New Species of, and Other Notes on, Chisocheton and Walsura (Meliaceae)

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Abstract

Chisocheton maxilla-pisticis Mabb., from Sabah, Malaysia, and Palawan, Philippines, and C. velutinus Mabb., from Sarawak, Malaysia, and Brunei, are described as new. A third new Chisocheton species, from Sarawak, is so far known only from a single fruiting specimen. Walsura pinnata Hassk. sensu T.Clark includes a number of distinctive Bornean entities, two of which are here afforded or re-afforded specific rank: Walsura decipiens Mabb., from northern Borneo and W. grandifolia Ridl. from the Sarawak limestone. Chisocheton nicobariensis Debnath & Sreek. is reduced to C. macrophyllus King, which is lectotypified here, while Walsura yunnanensis C.Y.Wu from China is reduced to W. pinnata sensu lato (W. cochininchinensis (Baill.) Harms).

Introduction

In preparing the text of Meliaceae for the Tree Flora of Sabah and Sarawak, it became clear that new Chisocheton species signaled in the author’s monograph (1979; see also 1995) could now be described using materials collected since its publication. Examination of Borneo materials assigned by Clark (1994) to Walsura pinnata Hassk., a perplexingly variable species, has shown that two distinct species, one of them new, are better segregated from it. In passing, notes on allied taxa from outside Borneo are included.

Chisocheton Blume

1. Chisocheton maxilla-pisticis Mabb., sp. nov., Fig. 1

Chisocheton, C. macrophyllus King affinis, indumento dense-fulvo, foliolis costis pauciornibus, pseudogemmula hiantem vix circinnata, maxilla pisticis simulante, floribus pusillioribus, differt. Typus: Malaysia, Sabah, Telupid, Pinangah F.R., 10 July 1993, Sawan Tingki SAN 136830 (holo SAN!, iso KEP!, SAR!).
Rather pachycaul tree with sparsely branched crown to 45 m tall; fluted bole to 90 cm diameter with steep buttresses to 1(-3) m tall. Bark smooth to scaly, markedly lenticellate; inner bark reddish brown; sapwood pale yellowish white. Twigs brown, with longitudinal cracks, cicatrices conspicuous, latex white. Leafy twigs 1.2–1.5 cm diameter, fulvous-tomentellous. Leaves in dense terminal spirals, to 1.3 m long, pseudogemnulate; petioles 8.5–16.5 cm long, more or less angled or grooved, like rachis, indumentum sericeous to pilose; leaflets in up to at least 17 pairs, oblong-ovate, weakly falcate, to 21 x 8.5 cm, rather fleshy (Pennington), young ones brownish or reddish, densely pilose on midrib and costae, also abaxially scattered between veins, bases asymmetrical, rounded or, particularly in juveniles, cuneate, apices acute to shortly acuminate, costae c. 17 on each side, spreading, rather prominent adaxially insicco, petiolules to c. 9 mm long, densely pilose; pseudogemmula of rather unfurled leaflets, densely long-hairy. Thyrs to 50 cm long, narrowly paniculiform, tomentellous; peduncle c. 18 cm long, branches rather distant, to 10 cm long, squarrose; ultimate branchlets cymosely, many-flowered; pedicels tomentellous. Calyx c. 2 mm tall, cupular, sericeous, margin truncate to weakly 4-lobed. Petals 4 or 5, c. 11 mm long, c. 1.8 mm wide, linear-spathulate, sericeous without, glabrous within, imbricate, apices concave (corolla clavate in males). Staminal tube swollen at mouth, weakly adherent to petals at base, hairy at least along interlobe sutures near apex without, hairy within, margin with 6–8 linear, more or less 2- or 3-toothed, lobes to 2.5 mm long; anthers 5–8(9), c. 2 mm long, oblong, locellate, basifixed, slightly exserted. Disc obscure. Ovary 4-locular, sericeous; style sericeous in proximal 5/6; stylehead subcylindrical with flattened apex. Infructescences to 30 cm long, axillary or on twigs behind leaves. Capsule spherical, to at least 9 cm diameter, reddish brown, latex white; pedicel to 9 mm across. Seeds unknown.


