

TRICHILIA MONADELPHA (THONN.) J. J. DE WILDE,
COMB. NOV., A PRELIMINARY NOTE

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In the course of a taxonomic revision of the genus *Trichilia* P. Browne (*Meliaceae*) for Africa the nomenclature and the rather difficult taxonomy of *Trichilia heudelotii* Planch. ex Oliv., a well-known and widely distributed species, had to be considered. It appeared that a name-change for this species is unavoidable and in order to establish the new combination in literature and practice as early as possible, a preliminary note to the forthcoming revision of *Trichilia* is now published.

KEAY (in HUTCH. and DALZ., *Fl. W. Trop. Afr.* 2nd ed. 1(2): 705. 1958) mentioned under *Trichilia* as "imperfectly known species: *Limonia? monadelpha* Thonn. in Schum. *Beskr. af Guin. Pl.*: 217. 1827". He stated: "I have examined an authentic specimen of this from the Vahl herbarium, Copenhagen. It consists only of an incomplete leaf, which might possibly be regarded as coming within the rather broad interpretation of *Trichilia heudelotii* which I have given above. A more exact determination would be most inconvincing. I consider, therefore, that it is scientifically undesirable to make a new combination to replace the well-known *T. heudelotii* Planch. ex Oliv. which has excellent and widely distributed type specimens".

THONNING (loc. cit. 1827) gives a for that time very good description of *Limonia? monadelpha*. Thonning's diagnosis and description are as follows:

"*L.? monadelpha*; foliis impari-pinnatis; foliolis subsexjugis, paniculis axillaribus brevibus.

Voxer ved Aquapim.

Frutex vel Arbor inermis: ramulis teretiusculis, subtomentosis. Folia sparsa, impari-pinnata: foliola quinque-sexjuga, brevissime petiolata, elongato-obovata, acuminata, subacuta, integerrima, glaberrima, costata, tenuissime venosa, sex-novem-pollicaria, inferiora gradatim minora, extima tria digitato-ternata. Petiolus teres, basi crassus, subtomentosus, pedalis: petioli partiales sesquilineares. Stipulae nullae. Panicula axillaris, brevis; bracteis solitariis, minutis; floribus magnitudine florum Citri.

Perianthium minimum, quinquefidum, acutum. Corolla penta-petala: petala linearia, alba. Filamenta decem, longitudine fere corollae, conniventia, interne pubescentia, basi in urceolum coalita. Antherae ovatae erectae. Germen-Stylus longitudine filamentorum, pubescens. Stigma subcapitatum."

Evidently, detailed and ample information is given about *L.? monadelpha* by Thonning. A question mark was added by Thonning

because he doubted whether the species belonged in the genus *Limonia* L. (*Rutaceae*). According to the Code (art. 34, note 1) the effectively published name *L.?* *monadelpha* Thonn. must, notwithstanding the question-mark, be considered valid.

From the description it appears beyond any reasonable doubt that a *Meliacea* is described, and from the meliaceous genera occurring in the locality mentioned in Thonning's protologue only the genus *Trichilia* shows the characters given in the description.

Already in 1849, W. J. HOOKER in his Niger Flora giving a survey of the *Trichilia*'s known to him from that area, stated that according to Planchon, *Limonia?* *monadelpha* Thonn. was probably also a *Trichilia*. Whether or not Planchon saw type-material of *Limonia?* *monadelpha* remains uncertain, but Oliver in publishing *Trichilia heudelotii* Planchon (in Fl. Trop. Afr. 1: 334. 1868) must have based it on information or material given or seen by PLANCHON. Whatever link, if any, may exist between Hooker's and Oliver's references to Planchon's opinions, there exists no previous published remark contradicting the view that *L.?* *monadelpha* Thonn. would belong in the genus *Trichilia*. As to the species no decision was ever taken.

