *Xylosma* described by Guillaumin: *X. fasciculata*, *X. koghiensis*, *X. planchonellifolia*, *X. hurlimannii*, and *X. trichostemona*, and described additional species: *L. peltata* Sleumer (1974: 125), *L. coriacea* Sleumer (1974: 126), *L. pseudocoriacea* Sleumer (1974: 126), *L. rivularis* Sleumer (1974: 127), *L. cordifolia* Sleumer (1974: 127), *L. grossecrenata* Sleumer (1974: 128), and *L. mandjeliana* Sleumer (1974: 128).

Lescot (1980) wrote the monographic treatment of Flacourtiaceae for “Flore de la Nouvelle-Calédonie et Dépendances”, in which she provided more details about the floral morphology of *Xylosma* and *Lasiochlamys*. She considered that the perianth of *Lasiochlamys* consists of two whorls each of (3) 4 (5) pieces, whereas the perianth of *Xylosma* is composed of a single whorl with 4-6 (7-8) pieces, the latter numbers implying supernumerary organs. Based on her observations and interpretation of the floral morphology, she proposed the transfer *L. grossecrenata* and *L. peltata* to *Xylosma*.

New Caledonian Flacourtiaceae have received little attention since the work of Lescot (1980). Molecular phylogenetic studies showed that Flacourtiaceae was an unnatural assemblage (Chase *et al.* 2002), and a large number of its genera are now included in Salicaceae (Angiosperm Phylogeny Group II 2003), and that is the case for all the native species of New Caledonia (Morat *et al.* 2012). In his molecular phylogenetic study, Alford (2005) found that *Lasiochlamys* was nested in *Xylosma*. The only species of *Lasiochlamys* that was sampled was the type, *L. reticulata*, which was sister to *Xylosma vincentii* Guillaumin (1953a: 415), also from New Caledonia. This result has been confirmed by data

from additional accessions (Pillon & Gotty, unpublished). Alford (2005) also noted that the presence/absence of petals is highly homoplasious in the family.

Since *Xylosma* and *Lasiochlamys* are not reciprocally monophyletic, are morphologically similar, have a confused history, and differ in a single character (one vs. two perianth whorls), which is homoplasious and the interpretation of which is subjective, *Lasiochlamys* is better treated as a synonym of *Xylosma*. The necessary combinations are provided below.

Xylosma cordifolia (Sleumer) Pillon **comb. nov.** (LSID: 77312120-1). Basionym: *Lasiochlamys cordifolia* Sleumer (1974: 127). Lectotype ([second step], designated here):—NEW CALEDONIA, pente est du Mt. Aoupinié 700 m, 7 November 1972, *MacKee 25783* (P04849378!, iso-: P04849379!, G003866797!, L0011076!, L0011077!, NOU005996!).

Xylosma mandjeliana (Sleumer) Pillon **comb. nov.** (LSID: 77312121-1). Basionym: *Lasiochlamys mandjeliana* Sleumer (1974: 128). Type:—NEW CALEDONIA, Pouébo: Mont Mandjélia (exploitation forestière Frouin), 600-750 m, 4 November 1971, *MacKee 24581* (holo-: P00648808!, iso-: L0011083!, NOU005994!).

Xylosma pseudocoriacea (Sleumer) Pillon **comb. nov.** (LSID: 77312122-1). Basionym: *Lasiochlamys pseudocoriacea* Sleumer (1974: 126). Type:—NEW CALEDONIA, Haute Kouaoua: pente nord-est du Mé Ori, 800 m, 3 December 1969, *MacKee 21232* (P00714499, P00714500 [physical specimens not located in October 2022]; iso-: L0011087!, NOU005992!, NOU005993!).

Xylosma reticulata (Schltr.) Pillon **comb. nov.** (LSID: 77312123-1). Basionym: *Cyclostemon reticulatus* Schlechter (1906: 148). *Lasiochlamys reticulata* (Schlechter) Pax & Hoffmann (1922: 17). Lectotype (designated by Lescot 1980: 64):—NEW CALEDONIA, Auf den Bergen bei Ou-Hinna, 600 m, 4 January 1903, *Schlechter 15628* (P00648815!).

Xylosma rivularis (Sleumer) Pillon **comb. nov.** (LSID: 77312125-1). Basionym: *Lasiochlamys rivularis* Sleumer (1974: 127). Type:—NEW CALEDONIA, La Rivière Bleue, 3 February 1965, Veillon 452 (holo-: L0011090!, iso-: NOU005991!, P00800997!, P00648810!, P00648811!).

Xylosma zongoi Pillon **nom. nov.** (LSID: 77312126-1). Replaced synonym: *Lasiochlamys coriacea* Sleumer (1974: 126). Type:—NEW CALEDONIA, Pouébo: Mont Mandjéla (exploitation forestière Frouin), 600–700 m, 4 June 1971, MacKee 24594 (holo-: P00648821!, iso-: L0011078!, NOU005995!). Non *Xylosma coriacea* (Poiteau) Eichler (1871: 449). Non *Xylosma coriacea* Lignier & Bey (1904: 167) nomen nudum. Non *Xylosma coriacea* Pancher ex Guillaumin (1919: 313) nomen nudum.

The combination in *Xylosma* is pre-empted by three earlier names. The new epithet chosen commemorates Charly Zongo (1980–2015), for his contribution to our knowledge on the seed physiology of New Caledonian plants (Bombarda *et al.* 2010; Zongo 2010; Zongo *et al.* 2016).

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