Figure 1. Chisocheton maxilla-pisticis. A. flowering twig; B. young leafy shoot; C. older leaflet; D. adaxial view distal part of staminal tube; F. longitudinal section of flower bud; G. abaxial view of distal part of staminal tube; H. fruit. (A from SAN 31087, B from SAN 136830, C from Pennington 7915, D–G from SAN 31087, H from SAN A 4769.)
west of Samarinda, 60 m, 12 May 1952, Kostermans 6834 (A!, K!, KEP!, L!); Nunukan (northern part), 2 Dec 1953, Kostermans 8897 (K!, L!, SING!); W Kutei, Kelindjau River, 12 June 1954, Kostermans 9571 (K!, L!, SING!), bb 16168 (SING!); SE Borneo, Tidoeng vicinity, 15 m, bb 17894 (L!); Berouw, 400 m, 4 July 1934, bb 19239, (L!). PHILIPPINES: Palawan, Pagdanan Range, Ibangley Brookside Hill, 21 Apr. 1984, Ridsdale SMH 496 (KEP!).

Habitat: Lowland dipterocarp forest.

Notes: Some older sterile and fruiting specimens were previously referred with a ‘?’ (Mabberley, 1979: 346) to the closely allied Chisocheton macrophyllus King, which does not occur in the Tree Flora area. The specific epithet, meaning shark-jaw, refers to the open pseudogemmula characteristic of the leaf of this tree.

2. Chisocheton velutinus Mabb., sp. nov., Fig. 2

Chisocheton, C. erythrocarpum affinis, sed inflorescentia longiore facile separanda est. In ser. Sandoricarpis indumento velutino distincta est. Typus: Wong 1536. Brunci, Temburong Dist., Bt. Belalong, west ridge from summit, 650 m, 23 July 1989 (holo SAN!; iso KEP!, SAR!, SING!).

Tree to 25 m tall; bole to 35 cm diameter with small buttresses. Bark smooth, medium brown to greyish, hoop-marked, inner bark pinkish to reddish brown; sapwood straw; buttresses to 1.3 m x 7.5 cm. Leafy twigs 1.2-2.5 cm diameter. Leaves to 1 m long, pseudogemmulate; petioles 10-15 cm, more or less angled, like rachis, fulvovelutinous; leaflets in up to at least 12 pairs, oblong, to 24 x 9 cm, minutely pubescent on sunken midrib, densely velutinous on abaxial surface, bases asymmetrical, rounded, apices shortly acuminate, lateral veins 15-17 on each side, spreading, rather prominent adaxially in siccio, petiolules to 9 mm long. Thyrses to 40 cm long, paniculiform, velutinous; branches rather distant, to 13 cm long; ultimate branchlets eymulose, few-flowered; pedicels densely pubescent. Calyx c. 6 mm tall, cupular, pubescent, green, margin very obscurely 4-lobed to truncate. Petals 4(5), linear-spathulate, to 16 mm long, imbricate, puberulous to pubescent without, glabrous within, cream. Staminal tube cream, weakly adherent to petals at base, more or less hairy without, margin with 6–8 2-toothed lobes to 1 mm long; anthers 6–8, oblong, c. 3 mm long.

Figure 2. Chisocheton velutinus. A. flowering twig; B. flower buds; C. longitudinal section of flower bud; D. abaxial view of staminal tube; E, adaxial view of staminal tube; F, young new shoot; G, older leaflet; H. fruit. (A–E from Wong 1536, F–H from Kirkup et al. 940.)
locellate, basifixed, apices within the tube. Disc obscure. Ovary 4-locular, sericeous; style more or less glabrous; stylehead shortly cylindrical. Infructescences to 30 cm long, axillary or on twigs behind leaves. Capsule globose, c. 5 cm diameter (immature), rostrate when young, velutinous, yellow turning red.