From the protologue of *L.?* *monadelpha* Thonning, it appears that the type locality is near "Aquapim". Nowadays this locality is known as Akwapim, a region situated ca. 50 km north of Accra (Ghana). Thonning collected (from 1799-1803) in this area, which is near Christiansborg, his base.

The number of *Trichilia* species occurring in this particular area is small and the detailed description of *L.?* *monadelpha* agrees in all characters with *Trichilia heudelotii* Planch. ex Oliv..

JUNGHANS (in Bot. Tidsskrift 58: 88. 1963) pointed out that *Limonia?* *monadelpha* also had been called *L. multijuga* and *L. pinnata* in manuscript, under which names it therefore might be found in various herbaria. He added that Thonning's own collections were burnt in Copenhagen in 1807, due to the bombardment of that city by the English, but that Vahl already as early as in 1804 distributed many Thonning-specimens. Junghans gives information in which herbaria missing types may be found.

In order to trace possible isotypes the directors of the herbaria of B, G, LE, M, P and S were requested if specimens bearing the names *Limonia monadelpha*, *L. multijuga*, or *L. pinnata* (from Thonning's, and Vahl's herbarium) were preserved in their herbaria, to forward these for examination. However, they all kindly informed me that no specimen could be traced.

The curator of the Botanical Museum of the University in Copenhagen (C), Denmark, Dr. Skovsted was kind enough to send me on loan the leaf-fragment mentioned by Keay (l.c.; also as Kew negative no. 2595, Dec. 1955). The sheet seems to originate from Vahl's herbarium and is annotated "Thonninge Guinea" and "Limonia". It unmistakably belongs in the taxon currently known as *Trichilia heudelotii* Planch. ex Oliv., and even in *T. heudelotii* in a narrower circumscription. Whether the Copenhagen specimen is part of the

holotype I cannot decide, and it is unlikely that this can be proved or disproved, but there is no reason not to accept it as belonging to the type-material of *Limonia? monadelpha*.

Furthermore Dr. Skovsted informed me that a renewed search for material of *Limonia* originating from Thonning's – or Vahl's herbarium had not produced other specimens.

From the Ghana Herbarium (GC) I had on loan Irvine no. 2103. This specimen was collected at Berekusu, Akwapim, the type locality of *Limonia? monadelpha*. Although this material is vegetative, it is correctly identified by Irvine as *T. heudelotii* Planch. ex Oliv.. Irvine no. 354 from which I examined material present in GC and K was collected at the Accra plains near Akwapim Hills. This gathering from near the type-locality of *Limonia? monadelpha* belongs to *Trichilia priureana* A. Juss. ex Guill. Due to Thonning's excellent description of *Limonia? monadelpha* it can be decided with certainty that *T. priureana* is another species because Thonning stated: "Filamenta decem, . . . conniventia, . . . basi in urceolum coalita". As in *T. priureana* the filaments are completely united into a tube, this species certainly does not fit the description of *Limonia? monadelpha*.

Summarizing it can be concluded that Irvine collected 2 *Trichilia* species in the type region of *L.? monadelpha*. One of these (no. 354) cannot be identical with *L.? monadelpha* but the other specimen (no. 2103) is *T. heudelotii* and so agrees with Thonning's *L.? monadelpha*.

Thonning's clear and detailed description of *Limonia? monadelpha* has to be identified because the name is validly published. It cannot be neglected or rejected from the fact that the type was lost or is, possibly, uncertain.

In my opinion *Limonia? monadelpha* Thonning (1827) is without the slightest doubt conspecific with *Trichilia heudelotii* Planch. ex Oliv. (1868). Even when the protologue was less detailed there would be no way to escape from this conclusion. It implies that the name *T. heudelotii* Planch. ex Oliv. must be replaced by the new combination *Trichilia monadelpha* (Thonn.) J. J. De Wilde.

The leaf-fragment from the Vahl herbarium attributed to Thonning as collector, present in Copenhagen (C) is designated as lectotype for the name *Limonia? monadelpha* Thonn. and consequently for the new combination.

