

New Species and Varieties of Moraceae from Malaysia

K. M. KOCHUMMEN

Forest Research Institute of Malaysia, Kepong
52100 Kuala Lumpur, Malaysia

Abstract

Three new species and one new variety of *Artocarpus* and fourteen new species of *Ficus* and seven new varieties are described. All the new species and varieties are from Sabah and Sarawak except *F. ngii*, which is from Peninsular Malaysia. The new species and varieties are *Artocarpus corneri*, *A. jarrettiae*, *A. primackii*, *A. anisophyllus* var. *sessilifolius*, *Ficus ashtonii*, *F. borneensis*, *F. chailii*, *F. chewii*, *F. corneri*, *F. dulitensis*, *F. gamostyla*, *F. ilias-paiei*, *F. kerangasensis*, *F. longistipulata*, *F. ngii*, *F. pseudotarenifolia*, *F. sabahana*, *F. soepadmoi*, *F. cereicarpa* var. *ashtonii*, *F. deltoidea* var. *recurvata*, var. *subhirsuta*, *F. obscura* var. *lanata*, *F. oleifolia* var. *calcicola*, and var. *impressicostata*, and *F. sundaica* var. *impressicostata*. Descriptions of the new taxa are provided.

Introduction

In her revision of the genus *Artocarpus* of the Malesian region, Jarrett (1959, 1960, 1975) recognised 19 species from Sabah and Sarawak. Corner (manuscript 1972) recorded 20 species. In his checklist of *Ficus* in Asia and Australasia and in additional publications, Corner (1965, 1970, 1972) recognised 128 species of *Ficus* for Sabah and Sarawak. Completion of the study of these two genera in Sabah and Sarawak has added three new species and one new variety of *Artocarpus* and thirteen new species and seven new varieties of *Ficus* making a total of 23 species of *Artocarpus* and 141 species of *Ficus* known in Sabah and Sarawak. Of the newly described species of *Artocarpus*, one is recorded only from Sarawak. Similarly of the thirteen new species of *Ficus*, four are found only in Sabah, seven only in Sarawak, and two in Sabah and Sarawak.

Description of New Taxa

1. *Artocarpus corneri* Kochummen sp. nov.

(E.J.H. Corner, 1906–1996, prominent Professor of Tropical Botany, University of Cambridge, UK, who undertook extensive studies of the Malesian Moraceae)

Artocarpo lanceifolio simillimus, sed in foliis in sicco badiis supra scabridis, marginibus integris, syncarpiis cylindricis differt. Typus : Dayang Awa &

Yii P.C. S 46878, Borneo, Sarawak, Dulit Range, Belaga (holotypus KEP; isotypi CGE, K, L, SAN, SAR).

Tree to 22 m tall, 50 cm diameter. *Twigs* 7–9 mm thick, dark brown, closely ridged, very sparsely short-hairy, with distinct ring-like stipular scars. *Stipules* lanceolate, to 3 cm long, densely covered with long hairs. *Leaves* obovate or oblong, (12–)17–28 x (5.5–)7–12 cm, base cuneate, margin faintly wavy, apex acuminate or acute; both surfaces glabrous to the naked eye but with short rough hairs on the midrib and lateral veins, drying reddish brown to chocolate brown, upper surface sandpapery to touch; midrib raised above; lateral veins 12–15 pairs, raised below, faint above; intercostal veins scalariform, faintly visible below, invisible above; petioles 3–5 cm long, with short sparse hairs. *Inflorescences* axillary, solitary. Male not seen. *Syncarp* (immature) green when fresh, cylindric, 5–7 x 3.5–4 cm; tepal densely hairy, style distinctly bifid; peduncles 5.5–8 cm long.

Vernacular name: Sarawak: *talun* (Murut).

Distribution: Endemic to Borneo, rare, known only from Sarawak.

Ecology: Submontane forest between 820–1000 m altitude.

Notes: Closely related to *A. lanceifolius* in section *Duricarpus* of subgenus *Artocarpus* but differing in the reddish brown dry leaves with scabrid upper surface, entire leaf margins and in the cylindric syncarps.

Specimens Examined: BORNEO. SARAWAK: Lawas, Maligan Range, *Ilias Paie S 32879* (BO, CGE, K, KEP!, L, SAR!); Belaga, Dulit Range, Ulu Sg. Kayan, *Dayang. Awa & Yii P.C. S 46878* (CGE, K, KEP!, L, SAN!, SAR!).

2. *Artocarpus jarrettiae* Kochummen **sp. nov.**

(J. Francis Jarrett who revised the genus *Artocarpus* for the Malesian region)

Prope Artocarpum rigidum, in *syncarpio cylindrico*, *perianthio pilis longis glandulosis basi inflatis differt*. **Typus**: *Amin & Francis SAN 120933*, Borneo, Sabah, Ranau (holotypus SAN; isotypi K, KEP, L).

Small tree to 15 m tall, 50 cm diameter. *Twigs* 6–7 mm thick, dark brown, closely ridged. *Stipules* lanceolate, up to 5.5 cm long, with reflexed edges, densely long hairy outside. *Leaves* elliptic or oblong, 16.5–23 x 8.5–12 cm, base cuneate, apex obtuse or acute; scabrid on both surfaces, upper sparsely

and lower densely hairy; midrib raised above; lateral veins 11–13 pairs, raised below, flat or faintly sunken above; intercostal veins scalariform, visible below, faint above; petioles 3–5 cm long, covered with short hairs. *Inflorescences* axillary. Male not seen. *Syncarp* (immature) yellowish green when fresh, cylindrical, c. 4.5 x 3 cm; perianth covered with glandular hairs with swollen bases; style exserted, simple; peduncles 4.5–5.5 cm long, rough hairy.

Vernacular name: Sarawak: *tekalong* (Iban).

Distribution: Endemic to Borneo, very rare, only known from Sabah and Sarawak.

Ecology: Lowland forest by streams.

Notes: Near to *A. rigidus* in section *Duricarpus* of subgenus *Artocarpus* but differing in the cylindric syncarp and in the perianth with long glandular hairs with swollen bases.

Specimens Examined: BORNEO. SABAH : Ranau, Langanan, *Amin & Francis* SAN 120933 (K, KEP!, L, SAN!). SARAWAK : Sarikei, km 6, *Bernard Lee* S 54906 (CGE, K, KEP!, L, SAN!, SAR!).

3. *Artocarpus primackii* Kochummen **sp. nov.**

(Richard B. Primack of Boston University, U.S.A., author of *Foresters' Guide to the Moraceae of Sarawak*)

Artocarpus glauco similis in sectione Pseudojaca, in capitulo masculo globoso, perianthio praeter apicem lobatum connato differt. Typus : Aban Gibot SAN 99596, Borneo, Sabah, Kota Merudu (holotypus SAN, isotypus KEP).

