

## NEW TAXA OF FICUS (MORACEAE)

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### SUMMARY

*F. spadicea* sp. nov. (sect. *Adenosperma*, near *F. mollior* Benth.) is described from New Guinea; *F. sarawakensis* sp. nov. (sect. *Kalosyce*, near *F. tulipifera* Corner) from Sarawak; *F. theophrastoides* Seem. var. *angustifolia* var. nov., as a riparian variety from the Solomon Islands.

**278 A.<sup>1</sup>) *Ficus sarawakensis* Corner, sp. nov.** (sect. *Kalosyce* ser. *Punctatae* subser. *Ruginerviae*). — **Figure 1.**

Scandens, cauliflora. Lamina 9—15 × 2.6—3.8 cm, lanceolato-elliptica acuta, valde coriacea dura, sicca fragilis, margine anguste reflexo, subscabrida, foveolis subtus glabris; costis lateralibus utrinsecus 9—12; petiolo—35 mm longo. Receptacula 13—20 mm lata (sicca), subglobosa; pedunculo 0—5 mm longo; pedicello 3—12 mm. Typus: S. 28606, Sarawak (CGE).

A large root-climber similar in habit to *F. aurantiacea* Griff., cauliflorous on the main stems. Young twigs, petioles, and undersides of the main veins thinly or sparsely puberulous with whitish erect hairs 0.1—0.3 mm long, the underside of the veins with similar or longer and more crowded hairs 0—0.5 mm long, on the young figs — 1 mm long. Twigs 3—4 mm wide, somewhat flattened. Stipules —10 mm long, glabrous or puberulous on the keel, subpersistent. Lamina 9—15 × 2.6—3.8 cm, lanceolate-elliptic, slightly inequilateral, acute, very coriaceous, hard, brittle, the margin narrowly reflexed, subscabrid on both sides, drying brown, base subcuneate and often unequal; lateral veins 9—12 pairs, impressed above, prominent beneath, the reticulations impressed above and prominent beneath, with glabrous foveolate areolae sparsely fringed with leaf-hairs; intercostals 0—1; basal veins 1 pair, short; petiole 10—22 mm long, with scaling epidermis. Bathyphylls similar but smaller, thinner, smooth, without foveolate areolae, with fewer lateral veins (6—9 pairs); intermediate leaves larger and more broadly elliptic, —20 × 8 cm, with narrowly subcordate and slightly asymmetric base, the petiole —35 mm long. Figs puberulous then glabrescent, crowded on short, woody, leafless, cauliflorous twigs without internodes; young twigs often persistently and densely stipulate, reaching 4 cm × 10 mm; ripening red (? then black); peduncle 0—5 mm long; basal bracts 3, 1—1.7 mm long, subtriangular, caducous; pedicel 3—12 mm long; body 13—20 mm wide (dried), subglobose, the orifice closed by 3 small bracts in a slight cone; internal bristles —0.5 mm long, rather sparse, white or brownish. Male flowers 10—13 mm long; perianth red, gamophyllous to the middle; stamen 1, exsert. Gall-flowers sessile, 3—5.5 mm long; tepals 3 or 4, —1.7 mm long, red, lanceolate, free, generally shorter than the ovary. Neuter flowers as sterile male flowers. Female flowers sessile; tepals as in the gall-flowers, as long as the ovary or its stalk; ovary white, sessile or stipitate; stigma scarcely bifid. Seeds

<sup>1</sup>) The new taxa have been numbered for insertion into my check-list of *Ficus* (Corner 1965).