A full circumscription of the species *T. monadelpha* (Thonn.) J. J. De Wilde avoiding an eventual uncertainty as to its specific limits, is now added. The relationships and synonymy of *T. monadelpha* will be fully treated in the forthcoming revision.

Trichilia monadelpha (Thonn.) J. J. De Wilde, comb. nov.
Fig. 1.

Type: Thonning s.n. (Danish Guinea (presently Ghana), lectotype in C).

Basionym: *Limonia? monadelpha* Thonn. in SCHUMACHER Beskr. af Guin. Pl.: 217. 1827; *ibid.* in Vidensk. Selsk. Naturv. Math. Afh. 3: 237. 1828 (the same paper as in 1827); W. J. HOOKER, Niger Flora:

255. 1849; OLIVER, Fl. Trop. Afr. 1: 336. 1868; KEAY in HUTCH. and DALZ., Fl. W. Trop. Afr. 2nd ed. 1(2): 705. 1958; JUNGHANS in Bot. Tidsskrift 58: 88. 1962.

Small evergreen dioecious tree, about 4–16 m tall and 15–25(–40) cm d.b.h., bole cylindrical, not – (or rarely very slightly) buttressed, often low branching; crown large, open, rather spreading. Bark thin, ca. 0.5 cm thick; rhytidoma smooth, pale-grey to dark-brown or greenish-brown (often resembling *Platanus*); slash pale-brownish or pink, rapidly turning ochreous to pale-brown or brown, emitting a “cedar-wood” fragrance, sometimes near the cambium a little slightly sticky creamish-white latex appears; sapwood cream, rather soft, heartwood reddish-brown, quite hard.

Young twigs terete or (vigorous shoots) sometimes angular, brown, short grey, tomentose; lenticels almost absent; older twigs terete, longitudinally wrinkled or with dilatation lines, short brown tomentose to gradually glabrescent, sometimes lenticellate (lenticels small, elliptic or round, pale-brown or brown, ca. 0.5–1 mm diam.); outer bark thin, not peeling off, brown, inner bark thin, dark-brown, wood cream, not very hard.

Leaves imparipinnate, rarely paripinnate, 15–57 cm long, (often widely varying in length on one tree); petiole terete, more or less flattened on the upper surface, especially in the upper part and near the base, short tomentose, rather smooth, 4–13 cm long, pulvinus slightly swollen, wrinkled, contracted at the insertion; rachis (4–)8–20 (–23) cm long, flattened or sulcate on the upper surface (especially between the insertion of the leaflets), otherwise similar to the petiole; petiolules terete, narrowly sulcate on the upper surface, short tomentose, longitudinally wrinkled, petiolule of terminal leaflet (4–)5–11 (–13) mm, the others 2–7(–8) mm long.

Leaflets (3–)4–6(–7)–jugate, opposite or subopposite, not or very minutely and indistinctly glandular punctate, variable in size, 4–26 by 1.7–9 cm, distal leaflets largest, narrowly obovate to obovate, proximal leaflets smaller, narrowly ovate to ovate; apex acuminate, rarely acute, mucronulate, base cuneate or obtuse, margin sometimes very narrowly revolute. Upper surface glabrous (except for a short indumentum in the furrow of the impressed midrib), nerves (6–)8–15 (–18) on either side, opposite or not, straight or slightly arched but curving and anastomosing before reaching the margin; veins indistinct. Lower surface glabrescent, the hairs often with a brownish resinous