Small to medium-sized tree, rarely to 33 m tall and 150 cm diameter. *Bole* with tall buttresses to 3.3 m high; bark grey brown or orange brown, smooth to cracking. *Twigs* 5–7 mm thick, covered with short rough hairs. *Stipules* ovate, c. 4 mm long, hairy outside. *Leaves* oblong or obovate, 12–33 x 7.5–19 cm, base cuneate or rounded, apex with 1 cm long sharp tip; upper surface glabrous except midrib, lower surface rough hairy; midrib flattened above; lateral veins 10–16 pairs, prominently raised below, finely sunken above; intercostal veins scalariform, raised below, faint above, reticulation prominently raised below; petioles 2–5.5 cm long, short-hairy, often glaucous. *Inflorescences* solitary, axillary. *Male head* globose, c. 1.8 cm

diameter, sessile or with 5 mm long hairy peduncle; tepal 3-lobed, covered with short hairs; stamen one, exerted with stout filament; bracts numerous, with peltate heads. *Female flowers* with exerted 3-lobed styles. *Syncarp* sessile or shortly peduncled, subglobose, surface warty, c. 6 cm across, velvety hairy, pale yellow with pink flesh when fresh.

Vernacular names: Sabah : *beruni* ; Sarawak : *dadah* (Iban).

Distribution: Endemic to Borneo. Most collections are from Sabah with only one record from Sarawak.

Ecology: Lowland and hill forest to 600 m altitude.

Notes: Closely allied to *A. glaucus* in series *Peltatae* of section *Pseudojaca* in subgenus *Pseudogaea*, but differing by its globose male head and united perianth except for the lobed apex. It also differs from *A. tomentosulus*, (under which some of the collections mentioned below were included by Jarrett), by its rough hairy, large leaf with sunken veins, small ovate stipules, and in the sessile or shortly stalked syncarp.

Specimens Examined: BORNEO. SABAH : Keningau, Sook Road, *T. Oikawa* SAN 92157 (SAN!); Kota Merudu, *Aban Gibot* SAN 99596 (KEP!, SAN!); Tenom, Agriculture Station, *W. Meijer* SAN 120622 (SAN!); Kinabalu National Park, *S. Kokawa et al.* 5223 (SAN!); Beaufort, Lumat Estate Reserve, *Stephen Madius* SAN 50064 (K, SAN!); Sandakan, Sepilok F.R., *C. Charington* SAN 21181 (K, L, SING!); Lahad Datu, Silam, *Heya et al.* SAN 61681 (K, KEP!, L, SAN!, SAR!, SING!); Lahad Datu, Silam F.R. Block 8, *Agam Ambullah* SAN 31491 (K, L, SAN!); Tawau, *G.H.S Wood A* 3684 (A, KEP!, L, SING!); Tawau, Tinagat F.R., *J. Singh et al.* SAN 48990 (KEP!, K, L, SAR!, SAN!); Tawau, Mile 9 Apas Road, *F. Krispinus* SAN 86649 (KEP!, SAN!, SAR!, SING!); SARAWAK : Mulu National Park, Melinau Gorge, *R.B. Primack S* 43309 (A, K, KEP!, L, SAN!, SAR!).

4. *Artocarpus anisophyllus* var. *sessilifolius* Kochummen var. nov.

(Latin, *sessilis*=sessile, *folius*=leaved, i.e. the sessile leaflets)

A varietate typica in ramulis laevibus foliolisque sessilibus differt. Typus : *G.H.S. Wood* SAN 16549, Borneo, Sabah, Sepilok F.R. (holotypus SAN).

Vernacular name: Sabah : *terap ikal* (Malay).

Distribution: Widely distributed in Sabah, but known only from a single

collection from Sarawak.

Notes: This new variety differs from the typical variety by the smooth twigs and sessile leaflets.

Specimens Examined: BORNEO. SABAH : Terintidon, *Aban Gibot* SAN 99508 (SAN!); Kota Merudu, *Aban Gibot* SAN 100079 (SAN!); Sg. Sapi, Beluran, Ag. Ahmad & Chiba SAN 124521 (SAN!); Kinabatangan, *Austin Cuadra A 2133*; (KEP!, SAN!, SING!); Sandakan, Sepilok F.R., *G.H.S. Wood* SAN 16549 (A, BO, BRI, K, KEP!, L, SAN!, SING!); Sandakan, Labuk Road, *Tamiji & Laurence* SAN 47090 (SAN!). SARAWAK : Kuching, *Hewitt* 177 (SAR!).

5. *Ficus ashtonii* Kochummen sp. nov.

(P.S. Ashton, sometime Forest Botanist in Brunei and Sarawak)

Species prope Ficum hookerianum seriei Orthoneura, subgen. Urostigma, sed bracteis basalibus non connatis cupuliformibus sunt. In foliis crassis eis Fici stupendae similis, sed costa supra impressa. Typus : Dayang Awa & B. Lee S 47846, Borneo, Sarawak, Limbang (holotypus KEP; isotypi CGE, K, L, SAN, SAR).

Tree up to 28 m tall, 60 cm diameter. *Twigs* yellowish brown, irregularly ridged. *Stipules* ovate-lanceolate, pointed, c. 2.5 cm long, caducous. *Leaves* thickly leathery, elliptic, 14.5–17.5 x 6.5–9 cm, base broadly cuneate, apex pointed; midrib sunken above; lateral veins 6–7 pairs, curving and joining near margin, trinerved, basal pair reaching to more than $\frac{1}{3}$ of blade, raised below, faintly raised above; intercostal veins reticulate, distinct below, invisible above; petioles 2.2–3.7 cm long, wrinkled on drying. *Syconia* from leafy twigs, axillary, orange turning deep red, sessile, oblong, c. 2 x 1 cm, apex flat with disc-like bracts; basal bracts large, with rounded apex, persistent. *Male flowers* with long stout stalk; tepal not distinct; stamen one with short filament. *Female flowers* sessile; perianths 3, lanceolate acuminate, up to the lower half of style; ovary elliptic, brown, slightly ridged, style lateral, long, stigma clavate. *Gall flowers* similar to female flowers, but with short pedicels.

Distribution: Endemic to Borneo; known only from the Bario and Limbang districts in Sarawak.

Ecology: Submontane forest at 1020 m altitude.

Notes: A species near to *F. hookeriana* of Series *Orthoneura* in Subgen.

Urostigma but the basal bracts are not united and cup-like. The thick leaves resemble those of *F. stupenda* but the midrib is impressed above.

Specimens Examined: BORNEO. SARAWAK : Bario, Pa Ukat, 4th Division, *Peter Sie S 35394* (A, CGE, K, L, MO, SAR!); Limbang, G. Pagon Periok, *Dayang Awa & B. Lee S 47846* (CGE, K, KEP!, L, SAN!, SAR!).

6. *Ficus borneensis* Kochummen sp. nov.

(Of Borneo)

In subsezione Dictyoneuron prope Ficum delosyce, sed ficorum bracteis truncatis vel planis differt. Typus: W. Meijer et al. SAN 131862, Borneo, Sabah, Telupid, Bukit Tangkunan F.R. (holotypus KEP).

