

STUDIES IN MALESIAN VITACEAE X.
TWO NEW SPECIES OF TETRASTIGMA FROM BORNEO

A. LATIFF

Department of Botany, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Malaysia

SUMMARY

Tetrastigma steenisii and *Tetrastigma megacarpum*, two new species from Borneo, are herein described and illustrated. Conspicuous and distinctive features of *T. steenisii* are the simple leaves and the smooth manifestly grass-like stem; *T. megacarpum* has large ellipsoidal berries and digitate leaves with 5 leaflets.

INTRODUCTION

In revising the genus *Tetrastigma* (Miq.) Planch. in Malesia, two interesting undescribed species from Kalimantan (Borneo) have been encountered in the Rijks-herbarium, Leiden, and are described here. Up to now some 18 species have been described from Borneo, three of which are endemic, viz. *T. havilandii* Ridley, *T. enervium* Ridley, and *T. articulatum* (Miq.) Planch. Borneo has by far the highest number of *Tetrastigma* species compared to other Malesian provinces. With the addition of these new species the number for Borneo becomes 20.

Planchon (1887) and Suessenguth (1953) had previously given very good accounts of the genus. In the latest account of the genus in the Malay Peninsula, Latiff (1983) recognised two sections in the genus, viz. section *Tetrastigma* and section *Carinata* Latiff. *Tetrastigma* sect. *Tetrastigma* is characterised by globose or ellipsoid, 1- or 2-seeded berries, seeds globose or plano-convex and testa smooth, the chalazal knot extending three-quarters to the whole length of the longitudinal surface of the seed, the endosperm M- to T-shaped in cross section. Section *Carinata* is characterised by pyriform 3- or 4-seeded berries, seeds carinate ventrally and testa tuberculate, the chalaza extending halfway along the longitudinal surface of the seed, and the endosperm T-shaped in cross section.

Tetrastigma steenisii Latiff, *spec. nov.* – Fig. 1.

Liana robusta glabra, caulis teretis fistulosis longitudinaliter striatis fragilis (instar caule graminii evocantibus) 0,8–1,2 cm diametro lenticellis obscuris. Cirrhii ca. 15 cm longis crasse furcatis 0,2 cm diametro. Folia simplicia, tenuiter coriacea vel chartacea ovato-oblonga vel suborbicularia apice acuminato, basi obtuso vel rotundato margine subintegro vel distanter spinuloso, veniis primariis 9-paribus supra conspicuis, subtus prominentibus, costa elevato, conspicue-alato, venis secundariis elevatis, reticulationibus obsoletis vel prominentibus distantibus; lamina 21,0–28,4 cm longo, 11,2–14,4 cm lato, supra et subtus glabro; petiolo 2,8–5,6 cm longo striato. Inflorescentia