Fig. 1. *Trichilia monadelpha* (Thonn.) J. J. De Wilde, comb. nov. — *a*: flowering branch of male tree ($\times \frac{1}{2}$); *b*: male flower ($\times 2$); *c*: longitudinal section of male flower ($\times 4$); *d*: part of staminal tube, inside, male ($\times 4$); *e*: *ibid.*, outside ($\times 4$); *f*: anther of male flower, ventral side ($\times 8$); *g*: *ibid.*, dorsal side ($\times 8$); *h*: longitudinal section of female flower ($\times 4$); *k*: fruiting branchlet ($\times \frac{1}{2}$); *m*: transverse section of young fruit ($\times 1$); *n*: seed ($\times 1$); *p*: cotyledons ($\times 1$); *r*: transverse section of seed ($\times 1$); *s*: leaf portion beneath ($\times 20$); *t*: transverse section of midrib of leaflet ($\times 10$).

a, *f* and *g*: De Wilde & Leeuwenberg 3455; *b–e*: De Wilde 3406; *h*: De Wilde & Leeuwenberg 3453; *k*, *s* and *t*: De Wilde 3196; *m–r*: De Wilde 3403.



Fig. 1

central canal which extends up to the middle or higher, midrib and nerves very prominent, veins slender but distinct, as a rule glandular-translucent, rather closely reticulate. (Young leaflets drying dark-brown, puberulous on the lower surface and there with densely pubescent midrib and nerves, indumentum soon diminishing with age.)

Inflorescences lax or rather condensed, paniculately arranged, axillary or supra-axillary, often crowded near the top of the branches, 1.5–12(–21) cm long; main axes flattened or angular, wrinkled lengthwise, shortly tomentose, once-, twice- or three-times branching before the pedicel, branches up to 9 cm long. Bracts early deciduous, ovate or triangular, often boat-shaped, 2.2–5.0 by 1.2–2.8 mm, acute, abaxially shortly pubescent, adaxially puberulous to glabrous, hairs often with a brownish, resinous, central canal.

Male flowers: on up to 2 mm long, shortly tomentose, longitudinally wrinkled pedicels, sometimes sessile; bracteoles 1 or 2, sometimes absent, early deciduous, ca. 1.5 by 0.5 mm, narrowly ovate to ovate, acute, abaxially appressed pubescent, adaxially glabrous. Receptacle cylindrical, tapering to the base, 0.8–2.5 mm long, smooth or longitudinally wrinkled, appressed puberulous, jointed to the pedicel.

Calyx cup-shaped, 1.5–2.7 mm high, by 3–5 mm wide, 5-lobed (lobes imbricate in bud), (0.6–)1.0–1.7 by 1.2–2.5 mm, depressed ovate, obtuse or acute at apex, rather fleshy, outside pubescent, irregularly wrinkled, inside smooth and glabrous, margin shortly ciliate. Petals (4–)5, free (imbricate in bud, reflexed during anthesis), rather fleshy in the upper part, (6.5–)7–10(–11) by 1.7–2.7 mm, narrowly oblong, often slightly incurved at the obtuse apex, inside glabrous or somewhat rough, outside puberulous. Staminal tube 5.5–7.5 mm long (including the anthers), (8–)10-fid, incisions to about $\frac{1}{2}$ or $\frac{3}{5}$ of its length, free parts of the filaments 2.3–3.8 mm long, glabrous or with a few, rather long, appressed hairs outside, densely tomentose inside and on the margins, connate part of the staminal tube 2.0–3.0 mm long, more or less hairy (indumentum rather variable but hairs always present) and fleshy inside, the fleshy tissue covering the inner surface of the lower part of the staminal tube, produced towards the top into raised wedge-shaped issues, the tops of the wedges alternating with the bases of the free parts of the filaments, the connate part glabrous or glabrescent outside; anthers dorsifix, attached near the base, inserted in the apical sinus of the free part of the filament, between two very short, hairy lobes of 0.1–0.2(–0.4) mm long (often one or both lobes not distinct or absent and so the apex of the filament more or less truncate), 1.0–1.7 by 0.4–0.6 mm, narrowly oblong to oblong, slightly mucronulate, with some hairs on the dorsal side, especially near the base, otherwise rough, opening laterally, lengthwise, pollen well developed. Disk absent. Pistillode scarcely or not expanded at the base; ovary sterile, pubescent, vestigial ovules present; style 4.0–5.5 mm long, 0.5–0.9 mm wide, pubescent; stigma globular, 0.5–1.0(–1.3) mm diam., densely velutinous by very minute trichomes, flattened and slightly (2–)3-lobed at the apex and there deeply depressed and often hollow in the centre. Male flowers soon after anthesis as a whole falling.