Strangling fig. *Young twigs* yellowish, grooved. *Stipules* ovate-lanceolate, c. 15 x 5 mm, glabrous or hairy. *Leaves* leathery, drying chocolate brown; elliptic or oblong, 6.5–10.5 x 1.5–5 cm, base broadly cuneate, apex pointed; midrib sunken above, lateral veins 4–6 pairs, trinerved, basal pair reaching 1/3 of blade, curving and joining to form a looped intramarginal vein, distinct below, invisible to faintly visible above, intercostal veins reticulate, visible below, invisible above; petioles 1–2 cm long, drying black. *Syconia* axillary, solitary or in pairs, ripening red, sessile, oblong, 10–12 x 7 mm, surface rugose and with distinct ridges, apex truncate with disc-like bracts; basal bracts triangular with acute tip, persistent. *Male flowers* stalked; tepals 3; stamen one, almost sessile. *Gall flowers* sessile; tepals 3; ovary reddish on one side, with short subterminal style. *Female flowers* shortly pedicelled; style lateral, stigma clavate; seed covered with mucilage.

Distribution: Endemic to Borneo, very rare, recorded from Sabah and Sarawak.

Ecology: Lowland to submontane forest to 1350 m altitude on ultrabasic soil.

Notes: Somewhat like *F. pellucido-punctata* but the leaves are thicker and the figs are without perforation. Within the Subsection *Dictyoneuron* of section *Conosycea* of subgenus *Urostigma*, *F. borneensis* is near to *F. delosyce* but differs by its truncate apex and flat apical bracts of the figs.

Specimens Examined: BORNEO. SABAH : Ranau, G. Mikil SAN 38549 (SAN!, SING!); Telupid, Bukit Tangkunan F.R., SAN 131862 (KEP!); Mount Kinabalu, J. & M.S. Clemens 29170 (SING!), 31275 (SING!).

SARAWAK : Kapit, Ulu Balleh, *Ilias Paie S 28556* (A, CGE, E, K, L, SAR!); G. Mulu National Park, Sg. Mentawi *Paul P.K. Chai S 39749* (CGE, K, KEP!, L, SAN!, SAR!).

7. *Ficus chaiti* Kochummen sp. nov.

(Paul P.K. Chai, sometime Forest Botanist, Forest Department, Sarawak).

Hac species prope Ficum ixoroidem sectionis Sycocarpus subgenus Ficus, sed in foliis distincte dentatis venarum lateralium paribus multis differt.

Typus: Paul P.K. Chai S 36002, Borneo, Sarawak, Sg. Kapit (holotypus KEP; isotypi CGE, K, L, SAN, SAR).

Treelet to 1 m tall. Twigs reddish brown, angled. *Stipules* lanceolate, up to 10 mm long, caducous, finely hairy outside. *Leaves* narrowly oblong, drying to greenish yellow, 13.5–23.5 x 1.5–2.2 cm, base cuneate, apex pointed with 1–2 cm long tip, margin distantly toothed; midrib raised above; lateral veins 13–21, distinctly curving and joining near margin, trinerved, basal veins short, visible below, very faint above; intercostal veins reticulate, visible below only; petioles 1–1.5 cm long, yellowish on drying. *Syconia* from leaf axils, solitary or in pairs, pear-shaped, 5–8 x 3–4 mm, green ripening to orange; peduncles to 3 mm long; basal bracts tiny. *Gall flowers* shortly stalked; tepals 3, lanceolate, transparent; ovary globose, whitish, style short, terminal. Male flowers not seen.

Distribution: Endemic to Borneo, very rare, known from a single collection from Sarawak.

Ecology: Lowland forest by river side.

Notes: This species is near to *F. ixoroides* of Section *Sycocarpus* Subgenus *Ficus*, differing in the distinctly toothed leaves and many pairs of lateral veins.

Specimens Examined: BORNEO, SARAWAK. Kapit, Sg. Kapit, *Paul P.K. Chai S 36002* (CGE, K, KEP!, L, SAN!, SAR!).

8. *Ficus chewii* Kochummen sp. nov.

(W.L. Chew, formerly taxonomist, Singapore Botanic Gardens)

Species as sectionem Conosycea subgenus Urostigma pertinet Ficus sumatrana similis, sed ficis oblongis apice truncato differt. **Typus:** Chew et al. RSNB 1972, Borneo, Sabah, Mount Kinabalu (holotypus SAN; isotypus SING).

Strangling fig. *Twigs* greyish yellow, finely ridged. *Stipules* ovate-lanceolate, pointed, 15–17 mm long, hairy outside, caducous. *Leaves* thickly leathery, shiny above, elliptic or oblong, (2.7–)6–11 x 3.5–5.5(–1.5) cm, base rounded or broadly cuneate, apex acute; midrib raised above with distinct central groove; lateral veins 6–8, with short intermediate veins, trinerved, basal veins reaching to middle of blade, curving and joining near margin, faintly visible on both surfaces; intercostal veins reticulate, faint below, invisible above; petioles 7–17 mm long, drying black. *Syconia* axillary, solitary or in pairs, sessile, oblong, c. 10 x 6 mm, apex truncate with disc-like apical bracts, surface irregularly wrinkled; basal bracts persistent, with rounded apex. *Male flowers* with 3 spatulate tepals; stamen one, sessile. *Female flowers* sessile; tepals 3; ovary with red markings, style long, subterminal, stigma clavate.

Distribution: Endemic to Borneo; very rare, known only from Mount Kinabalu in Sabah.

Ecology: Submontane forest at 1290 m altitude.

Notes: *F. chewii* belongs to Section *Conosycea* of Subgenus *Urostigma* and is close to *F. sumatrana* but differs in the oblong figs with truncate apex.

Specimens Examined: BORNEO. SABAH : Mount Kinabalu, Ulu Liwagu and Ulu Mesilau, W.L. Chew *et al.* RSNB 1972 (SAN!, SING!).

9. *Ficus corneri* Kochummen **sp. nov.**

Species ad sectionem Leucogyne subgen. Urostigma pertinet foliis sine venis intercostalibus distinctis sed venis intermediis multis brevibus venis principalibus aequiliter prominentibus, ficis globosis sessilibus bracteis basalibus minutis absconditis, ovario albido notata. A Fico ngii in staminibus sessilibus periantho rubello marginibus albis differt. Typus: *Fidilis & Asik SAN 119744*, Borneo, Sabah, Keningau (holotypus KEP; isotypus SAN).