Other material seen: Restricted to Bornco. SARAWAK: Ulu Luak, Sg. Setap road, Miri, 15 May 1964, S 21307 (K!, SAR!, SING!); Kapit. Ulu Merit, Ng. Sebatong, 6 Oct 1969, S 28793 (K!, SAR!, SING!). BRUNEI: Temburong, Bt. Belitun, 29 Jan 1994, Kirkup et al. 940 (K!, KEP!, SAN!, SAR!, SING!). KALIMANTAN: Balikpapan, Kostermans 10024 (L!); Peak of Balikpapan (G. Beratus), sandstone, 700 m, 9 July 1952, Kostermans 7383 (K!, SING!); Sg. Wain region, N of Balikpapan, 30 m, Kostermans 4175 (SING!).

Habitat: Rain forest at altitudes to 650 m.

Notes: Some of the older fruiting specimens cited above (Kostermans 7383, Kostermans 10024 and S 28793) were tentatively placed under Chisocheton species B (Mabberley 1979: 372; 1995: 186). The remaining specimens from the Tree Flora region cited there (S 25844 from Kapit, Melinau, Ulu Sapura, Bt. Salong, Sarawak (K!, SAR!), with flowers in bud) is the flowering element used in that description and remains the only flowering material I have seen of that tree. Apparently conspecific with it is the fruiting specimen S 45515 (from the 7th Division, Belaga, Linau, Sg. Iban in Sarawak (FHO!, L!, SAR!), collected as C. medusae).

3. Chisocheton sp. nov. aff. diversifolius Miq.

Collected as Aglaia affinis Merr. [= A. odoratissima Blume], this fruiting collection of a 4 m tall treelet (P.C. Yii S 48450, Sarawak, 7th Division, Batang Balleh. Bukit Melatai, Camp 2; FHO!, SAR!) has delicate twigs with 7-jugate leaves, with very narrow multi-veined leaflets 5–6 times as long as wide, and a very delicate fruiting rachis c. 20 cm long with pubescent spherical fruits 3–4 cm diameter. It appears to be close to C. diversifolius Miq. from Sumatra, but that rarely collected treelet is known for certain only in flower and has broader leaflets (see Mabberley 1979: 358; 1995: 174).

4. Chisocheton nicobarianus Debnath & Sreek.

The only other species described in the genus since the author’s monograph, now almost a quarter of a century old, is Chisocheton nicobarianus Debnath & Sreek.
from the Nicobars. Examination of an isotype shows it to be conspecific with *C. macrophyllus* King:

**Chisocheton macrophyllus** King *in* J. Asiat. Soc. Bengal 64(2) (1895) 32; Mabb. *in* Bull. Brit. Mus. Nat. Hist. Bot. 6 (1979) 345. **Type:** (lectotype [selected here from King’s syntypes] *Curtis* 2469, Peninsular Malaysia, Penang, ‘Polo Boeting’ (CAL!); isolecotypes BM!, K!, K [ex SING!]). **Synonym:** *C. nicobariamicus* Debnath & Sreek. *in* J. Econ. Tax. Bot. 16 (1992) 553. **Type:** *Dwivedi* 8541, Gt Nicobar, Lafia forest, 18 May 1981 (holo CAL. n.v.; iso L!, PBL n.v.). **syn. nov.**

**Note:** This brings the total number of species in the genus to 53, with 22 in Borneo (11 restricted to that island), all of which are found in the Tree Flora area.

**Walsura** Roxb.

In his revision of the genus *Walsura*, Clark (1994: 249, 279) discussed the variation in his concept of *W. pinnata* Hassk. and proposed informal entities for the major variants he recognised. In Sabah, these are the typical ‘*pinnata*’, represented by *SAN 86994* (SAN!, SAR!) from Keningau in Ranau district, and also his ‘*villamii*’ represented by *SAN 57288* (SAN!, SAR!) from Lahad Datu, Sandakan, which has leaves with seven or nine, as opposed to five, leaflets with some costae failing to reach the leaf margin, but otherwise intergrading with ‘*pinnata*’, the form found throughout most of the range of this tree which, according to Clark (1994: 279, fig. 12) is distributed from the mainland SE Asia to Peninsular Malaysia, Borneo, the Philippines and NW New Guinea.