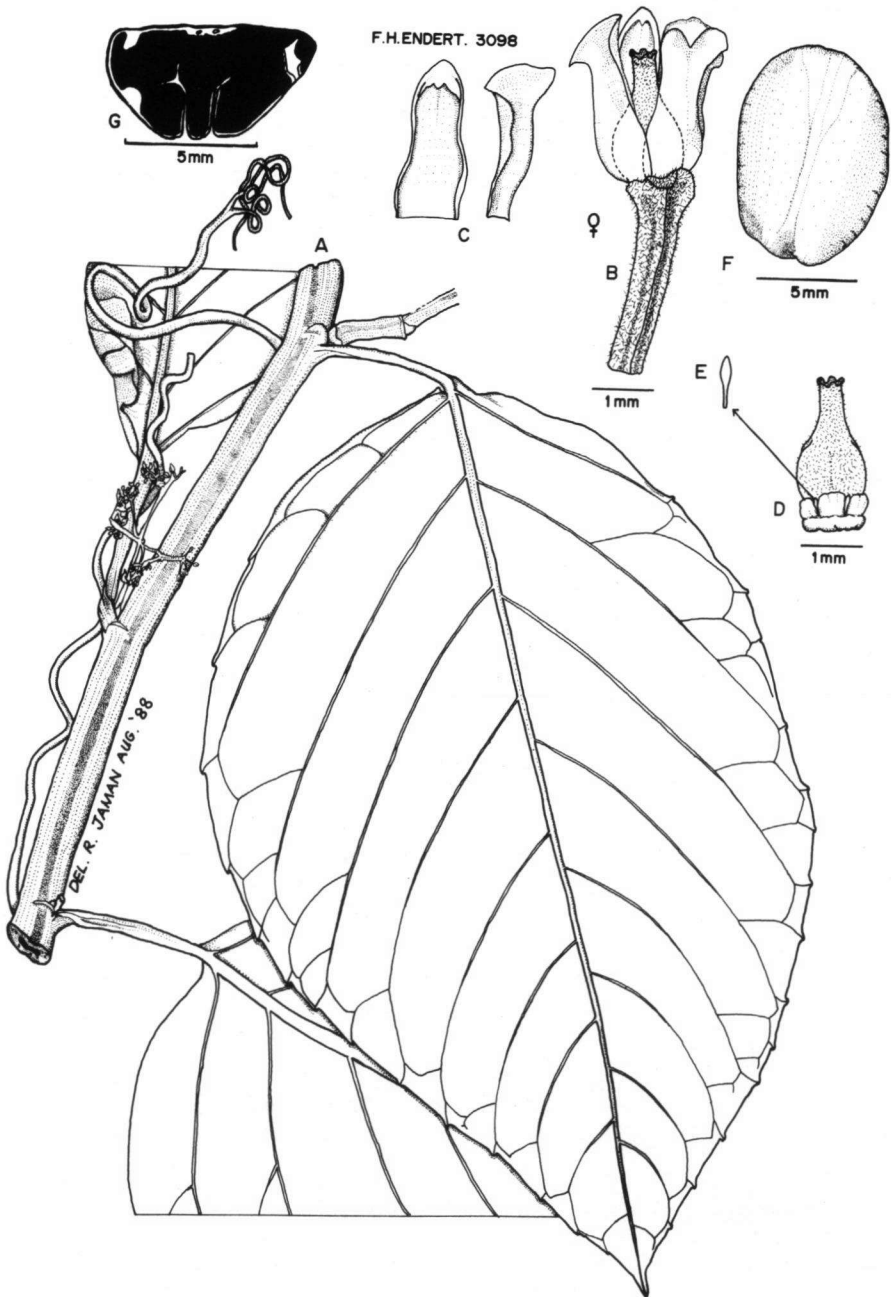


Fig. 1. *Tetrastigma steenisii* Latiff. A. Habit, $\times 0.7$; B. pistillate flower, note the hairy pedicel; C. petals; D. gynoecium, showing 4-cleft stigma and disc, note the hairs; E. staminode; F. seed; G. seed in transverse section showing endosperm.

axillaris pedunculata umbellato-cymosa ca. 5 cm diametro, pedunculo bracteato 1,7–1,9 cm longo. Flos masculina ignota. Flos femina tetramera ovoidea truncata 5 × 3 mm glabra pedicello puberula; calyx subcupuliforme. Corollae petalis oblongis corniculatis 5 × 2 mm; disco lobato, ovario ovoideo puberulo minuto, stylo conico puberulo, stigma quadrifido; staminodia clavata 0,4 mm longa. Bacca globosa 1,4 cm diametro tetrasperma, siccitate alata, seminis oblongis rostratis 7 × 6 cm processo chalazino inconspicuo, chalaza apice sulcato triangulari, endospermium M-formatum in sectione transversale. — T y p u s: *F.H. Endert 3098* (holo L!), W Kutai, Sungai Kiau.