Climber. *Twigs* yellowish brown, strongly grooved. *Leaves* yellowish green on drying, elliptic to oblong, 12–20 x 4–6.5 cm, base cuneate, apex pointed, margin curled inwards; midrib raised above with distinct central sunken groove; lateral veins 5–7 pairs, with many short veins in between each pair, trinerved, basal pair reaching almost to half the length of blade, looping and joining near margin to form a looped intramarginal vein, visible below, very faint above; petioles 2.5–4 cm long, wrinkled on drying. *Syconia* yellowish when fresh, drying to reddish brown, from leaf axils, solitary or

in pairs, sessile, globose, 12–15 mm across, surface smooth, apex slightly sunken and closed by 2 bracts; basal bracts 3, small, concealed by base of syconium which is thickened and ring-like with white edge. *Male flowers* pedicelled, pedicels dark brown; tepals 4, dark brown, united; stamen one, sessile. *Gall flowers* similar to male flowers, ovary smooth, style lateral. *Female flowers* very few, sessile, with 4 narrow tepal lobes; style lateral; seeds smooth, subglobose.

Distribution: Endemic to Borneo. Recorded from Sabah and Sarawak and also from Brunei.

Ecology: Lowland and hill forests to 790 m altitude.

Notes: A species belonging to Section *Leucogyne* of Subgen. *Urostigma*, it is characterised by its leaves, which are without distinct intercostal veins but with many short intermediate veins that are as equally prominent as are the main veins, by its globose sessile figs with small concealed basal bracts and by the whitish ovary. It differs from *F. ngii* in the sessile stamen and the reddish perianth with white edges.

Specimens Examined: BORNEO. SABAH : Sipitang, Y.F. Lee & Dewol SAN 68975 (K, KEP!, L, SAN!, SAR!); Ranau, Tempurungan, Amin & Jarius SAN 115969 (KEP!, SAN!); Keningau, Lanas, Fidilis & Asik SAN 119744 (KEP!, SAN!). SARAWAK : Limbang, Bukit Pagon, Yahud Hj. Wat S 4763 (CGE, K, KEP!, L, SAN!, SAR!). BRUNEI : Temburong, Bukit Belalong, G.T. Prance et al. 30602 (K, KEP!).

10. *Ficus dulitensis* Kochummen sp. nov.

(Of Mount Dulit in Sarawak)

Hac species prope Ficum binnendykii var. *coriacea* sectionis *Conosycea* subgenus *Urostigma*, sed in flore masculo perianthiis 2, pedicello infundibuliformi differt. **Typus:** Dayang Awa & Yü P.C. S 46743, Borneo, Sarawak, Belaga, Dulit Range (holotypus KEP; isotypus SAR).

Strangling fig. *Twigs* dark brown. *Stipules* oblong, pointed, c. 1 cm long, glabrous, caducous. *Leaves* leathery, elliptic to oblong, 4–6.5 x 2–3.5 cm, base broadly cuneate, apex acute; midrib sunken above; lateral veins 3–4 pairs, raised below, invisible above, trinerved, basal pair reaching more than half the length of blade; intercostal veins reticulate, visible below, invisible above; petioles 0.5–1 cm long. *Syconia* from leaf axils, yellowish when ripe, subglobose, c. 8 mm diameter, sessile, with 3 large basal bracts. *Male flowers* with obconic pedicels; tepals 2; stamen 1 with distinct filament

which broadens towards the apex. *Female flowers* sessile; tepals 3, lanceolate; ovary brownish, reddish at styler side, smooth, style long, terminal, stigma club-shaped. *Gall flowers* similar to female flowers but the style is shorter.

Distribution: Endemic to Borneo. Very rare, known only from one collection from Sarawak.

Ecology: Submontane forest at 820 m altitude.

Notes: This species is near to *F. binnendykii* var. *coriacea* of Section *Conosycea*, Subgenus *Urostigma* but differing in the male flower with 2 tepals and in the obconic pedicel.

Specimens Examined: BORNEO, SARAWAK : Belaga, Dulit Range, Dayang Awa & Yü P.C. S 46743 (KEP!, SAR!).

11. *Ficus gamostyla* Kochummen sp. nov.

(Greek, *gamo*=united; with united styles of adjoining flowers)

Ad Fico disticha sectionis Rhizocladus subgenus Ficus vergens, ab hac specie in ficorum pedunculis longioribus (10–13 mm), floris foemini stylo longo apicaliter florum aliorum stylis in fici cavitate adnatis. Typus: Amin et al. SAN 107123, Borneo, Sabah, Tongod (holotypus SAN).

Climber. *Twigs* dark brown, hollow. *Stipules* lanceolate–acuminate, c. 4 mm long, caducous. *Leaves* obovate or elliptic, 7–11 x 2.5–5.5 cm, base cuneate, apex pointed, margin recurved; midrib flattened above; lateral veins 5–6 pairs, with short intermediate veins, trinerved, basal veins short, raised below, very faint above, intercostal veins fine, reticulate, distinct below, invisible above; petioles 7–10 mm long. *Syconia* arising from leafless twigs and branches, in clusters, greenish, ripening red, subglobose, c. 5 mm across, apex umbonate with slight depression in the centre; peduncles 10–13 mm long; basal bracts persistent. *Female flowers* pedicelled; tepals 4, dark brown, oblong; ovary oblong, pale brown with white edges, style lateral, long, joined up near the apex forming a white ring-like mesh; centre of syconium hollow. Male and gall flowers not seen.

Distribution: Endemic to Borneo, very rare, known only from one collection from Sabah.

Ecology: Lowland forest.

Notes: Near to *F. disticha* of Section *Rhizocladus* Subgenus *Ficus*, from which it differs in the longer (10–13 mm) peduncles of the syconia, and in the long style of female flower, which is united at the tip with the styles of other flowers within the fig cavity.

Specimens Examined: BORNEO. SABAH : Tongod, Ulu Sg. Pinaggah, Amin et al. SAN 107123 (SAN!).

12. *Ficus ilias-paiei* Kochummen sp. nov.

(Ilias Paie, the collector of the type specimen)

Hac species ad serie Apiocarpeae, sectionis Kalosyce subgenus Ficus pertinet, prope Ficum warburgii, sed in hac specie fici subglobosae pedunculis 0–4 mm longis sunt. Typus : Ilias Paie S 42527, Borneo, Sarawak, Path to Gunong Silantek (holotypus SAR; isotypus CGE).

Climber. Twigs reddish brown. *Stipules* semi-persistent. *Leaves* elliptic, 10–12 x 2.5–4 cm, base tapered, apex pointed; midrib raised above, lateral veins 5–6 pairs, very faintly visible on both surfaces with distinct arcolate reticulation below, not trinerved; petioles 1.7–2 cm long. *Syconia* borne on older, leafless branches, arising on stout finger-like branches, greenish with white dots when ripe, elliptic, c. 7 x 2.5 cm, apex pointed, base tapered and stalk-like, about 1 cm long; peduncles 2.5–3 cm long; basal bracts tiny. *Male flowers* with pedicels; tepal united with 3 lobes; stamen one, exserted. *Gall flowers* with pedicels; tepals linear, lanceolate, brownish in the centre with white edges; ovary dark red, style lateral, stigma funnel-shaped.

Distribution: Endemic to Borneo, very rare, known only from one collection from Sarawak.

Ecology: Mixed dipterocarp forest at 200 m altitude.