Although there is a wide range of costa number in the leaflets of Sabah specimens, the great majority fall into Clark’s broadly circumscribed *W. pinnata*, though specimens with a very small number of leaflet costae (6 or 7 as opposed to 14–19) and short inflorescences and infructescences (e.g. *SAN 30551* and *SAN 31339*; both in SAN!, SAR!) from Tawau, and *SAN 44553* (SAN!, SAR!) from Keningau, seem rather distinctive, at least within the Tree Flora area.

Moreover there is a small number of other sheets included by Clark and these are more clearly separable and indeed represent a distinct species described below.

1. **Walsura decipiens** Mabb., **sp. nov.**, Fig. 3

Tree to 28 m tall with bole to 6 m, 30 cm diameter. Bark scaly, outer bark dark reddish brown, inner bark pinkish red. Young twigs pale brown, finely sericeous, lenticellate, leafy ones c. 4–5 mm diameter; apical buds strongly fulvous-hairy. Leaves to 25 cm long, 2-jugate; petiole 3–5 cm long, terete; leaflets 5.5–14.5 x 2.0–4.5 cm, the apical larger than laterals, ovate, articulated at petiolule apices, glabrous, somewhat glaucous abaxially in seco, base acute, apex acuminate, costae 8–12 on each side, arising almost at right angles to midrib but strongly archuate, looping together but not reaching margin; petiolules 8–18 mm long, that of apical leaflet to 25 mm long, conspicuously swollen at both ends. Inflorescences subcorymbose cymes to 20 cm long, in axils of current flush of which apical leaves scarcely developed, all axes densely fulvous pilose; peduncle to 7 cm long, with branches to 9 cm long, bearing apical head of branchlets, each branched once or twice more and bearing cymules of 1–5 flowers; bracts to 2 mm long, usually much less, triangular, densely hairy, caducous; pedicels c. 1 mm long; bracteoles 0.5–1 mm, triangular, densely hairy, persistent. Calyx c. 0.8 mm high, green, lobes broadly triangular, apices rounded to acuminate, very hairy without. Petals oblong, c. 3 mm long, c. 1 mm wide, white, hairy without, apex obtuse. Stamens 10, with the filaments alternately long and short, the longer almost as long as petals, weakly bifid, apically strigose, pale green; anthers c. 0.7 mm long, ovate, apiculate, sparsely hairy, bright yellow, inserted between 2 apical lobes. Disc fleshy, annular. Ovary glabrous; style to 1.2 mm long; stylehead flattened with apical papilla and peripheral flange. Fruits ellipsoid, 2.5–3 cm long, brownish green tomentellous, apex usually apiculate. Seed 1, ellipsoid.

Other material seen: Restricted to the northern parts of Borneo. SABAH: Nabawan, Sg. Millian, 7 Nov 1986, Krispinus SAN 118575 (L!, SAN!); Sandakan, Lungmanis Timber Camp, 9 Aug 1962, Miki SAN 31560 (KEP!, L!, SAN!, SAR!); Tawau mile 12.5 Kalabakan road, 25 July 1962 (first record), Ahun Gibor SAN 30552 (KEP!, L!, SAN!, SAR!); Keningau, Saang Lian logging area, LANAS, 28 Oct 1986, Krispinus SAN 118523 (E!, K!, KEP!, SAN!). SARAWAK: Baram, Batang Tinjar, Ulu Sg. Sekiwa, Long Kerangan, 1 Sept 1974, Tong S 35017 (KEP!, L!, SAN!, SAR!).

Habitat: Rain forest, at least sometimes on sandstone, to 150 m.