Large liane, glabrous. Stem terete, hollow, longitudinally striate, brittle, grass-like, 0,8–1,2 cm across, lenticels less prominent. Tendrils furcate, leaf-opposed, c. 15 cm long or longer, thick, 0,2 cm across, becoming glabrous. Leaves simple, ovate-oblong to more or less orbicular, chartaceous, 21,0–28,4 cm long, 11,2–14,4 cm wide, glabrous on both sides, the apex acuminate, the base obtuse to rounded, the margin subentire or distantly bristled; veins 9 pairs, distant, more or less conspicuous above, very prominent below, midrib raised, manifestly alate, secondary nerves sharply elevated, reticulation obsolete to prominent; the petiole 2,8–5,6 cm long, striate. Inflorescence axillary, peduncled, umbellate cyme, c. 5 cm across; peduncle bracteate, 1,7–1,9 cm long, ultimate axis 8-flowered. Staminate flowers not observed. Pistillate flowers 4-merous, ovoid, 5 × 3 mm, flat-topped, glabrous; calyx subcupuliform, low; petals oblong, corniculate, 5 × 2 mm; disc lobed, low; ovary ovoid, pilose; style conical, pilose; stigma 4-cleft; staminodes 0,4 mm long, clavate. Berries globose, 1,4 cm across, alate (when dry), 4-seeded. Seeds oblong, 7 × 6 cm, beaked, chalazal knot inconspicuous, chalazal-apex groove triangular, grooves prominent, endosperm M-shaped in cross section.

Distribution. Borneo (Kalimantan, West Kutai).

Ecology. This species was collected in West Kutai apparently near the river.

Specimens examined:

BORNEO. Kalimantan, Liang Gagang, *H. Hallier 2838*, in 1893/1894; West Kutai, Sungai Kiau, *F.H. Endert 3098* (holotype, L!), *4571, 4676, 27 Aug. 1925*.

***Tetrastigma megacarpum* Latiff, *spec. nov.* – Fig. 2.**

Liana robusta glabra, caulis teretis fistulosis striatis 3,5–3,7 cm latis rugosis 0,7 cm diametro; lenticellatis prominente ocellata; cirrhii simplicibus 0,2 cm diametro ca. 9 cm longis. Folia 5-foliolata digitata subcoriacea glabra, petiolis 9,7–23,2 cm longis striatis, foliolum terminale ellipticum apice caudato basi obtuso margine grosse dentato, veniis primariis utroque latere 8–10, veniis secundariis prominentibus; costa media alata, petiolulo 3,5–6,1 cm longo, lamina 13,2 ad 23,4 cm longo et 6,8 ad 10,7 cm lato; folioliis lateralibus foliolo terminali conformaribus, 10,2 ad 12,4 cm longis et 5,6 ad 6,4 cm latis, petiolulis 1,5 ad 5,1 cm longis. Inflorescentia axillaris erecta e caule vetustiore egressa umbellato-cymosa ca. 18 cm diametro; pedunculo ca. 2,1 ad 6,3 cm longo. Flos masculina ignota. Flos feminea tetramera oblonga puberula 5,2 mm longa et 1,3 mm lata, pedicello puberulo. Calyx cupuliformis lobatis. Corollae petalis oblongis corniculatis, disco lobato; staminodia filiformia. Bacca majora oblonga 2,0 ad 3,2 cm longa et 1,3 ad 2,2 cm lata succulenta disperma, seminis oblongis 1,6 cm longis et 0,8 cm latis, processo chalazino inconspicuo, sulco manifesto; endospermium M-formatum in sectione transversale. — T y p u s: *F.H. Endert 4942*, West Kutai, near Lake Poehoes (holo L!).

Large liane, glabrous. Stem terete, hollow, longitudinally striate, 3,5–3,7 cm across, old twigs rugose, 0,7 cm across, lenticels prominent, ocellate. Tendril simple, thick, 0,2 cm across, c. 9 cm long. Leaves 5-foliolate, digitate, subcoriaceous,