Female flowers: similar to male flower, but anthers often narrower, not dehiscent, not producing pollen. Ovary well developed, globular, 2–3 mm diam., appressed pubescent, (2–)3(–4)–celled; ovules 2 in each cell, axile, collateral; style shorter than in male flowers, 3–4 mm long, pubescent, stigma as in male flower.

Fruit a (2–)3(–4)–chambered, shortly stipitate capsule, obovoid-subglobose; dry, mature fruits (2–)3(–4)–lobed, ca. 15–25 mm diam. (stipe excluded), (stipe 1–5 mm long, ca. 3(–6) mm thick, slightly or not tapering to the base, wrinkled lengthwise), densely covered with a mealy indumentum of very short trichomes, puberulous, often mucronulate (style remnant), pinkish-grey or violaceous, loculicidally dehiscent, (2–)3(–4)–valved; dry valves thick leathery or even slightly woody, broadly ovate, acute at apex, transversely wrinkled.

Seeds 2 in each chamber, collateral, 1.5–2.5 mm beneath the apex attached to the funicle, funicle running down along the axial side of the seed and inserted near the base of the axillary placenta. Mature seed 15–17 by 8–11 mm, arillate, plano-convex, flat on the adjacent sides; aril fleshy, scarlet or orange-red without, whitish within, ca. 1 mm thick, near apex and base of the seed up to 3 mm thick, enveloping the seed for about $\frac{2}{3}$, leaving uncovered a large truncate-elliptic dorsal spot of 10–11 by 6–7 mm; uncovered testa glossy, leathery, very dark-brown or blackish; cotyledons firm, fleshy, olive-green or pale-brown outside, whitish within, plano-convex, 9.5–12 by 4.5–6 mm, radicle narrowly ellipsoid, longitudinally slightly flattened, 1.6–2.5 by 0.5–0.9 mm, in between the cotyledons at 1–2 mm beneath the apex.

Seedling: Germination epigeal. Tap root. Hypocotyl 1.5–4 cm long, pubescent. Cotyledons sub-opposite, sessile, green, fleshy, not developing, falling about 3 months after germination. Epicotyl 2–3.5 cm long, pubescent. First two leaves opposite, simple, petiolate, ca. 3.5–5.5 by 2–3 cm, obovate or elliptic, broadly cuneate to obtuse at the base, shortly acuminate at apex, glabrous above except for some indumentum in the furrow of the impressed midrib, glabrescent beneath, hairs especially on the prominent midrib and nerves; very minutely and indistinctly glandular punctate. Petiole 2–7 mm, pubescent. Following leaves alternate, simple, similar to the above-described or slightly larger and with petioles up to 1.5 cm long. The fifth leaf after the cotyledons may be compound and is found to be two-foliolate at an age of the seedling of ca. 9 months.

Distribution: Port. Guinea, Guinea, Sierra Leone, Liberia, Ivory Coast, Ghana, Dahomey, Nigeria, Cameroon, Fernando Po, Rio Muni, Gabon, Congo, Angola (Cabinda).

Ecology: A common species of secondary forests and of river banks in the evergreen- and semi-deciduous forest zone. Occasionally also in riverine forest- and on moist places in the deciduous forest zone.

NOTE: The present description of *Trichilia monadelpha* (Thonn.) J. J. De Wilde was prepared after examination of specimens from its whole distribution area.

The intricate synonymy and systematy of the genus demand a very much detailed description.

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