Notes: The only flowering material known to me is that of the type. Plants of this species have misled many field collectors who have referred

Figure 3.

Chisocheton and Walzera
them variously to *Dialium* (Leguminosae), Burseraceae and to several genera in the Sapindaceae, curators filing them variously (and even in Lauraceae), so the wide deception is commemorated in the specific epithet.

2. **Walsura grandifolia** Ridl.

In Sarawak, ‘typical’ *Walsura pinnata* has rarely been collected, though forms with a wide range of costa number (see above) are preserved (e.g. S 64519 from Kuching (SAR) and S 23959 (SAR) [18 or 19 costae], Pennington 8000 [8 or 9] (SAR) from Kapit), but S 35017 from Baram District included by Clark in his broad concept of the species is here referred to *W. decipiens* (see above).

Some other Sarawak sheets included by Clark constitute another discrete entity worthy of specific rank, much as he has afforded the striking stout-shooted *W. pachycaulus* Mabb. ex T. Clark. (Clark, 1994). These distinctive specimens, with very large rugose leaflets and long inflorescences, were collected from treelets apparently restricted to limestone and they include the type of *W. grandifolia* Ridl., which is here resurrected from Clark’s synonymy, bringing to 16 the number of extant species of *Walsura* now recognised, seven in Borneo (to which six are restricted), all recorded in the *Tree Flora* area.

*Walsura grandifolia* differs from *W. pinnata* not only in its very large leaflets, inflorescences and flowers, but also in its androecium of almost free filaments, which have no apical teeth, its larger disc and its longer cylindrical stylehead. In its androecium therefore it more approaches sect. *Surwala* (M. Roem.) Hook.f. (see Clark 1994, 1995), such that the distinction between that section and sect. *Walsura*, to which *W. pinnata* belongs, seems hardly worth maintaining. On the other hand, the third group, sect. *Ruswala* T. Clark, with the sole species *W. dehiszens* T. Clark, is marked by its distinctive dehiscing fruit and, in that, approaches *Heynea* Roxb.


**Distribution**: Restricted to Kuching Division, Sarawak. Other sheets seen: Teng Bukap, mile 32 Padawan Road. S 32633 (SAR!); Bt Mentawa, mile 34 Padawan Road. S 41069 (SAR!); Bt. Bidi. Bau. S 50390 (L!, SAR!); and Bt. Taipu, S 74985 (SAR!).

**Habitat**: Forest on limestone at altitudes to 220 m.

**Notes**: Of other specimens referred to *Walsura pinnata* by Clark (1994: 300), *Moea*
3711 (L!) is Sandoricum borneense Miq.; SAN 28613 (SAR!) is Aglaia leptantha Miq. (and, of those referred to Pseudoclaudina chrysogyne (Miq.) T. Clark there): Kokawa & Hotta 3069 (SAN!) = Heynea trijuga Roxb.; S 26985 (SAR!) = Aphananthis borneensis (Miq.) Harms; S 35236 (SAR!) = Micromelia minutum (Forst.f.) Wight & Arn. [Rutaceae]; and S 39029 = Aglaia leptantha [C.M. Pannell, pers. comm.]). Nonetheless, the rest of the perplexing complex (see diversity of costa-number and inflorescence size above) around W. pinnata needs further collecting and analysis in the field across its range, particularly concentrating on whether certain small flowering trees are really juvenile forms of larger ones, or comprise distinct species like W. grandifolia. As it stands, even shorn of all the above, W. pinnata still seems to me to be heterogeneous, and certainly so across its range, a conviction confirmed by a cursory examination of Peninsular Malaysian material now available.

3. Walsura yunnanensis C.Y.Wu

Among his ‘insufficiently known species’, Clark (1994: 290) has W. yunnanensis C.Y.Wu. Examination of the type preserved at KUN shows it to be W. pinnata sensu lato (W. cochinichinesis (Baill.) Harms), already known from Yunnan:


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References