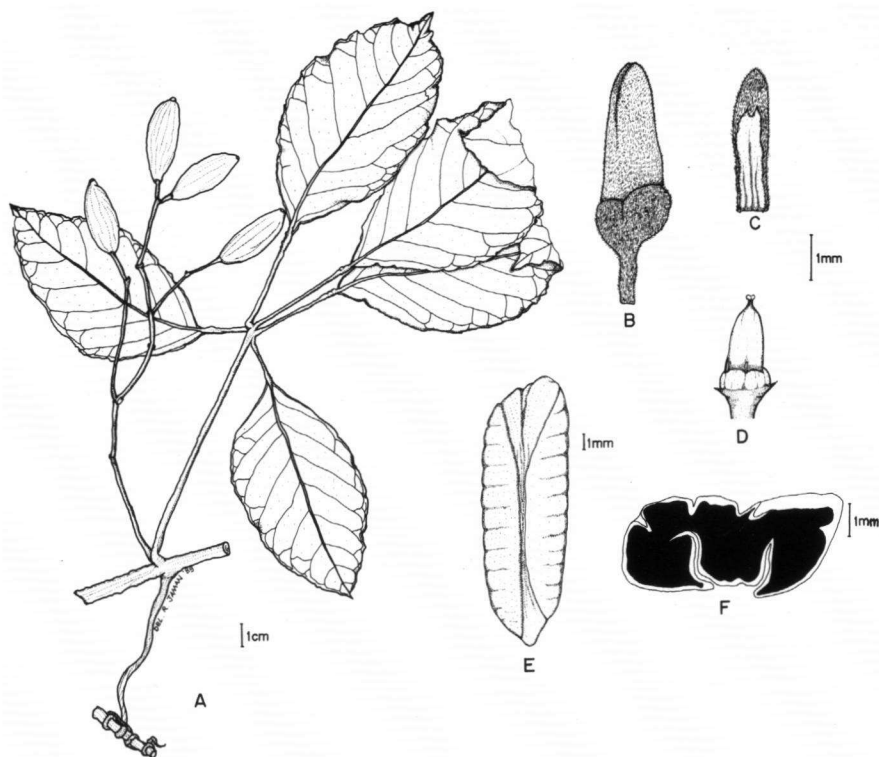


Fig. 2. *Tetrastigma megacarpum* Latiff. A. Habit; B. flower; C. petal; D. gynoecium, note the disc, stigma and staminodes; E. seed, F. seed in transverse section showing endosperm.

glabrous, the petioles 9.7–23.2 cm long, 0.3–0.5 cm thick, striate; terminal leaflets elliptic, 13.2–23.4 cm long, 6.8–10.7 cm wide, the apex caudate, the base obtuse, the margin grossly dentate, nerves 8–10 pairs, secondary nerves prominent, midrib alate, the petiolules 3.5–6.0 cm long; lateral leaflets elliptic, 10.2–12.4 cm long, 5.6–6.4 cm wide, the apex, base, margin, and veins as in terminal leaflets, the petiolules 1.5–5.1 cm long. Inflorescence axillary, peduncled, on old stem, umbellate cyme, c. 18 cm across, the peduncle c. 2.1–6.3 cm long. Staminate flowers not observed. Pistillate flowers 4-merous, oblong, pubescent, 5.2 × 1.3 mm, the pedicel pubescent; calyx cupuliform, lobed; petals oblong corniculate, 3.2 × 0.7 mm; disc lobed, low; staminodes filiform. Berries large, oblong, 2.0–3.2 cm long, 1.3–2.2 cm wide, juicy, 2-seeded, seeds oblong, 1.6 × 0.8 cm, beaked, chalazal knot inconspicuous, chalazal groove prominent, endosperm M-shaped in cross section.

Distribution. Borneo (Kalimantan, Sabah, Sandakan, Sarawak).

Specimens examined:

BORNEO. Kalimantan, West Kutai, near Lake Poehoes, *F. H. Enderi* 4942, 15 Nov. 1925 (holotype L!); Jaro Dam, *de Vogel* 783, 14 Nov. 1972; Jaro Dam, Muara Uya, *K. Kartawinata* 798, 14 Nov. 1971; Bukit Raya, *Nooteboom* 4695, 30 Jan. 1983; Sabah, Tawau, mile 27 Sepulut–Lua-