Notes: This species belongs to Series *Apiocarpeae* Section *Kalosyce*, Subgenus *Ficus*, and is near to *F. warburgii* but which has subglobose figs with a 0–4 mm-long peduncle.

Specimens Examined: BORNEO. SARAWAK : Ulu Sg. Silantek, 85th Mile Simanggang Road, Ilias Paie S 42527 (CGE, SAR!).

13. *Ficus kerangasensis* Kochummen sp. nov.

(Of *kerangas* forest)

Species prope Ficum tristaniifolii subgenus Urostigma, sed a hac specie in ficis oblongis, folii costa immersa differt. Typus : Ilias Paie S 38595, Borneo, Sarawak, Sabal FR, (holotypus KEP; isotypi CGE, L, SAN, SAR, SING).

Climber. *Twigs* blackish. *Stipules* lanceolate, pointed, 10–14 mm long, caducous. *Leaves* obovate, drying dark brown or blackish, 6–7.5 x 2.5–4 cm, base cuneate, apex rounded, margin curved inwards; midrib sunken above, lateral veins 6–8 pairs with short intermediate veins, curving and joining near margin, trinerved, basal pair extending up to $\frac{1}{3}$ of blade, faintly visible below, invisible above; intercostal veins reticulate, faintly visible below, invisible above; petioles 10–15 mm long, drying black. *Syconia* axillary, in pairs, yellowish green when fresh, sessile, oblong, 8–10 x 7 mm, surface rugose, apex truncate with distinct disc; basal bracts with blunt apex, persistent. *Male flowers* pedicelled; tepals 3, brown with white edge; stamen 1. *Female flowers* sessile; tepals 3; ovary oblong, reddish brown, longitudinally ridged, style lateral, stigma broad. *Gall flowers* similar to female flowers; interfloral bracts abundant.

Distribution: Endemic to Borneo. Known only from one collection from Sarawak.

Ecology: Kerangas forest.

Notes: This species is near *F. tristaniifolia* of section *Conosyce* in Subgenus *Urostigma*. It differs from that species in the oblong figs and in the sunken midrib of the leaf.

Specimens Examined: BORNEO. SARAWAK : Sabal F.R., Simungan, Ilias Paie S 38595 (CGE, KEP!, L, SAN!, SAR!, SING!).

14. *Ficus longistipulata* Kochummen sp. nov.

(Latin, *longistipulatus*=with long stipules)

Hac species prope Ficum globosam in sectione Conosycea subgenus Urostigma. A hac species in stipulis multo longioribus, ficis minoribus differt.

Typus : G. Argent et al. 441987, Borneo, Sabah, Palum Tambun (holotypus SAN).

Strangling fig. *Twigs* brownish, irregularly ridged. *Stipules* lanceolate, pointed, c. 3.5 cm long, drying pinkish. *Leaves* elliptic to oblong, 11.5–13.5 x 5–6 cm, base rounded or broadly cuneate, apex pointed; midrib flattened above, drying to pinkish below; lateral veins 12–15 pairs with short intermediate veins, curving and joining near margin, trinerved, basal veins

very short, distinct below, visible above; intercostal veins reticulate, faint below, invisible above; petioles 2–3 cm long. *Syconia* in clusters on twigs below leaves, green when fresh, subglobose, 5–7 mm across, apex swollen and prominently umbonate, basal bracts small, persistent; peduncles c. 1 cm long, sparsely hairy. *Male flowers* in the centre of the syconium; pedicels stout; tepal brownish, united, with 3 lobes, stamen 1, anthers oblong, sessile. *Female flowers* sessile; tepal shorter than ovary, brownish, lanceolate; ovary whitish with red brown dots, subglobose, with faint ridges, style dark brown, subterminal. *Gall flowers* similar to female flowers.

Distribution: Endemic to Borneo; very rare, known only from one collection from Sabah.

Ecology: Lowland forest at 150 m altitude.

Notes: This species is near to *F. globosa* in Section *Conosycea* Subgenus *Urostigma*. It differs from that species in the much longer lanceolate stipules and in the smaller figs.

Specimens Examined: BORNEO. SABAH : Palum Tambun, *Argent et al.* 441987 (SAN!).

15. *Ficus ngii* Kochummen **sp. nov.**

(F.S.P. Ng, former Forest Botanist, Forest Research Institute Malaysia)

Prope Ficum corneri sectionis Leucogyne subgenus Urostigma, staminibus filamento valido, perianthiis albis, folii basi etrinervosa differt. Typus : Saw L. G. FRI 44887, Peninsular Malaysia, FRIM, Kepong (holotypus KEP).

Strangling fig when planted, becoming independent tree up to 15 m tall with multiple stems, few aerial roots, and a spreading bushy dark green crown. *Twigs* c. 3 mm thick, covered with pale white lenticels. *Stipules* lanceolate, c. 8 mm long, with long white hairs on the outside. *Leaves* elliptic to oblong, 10–16 x 3–5.3 cm, base cuneate, apex pointed with tip c. 1 cm long; midrib flattened to slightly impressed above; lateral veins 8–11 pairs, not trinerved, thin, curving and joining near margin to form looped intramarginal vein, distinct below, very faint above, with equally prominent intermediate veins and reticulations; petioles 1–2 cm long. Sapling leaves oblong, to 3 cm broad, with sharp midrib below. *Syconia* from leaf axils, solitary or in pairs, sessile, green ripening yellow to deep red, subglobose to slightly obovoid, with scattered tubercles on the surface, 8–15 mm across, apex slightly depressed, closed by 3 apical bracts; basal bracts 3, concealed

by the basal part of the synconium. *Male flowers* with short pedicels; tepals 3, white; stamen one with stout filament, anthers crescent-shaped. *Gall flowers* pedicelled; tepal united at base with 3–4 lobes; ovary subglobose, slightly angled, style lateral, short. *Female flowers* with three tepals, free; ovary white, almost globose, style lateral, stigma brownish; seed smooth.

Distribution: Endemic to Peninsular Malaysia, rare, known only from two collections.

Ecology: Limestone forest.

Notes: This species belongs to Section *Leucogyne* Subgenus *Urostigma*, which until now was known from only two species: *F. amplissima*, a species of India, Sri Lanka and the Maldives, and *F. rumphii*, a species widely distributed in the Indo-Malesian region. *F. ngii* differs from these two species in leaf shape and the distinct stamen with a stout filament. *F. ngii* is near to *F. corneri* Kochummen, another newly described species of Section *Leucogyne*, but that species has red tepals with white edges and sessile stamens. In addition, *F. corneri* has leaves with a distinctly trinerved base. The type specimen was collected from a planted tree at the Forest Research Institute Malaysia, Kepong. It was grown from a cutting collected in 1982 from limestone forest near Ipoh in Perak by Dr. F. S. P. Ng. It is a very fast growing species; figs appear 2–3 times a year.

Specimens Examined: PENINSULAR MALAYSIA : Perak, Cave Temple north of Ipoh, F.S.P. Ng FRI 27361 (KEP!); Forest Research Institute of Malaysia, Kepong, Selangor, planted tree, Saw L.G. et al. FRI 44887 (KEP!).