sang, *F. Krispinus* SAN 89885, 9 Aug. 1979; Keningau, Kitan, *Amin* SAN 95324, 7 April 1982; Mt Kinabalu, Kaung, *J. & M.S. Clemens* 26013, 4 July 1931; Ranau, Kg. Saginda-Kg. Nabutan, *Abon Gibot & Petrus* SAN 90613; Mt Kinabalu, Ulu Liwagu, *W.L. Chew et al.* 2612; Keningau, *D. Sundaling* SAN 83775, 16 July 1976; Tawau, Tawau Hill F. R., *Aban Gibot & George* SAN 79752; Papar, Ulu Bongawan, *Talib Bidin* SAN 8448, 14 Sept. 1976; Sandakan, Sepilok F. R., *Saikeh & Ejan* SAN 83702, 21 Nov. 1976; Keningau, 16 ms Kimanis-Keningau road, *A. Latiff et al.* ALM 2022, 6 Nov. 1986, ALM 2074, 7 Nov. 1986; Lahad Datu, Tabin Wildlife Sanctuary, *A. Latiff* (obs.) 2.10.1988; Sarawak, 1st Division, Padawan Rd, *J. Mamit et al.* S 32623; 5th Division, Lawas, Bangkor, *P. Chai & Ilias Paie* S 31583, 3 Nov. 1971.

NOTES ON MORPHOLOGY

Tetrastigma steenisii:

There is only one species of *Tetrastigma* in Malesia with absolutely simple leaves, and this is *T. scortechinii* (King) Gagnep. This species has been collected on limestone hills of Perak and Pahang in Peninsular Malaysia (Latiff, 1983). The differences with *T. steenisii* are as follows:

Character	<i>T. scortechinii</i>	<i>T. steenisii</i>
Old Stem	flattened	cylindrical
Lamina		
undersurface	minutely pubescent	glabrous
base	subcordate	obtuse to rounded
Peduncle	c. 3 cm long	c. 2 cm long
Inflorescence	c. 1.5 cm across	c. 5 cm across
Berries	c. 0.5 cm across	c. 1.4 cm across

In *T. steenisii*, the stems are characteristically brittle, simulating those of small bamboo, striate, hollow and smooth. In most species the stems are flattened, tuberculate or papillate, seldom hollow, and not striate. This new species represents the second *Tetrastigma* species known to possess simple leaves. The other, *T. scortechinii*, from the Malay Peninsula is described by Latiff (1983). The Bornean *T. steenisii* differs from the Malayan species in its larger and glabrous leaves, rounded leaf base, grass-like and striate stem and bigger berries. There are many other Malaysian species which exhibit heterophylly; but there are only three species which have both the simple and 3-foliolate leaves present on the same plant. They are *T. glabratum* (Blume) Planch., *T. dichotomum* (Blume) Planch. and *T. cruciatum* (Gagnep.) Craib.

Tetrastigma megacarpum:

The second new species is unlike any other in Malesia in that its 5 leaflets are digitately arranged and it has very large oblong berries. In species which have compound leaves with five leaflets, all leaflets are pedately arranged, e.g. *T. lanceolarium* (Roxb.) Planch., *T. hookeri* (Laws.) Planch., *T. laevigatum* (Blume) Gagnep., *T. glabratum* (Blume) Planch., *T. pisicarpum* (Miq.) Planch., etc. The species which

have large berries are *T. hookeri* and *T. trifoliolatum* Merr., but in these species the berries are globose and ellipsoidal, respectively.

There is some similarity to *T. trifoliolatum*, but in the latter species the leaves are consistently 3-foliolate and the terminal petiolules are twice as long as the lateral petiolules.

RELATIONSHIP

The clearest relationship of *Tetrastigma steenisii* is to *T. scortechinii* which has leaves of virtually identical size but differently shaped base and apex. Moreover, the latter species has tough, tuberculate, and flattened stems very different from the brittle, smooth, hollow and bamboo-like stems of *T. steenisii*. Also, the berries are smaller and the seed proportionally small.

Tetrastigma megacarpum seems to be without close allies, having 5-foliolate digitately arranged leaves not typical of any species of *Tetrastigma* known in Malesia.

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