16. *Ficus pseudotarennifolia* Kochummen sp. nov.

(Latin, *pseudo*=false, like *F. tarennifolia*)

Fico tarennifolio sectionis Sycocarpus subgenus Ficus in subserie Tuberculifasciculatae similis, floribus cecidiophoris pedicellis gracilibus, foliis multo angustioribus differt. Typus : Dayang Awa S 51027, Borneo, Sarawak, Bario, Sg. Mengalio (holotypus KEP; isotypi CGE, K, L, SAN, SAR).

Small tree to 6 m tall. *Twigs* reddish brown, angled. *Stipules* lanceolate, pointed, 15–17 mm long, caducous. *Leaves* opposite, narrowly oblanceolate, oblong or elliptic, 9.5–22.5 x 1–3.5 cm, base cuneate, apex pointed, margin recurved, faintly wavy; midrib raised above; lateral veins 8–13, often with glands in axils of veins, not trinerved, curving and joining near margin, visible below, very faint above; intercostal veins reticulate, visible below,

almost invisible above; lower surface with few scattered glands, sometimes in axils of lateral veins; petioles 1–2.5 cm long. *Syconia* borne in clusters on older branches and stems, pear-shaped, c. 2 x 1.2 cm, apex depressed; peduncles to 1.2 cm long; basal bracts tiny, persistent. *Gall flowers* with long slender pedicels; tepal whitish, cup-shaped with irregularly shaped lobes covering $\frac{3}{4}$ of red ovary, style short, lateral. Male flowers not seen.

Distribution: Endemic to Borneo; rare, recorded only from Sarawak.

Ecology: Lowland to submontane forests up to 950 m altitude, by streams.

Notes: Similar to *F. tarennifolia* of Section *Sycocarpus* Subgenus *Ficus* Subseries *Tuberculifasciculatae*, but differing in the gall flowers with slender pedicels and in the much narrower leaves with faintly wavy recurved margins.

Specimens Examined: BORNEO. SARAWAK : Bario, Sg. Menalio, *Dayang Awa S 51027* (CGE, K, KEP!, L, SAN!, SAR!); Kakus-Pandare primary forest, Tatau, *E.F. Brunig S 11929* (SAR!).

17. *Ficus sabahana* Kochummen sp. nov.

(Of Sabah, one of the states of Malaysia)

Hac species prope Ficum sagittatam sectionis Rhizocladus subgenus Ficus. A hac species in foliis glabris subcordatis infra cystolithis scabris tectis differt.

Typus : Ashik Mantor SAN 114907, Borneo, Sabah, Pandewan, Mesopo River (holotypus SAN).

Root climber. *Twigs* flattened, greyish yellow. *Stipules* ovate lanceolate, pointed, c. 2 cm long, subpersistent. *Leaves* ovate-lanceolate, greyish yellow on drying, undersurface sand papery to touch, 12.5–18.5 x 7–10 cm; base cordate or subcordate, apex pointed, margin recurved; midrib flattened above; lateral veins 3–4 pairs, trinerved, basal veins reaching more than half the length of blade, prominently raised below, flattened or faintly raised above; intercostal veins scalariform-reticulate, distinct below, faint above; petioles 1–2 cm long, sparsely hairy. *Syconia* borne in clusters in the leaf axils, globose, 6–11 mm across, surface smooth on drying, apex depressed, base narrowed to a cylindrical stalk; peduncle absent; bracts densely long-hairy. *Male flowers* shortly pedicelled; tepals 3, dark red; stamens 2, filaments united, stout. *Gall flowers* shortly pedicelled; tepals 3, dark red; ovary globose with dark red spots, style short, lateral. *Female flowers* not seen.

Distribution: Endemic to Borneo. Rare, known only from Sabah.

Ecology: Lowland forest in disturbed areas.

Notes: This species is near to *F. sagittata* of Section *Rhizocladus* Subgenus *Ficus*. It differs from that species in the glabrous cordate leaves covered with rough cystoliths on the undersurface.

Specimens Examined: BORNEO. SABAH : Nabawan, Keningau, *Dewol Sundaling* SAN 83817 (KEP!, SAN!, SAR!, SING!); Pandewan, Mesopo River, *Ashik Mantor* SAN 114097 (SAN!).

18. *Ficus soepadmoi* Kochummen sp. nov.

(E. Soepadmo, Collaborator and Chief Editor of the Tree Flora of Sabah and Sarawak Project)

A subsectione Dictyoneuron sectionis Conosycea subgenus Urostigma pertinet. Ad Ficum sumatranum vergens, sed fisis carinatis et folii venatione differt. Typus : Ilias Paie & Yeo Eng Teck S 38376, Borneo, Sarawak, Lambir Hill National Park, Ulu Sg. Lebau (holotypus KEP; isotypi CGE, K, L, SAN, SAR).

Climber. *Twigs* dark brown, angled. *Stipules* lanceolate, c. 15 mm long, appressed hairy outside. *Leaves* drying greenish yellow; oblong or oblanceolate, 9–13 x 2.8–3.7 cm, base cuneate, apex pointed, margin recurved; midrib sunken above; lateral veins 5–7 pairs with a number of short intermediate veins, trinerved, curving and joining near margin to form looped intramarginal vein; intercostal veins reticulate, venation visible below, very faint to inconspicuous above; petioles 1–1.5 cm long, drying black, sparsely hairy. *Syconia* axillary, sessile, in pairs, pale green when ripe; subglobose, 6–8 mm across, apex faintly sunken and closed by 2 apical bracts; surface rugose with five prominent ridges from apex to base; basal bracts persistent, with rounded apices. *Male flowers* sessile; tepals 3, stamen 1, sessile. *Female flowers* sessile; tepals 3, oblong, reddish; ovary oblong, irregularly lobed, dark brown on one side, style lateral, long, stigma dark brown, lobed. *Gall flowers* similar to female flowers but style short; interfloral bracts abundant.

Distribution: Endemic to Borneo; very rare, known only from the type collection from Sarawak.

Ecology: Submontane forest by river side at 1400 m altitude.

Note: Belonging to Subsection *Dictyoneuron* Section *Conosycea* Subgenus *Urostigma*, it comes near to *F. sumatrana* but the ridged figs and leaf venation are different. A sterile collection from Brunei, *BRUN* 5332 from S. Belalong, a juvenile stage collection, probably belongs here.

Specimens Examined: BORNEO. SARAWAK : Ulu Sg. Lebau, Lambir Hill National Park, *Ilias Paie & Yeo Eng Teck* *S* 38376 (CGE, K, KEP!, L, SAN!, SAR!).

19. *Ficus cereicarpa* Corner var. *ashtonii* Kochummen var. nov.

A varietate typica in ramulis crassioribus, foliis maximis cordatisque, ficis longe pedunculatis differt. Typus : P.S Ashton S 17806, Borneo, Sarawak, Balleh, Ulu Selentang (holotypus KEP; isotypi A, BO, CGE, K, L, SAR, SING).

Small tree to 6 m tall. Twigs 10–18 mm thick, glabrous and prominently ridged with prominent stipular scars, young twigs covered with patent brown hairs. Stipules to 5 cm long covered with patent brown hairs. Leaves elliptic or oblong, 32–43 x 20–24 cm, lower surface sparsely brown hairy on the midrib and lateral veins, base distinctly cordate, apex pointed, lateral veins 16–20 pairs, palmately veined at base; petioles 9–14 cm long, covered with patent brown hairs when young, becoming glabrous. Syconia borne at base of bole, pear-shaped, 2.5–3 x 2.5–3 cm, surface hairy, with thick lateral bracts, peduncle 3 cm long.

Distribution: Endemic to Borneo; recorded only from Sarawak.

Ecology: Lowland forest by streams.

Notes: Differs from the typical variety in the stouter twigs, very large cordate leaves and in the long-peduncled figs.

Specimens Examined: BORNEO. SARAWAK : Balleh, Ulu Selentang, *P.S. Ashton S 17806* (A, BO, CGE, K, KEP!, L, SAR!, SING!); Lambir National Park, Sg. Riam Libau, *Rena George S 40302* (CGE, E, K, KEP!, L); Belaga, Sg. Iban, *Bernard Lee S 45512* (CGE, K, L, MO, SAN!, SAR!).

20. *Ficus deltoidea* Jack var. *recurvata* Kochummen var. nov.

(Latin, *recurvatus*=curved backwards; the leaf margin)

Ab varietatibus aliis Fici deltoideae in foliis maioribus crasse coriaceis marginibus valde recurvatis differt. Typus : Othman, Yii et al. S 48969,

Borneo, Sarawak, Tubau (holotypus KEP; isotypi SAN, SAR).

Epiphyte. *Leaves* thickly leathery, deltoid, 7.5–12 x 4–10 cm, base tapered, apex rounded, margin curled inwards; midrib forked, sunken above on the lower half; lateral vein 1 pair, trinerved; intercostal veins reticulate, visible below, invisible above; petioles 1–3 cm long, channelled above. *Syconia* green with brown tip when fresh, becoming black on drying; subglobose, c. 12 mm across, apex umbonate, peduncle short. *Gall flowers* with irregularly lobed ovary and short style; tepals 3 in male and gall flowers. *Female flowers* not seen.

Distribution: Endemic to Borneo; rare, recorded from Bintulu, Semengoh, Simanggang and Tubau in Sarawak.

Ecology: Lowland swamps to submontane forest.

Notes: Differs from other varieties of *F. deltoidea* in the larger thickly leathery leaves with distinctly recurved margins.

Specimens Examined: BORNEO. SARAWAK : Simanggang, E.W.F.O. Brunig S 4807 (SAR!); Arboretum, Semengoh F.R., J.A.R. Anderson S 12930 (SAR!); Tubau, Dataran Tinggi Merurong, Othman Yii et al. S 48969 (K, KEP!, L, SAN!, SAR!); Ulu Sg. Kemena, Selah, Tatau, Rantai Jawa S 65653 (SAR!).

21. *Ficus deltoidea* var. *subhirsuta* Kochummen var. nov.

(Latin, sub=somewhat, *hirsutus*=rough hair covering; the figs)

A varietatibus aliis Fici deltoideae in ficis pubescentibus et foliis venis lateralibus in 4 vel 5 paribus differt. Typus : Yii P. C. S 48452, Borneo, Sarawak, Batang Balleh, Bukit Melatai (holotypus KEP; isotypi CGE, K, L, SAN, SAR).

Epiphyte. *Twigs* dark brown, scaly. *Leaves* in life yellowish on the under surface; obovate, 2.2–3.5 x 1.7–2 cm, base tapered, apex rounded; midrib forked near the apex; lateral veins 4–5 pairs, curving and joining near margin, distinct below, faint above; petioles 3–6 mm long. *Syconia* axillary, red when ripe, solitary, elliptic, c. 3 x 2 mm, surface rough hairy; peduncles c. 2 mm long; basal bracts persistent, hairy.

Distribution: Endemic to Borneo, very rare, known only from Sarawak.

Ecology: Hill forest at 870 m altitude.

Note: Differs from other varieties of *F. deltoidea* in having hairy figs and leaves with 4–5 pairs of lateral veins.

Specimens Examined: BORNEO. SARAWAK : Batang Balleh, Bukit Melatai, Yii P. C. S 48452 (CGE, K, KEP!, L, SAN!, SAR!).

22. *Ficus obscura* Blume var. *lanata* Kochummen var. nov.

(Latin, *lanatus*=woolly)

A varietate typica in pilis lanuginosis in ramulis foliisque differt. Typus: Henry T. Sinanggul SAN 57361, Borneo, Sabah, Semporna, Kuala Kalumpang (holotypus KEP; isotypus SAN).

Twigs with woolly reddish brown hairs. *Leaves:* petioles and undersurface of leaves woolly hairy, uppersurface rough to touch. *Syconia* from leaf axils and on twigs below leaves, in pairs or in clusters, sessile or with peduncles, covered with woolly hairs, subglobose, 8–10 mm broad.

Distribution: Endemic to Borneo, frequent in Sabah, very rare in Sarawak.

Ecology: Lowland and hill forest, often by streams, at Serian on limestone.

Note: Differs from the typical variety in having woolly hairs on the twigs, leaves and figs.

Specimens Examined: BORNEO. SABAH : Lahad Datu, Kennedy Bay Timber Co. Road, G.H.S. Wood SAN 16080 (A, BO, BRI, K, KEP!, L, SAN!, SING!); Semporna, Kuala Kalumpang, Henry T. Sinanggul SAN 57361 (KEP!, SAN!); Ranau, Kampung Takutan, G. Shea & Aban SAN 77208 (A, K, KEP!, L, SAN!, SAR!, SING!); Kalabakan, Hap Song logged area, Fedilis & Sumbing SAN 91428 (BO, K, KEP!, L, SAN!, SAR!, SING!); Kalabakan, Fedilis Krispinus SAN 94809 (KEP!, SAN!, SAR!), SAN 95899 (KEP!, SAN!); Ranau, Poring, Amin et al. SAN 121496 (KEP!, SAN!). SARAWAK : Serian, S 28102 (SAR!).

23. *Ficus oleifolia* King var. *calcicola* Kochummen var. nov.

(Referring to the limestone habitat)

A varietatibus aliis Fici oleifoliae in venatione indistincta et habitatione calcarea differt. Typus : Bernard Lee S 38626, Borneo, Sarawak, Gunung Doya (holotypus KEP; isotypi CGE, K, L, SAN, SAR).

Small tree to 4.5 m tall. *Twigs* grey brown. *Stipules* linear, c. 4 mm long.

Leaves elliptic, drying to greenish yellow; base cuneate, apex pointed, margin recurved; midrib raised above, lateral veins and intercostal veins very faint to inconspicuous; petioles 7–10 mm long. *Syconia* ellipsoid to subovoid, c. 3 mm diameter, apex umbonate; peduncles 3–4 mm long.

Distribution: Endemic to Borneo; recorded only from the 1st Division in Sarawak, locally frequent.

Ecology: Limestone forest.

Note: Differing from other varieties of *F. oleifolia* in the indistinct venation and its limestone habitat.

Specimens Examined: BORNEO. SARAWAK : Bau, G. Jebong, *Banyeng Ludong* S 38535 (CGE, K, KEP!, L, SAN!, SAR!); G. Doya, *Bernard Lee* S 38626 (CGE, K, KEP!, L, SAN!, SAR!); G. Jambuan, *Bernard Lee* S 38604 (CGE, K, KEP!, L, SAN!, SAR!); G. Majar, Tebekang, *Yii & Othman* S 46283 (CGE, K, KEP!, L, SAN!, SAR!); Bukit Jambusam, Bau, *Yii et al.* S 50349 (CGE, K, KEP!, L, SAN!, SAR!).

24. *Ficus oleifolia* King var. *impressicostata* Kochummen var. nov.

(Latin, *impressus*=sunken, *costa*=midrib; midrib impressed above)

Prope Ficum oleaefoliam var. *memecylifoliam*, sed in foliis costa immersa differt. **Typus** : *Ilias Paie* S 40961, Borneo, Sarawak, Kapit, Melinau (holotypus KEP; isotypi CGE, K, L, SAN, SAR).

Epiphyte. *Leaves* elliptic, base cuneate, apex pointed; midrib sunken above, lateral veins and intercostal veins very faint to invisible; petioles short, 2–3 mm long. *Syconia* oblong to subglobose, 3–4 mm wide, on 5–8 mm long slender peduncles.

Distribution: Endemic to Borneo; reported only from Sarawak, rare.

Ecology: Hill and submontane forest between 700–1300 m altitude.

Notes: Very close to var. *memecylifolia* but differing in the leaves with the midrib sunken.

Specimens Examined: BORNEO. SARAWAK : Ulu Melinau, Hose Mountains, *Paul Chai et al.* S 37304 (CGE, K, KEP!, L, MO, SAN!, SAR!); Anap, Bukit Mersing, *Sibat ak Luang* S 21943 (A, BO, K, KEP!, L, MEL, P, SAN!, SAR!, SING!); Kapit, Melinau, *Ilias Paie* S 40961 (CGE, K, KEP!, L, SAN!, SAR!).

25. *Ficus sundaica* Blume var. *impressicostata* Kochummen var. nov.

A varietatibus aliis Fici sundaicae a folii pagina superiore costa immersa distinguendam. Typus : Talip Bidin SAN 80664, Borneo, Sabah, Papar, Mandahan (holotypus KEP; isotypi K, L, SAN, SAR, SING).

Twigs grey brown, ridged. *Stipules* glabrous, ovate-lanceolate, 1–1.5 cm long. *Leaves* elliptic to narrowly obovate, 6.5–11 x 2.8–5.5 cm; drying chocolate brown; base broadly cuneate, apex cuspidate with short tip, margin wavy, recurved; midrib sunken above; lateral veins 5–6 pairs with 3–4 intermediate veins between each pair, looping and joining near margin to form an intramarginal vein, trinerved, basal pair reaching more than half the length of blade, very faint on both surfaces; intercostal veins reticulate, very faint below, almost invisible above; petioles 1.5–2 cm long, distinctly channelled above. *Syconia* axillary, sessile, oblong, 15–22 x 12–20 mm, yellowish when fresh, irregularly wrinkled on drying, apex almost flattened; basal bracts large, ovate, c. 10 x 8 mm, persistent.

Distribution: Endemic to Borneo. Common and widely distributed in Sabah and Sarawak.

Ecology: Lowland forest on sandy soils, in *kerangas* and peat swamp forests.

Notes: It is distinguished from the other varieties of *F. sundaica* by the midrib, which is impressed on the upper surface.

Specimens Examined: BORNEO. BRUNEI : Bukit Pasir Puteh, *Ladi anak Bikar BRUN 5116* (BRUN, KEP!); Seria, *B.E. Smythies et al. S 5864* (BRUN, KEP!, SAR!); Temburong, *S. Atkins et al. 498* (BRUN, K, KEP!); Belait, Badas, *M.J.E. Coode et al. 6470* (BRUN, K, KEP!), *D. Kirkup et al. 387* (BRUN, K, KEP!); Tutong, Pasir Puteh, *M.J.E. Coode et al. 6850* (BRUN, K, KEP!); Tutong, Tanjong Maya, *D.A. Simpson et al. 2188* (BRUN, K, KEP!); Tutong, Bukit Pasir, *K.M. Wong 161* (BRUN, K, KEP!). SABAH : Papar, Kimanis F.R., *Aban Gibot SAN 49382* (SAN!); Papar, Bongawan F.R., *Dewol & Talip Bidin SAN 80345* (A, KEP!, OX, SAN!, SAR!, SING!); Papar, Mandahan, *Talip Bidin SAN 80664* (K, KEP!, L, SAN!, SAR!, SING!); Beaufort, Hindian F.R., *Talip Bidin SAN 84555* (KEP!, SAN!, SAR!); Sipitang, Malalia F.R., *R.A. Marsal & Heya SAN 86202* (KEP!, SAN!); Sipitang, Maritinetaman Forest Area, Ag. *Amin & Heya SAN 86485* (KEP!, SAN!, SAR!, SING!); Membakut, Sg. Damit, Ag. *Amin SAN 103271* (K, KEP!, L, SAN!, SAR!); Weston, Sianggu F.R., Ag. *Amin SAN 105981* (KEP!, SAN!); Sipitang, Mengalong F.R., *L. Madani SAN 111407* (KEP!, SAN!); Sipitang, Melakis F.R., Ag. *Amin SAN 114863*

(KEP!, SAN!). SARAWAK : Miri, Lambir Hills, *Joseph Au S 17259* (A, BO, CGE, K, L, MO, SAN!, SAR!); Balingian, Begruh, Bawan, *Paul Chai S 19474* (A, BO, CGE, K, L, SAN!, SAR!, SING!); Baram, Mt Dulit, *Sylvester Tong S 34898* (CGE, K, KEP!, L, MO, SAR!); Ulu Simunjan, G. Buri, *Bernard & Ilias S 36850* (CGE, K, KEP!, L, MO, SAR!); 99th mile Sri Aman, Kampung Gum, *Ilias Paie S 42734* (CGE, K, KEP!, L, SAN!, SAR!); 99th mile Sri Aman, *Ilias Paie S 42739* (CGE, K, KEP!, L, MO, SAN!, SAR!); Batang Balleh, Bukit Melatai, *Yii P. C. S 48453* (CGE, K, KEP!, L, SAN!, SAR!).

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