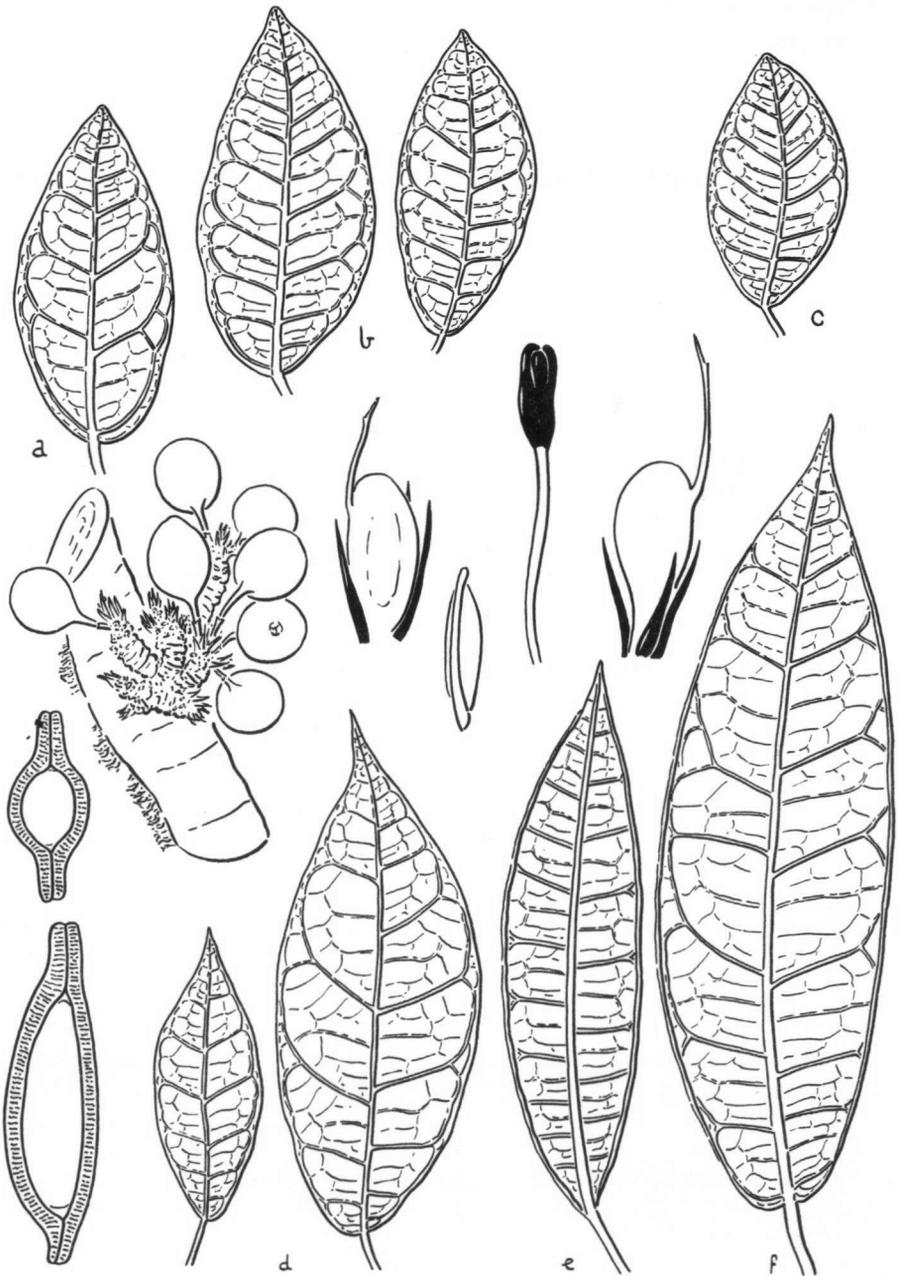


Figure 1. *F. cataupi*; a. Pancho and Wiebes 4189, with prominent basal veins; b. Pancho and Wiebes 4187, two leaves. — *F. tulipifera*; c. RSNB 4766. — *F. sarawakensis*; d. two bathyphylls; e. acrophyll with recurved edges; f. intermediate leaf; figs, female flowers, neuter flower and seeds. Leaves  $\times \frac{1}{2}$ ; figs  $\times \frac{1}{2}$ ; flowers  $\times 10$ ; sections of seed (left)  $\times 25$ .

2—2.3 × 0.9—1.1 × 0.5—0.7 mm (type) or shorter 1.5—1.7 mm long (*Hotta 188*), compressed, keeled all round.

*Lamina* (microscopic characters); epidermal cells polygonal, often with crystals; hypodermis 3—5 cells thick on both sides of the leaf, many cells with crystals; palisade 4 or 5 cells thick; cystoliths hypogenous; stomata superficial in the sunken epidermis of the areolae, the surrounding cuticle striate; gland-hairs peltate, but a few simple and capitate. *Hairs* thick-walled, smooth, acute, closely septate, slightly lignified. *Endocarp* as a single layer of thick-walled sclerotic cells with irregular undulate outline.

*Habitat*: in lowland and mountain forest — 1400 m alt.

BORNEO. *Sarawak*. *Corner s.n.*, Santubong; *Hirana & Hotta 188*, Bintulu Dist.; *Purseglove 5135*, Sana, Sungei Tau; *B. E. Smythies & E. J. H. Corner S 13739*, Kuching, Sungei China, Lundu Rd.; *J. Seal S 11730*, Kuching, Matang Waterworks; *J. A. R. Anderson & Ilias bin Paie S 28606*, Kapit Dist., Bukit Tibang, Indonesian border, at east end of Balleh-Batang Ridge, 1300 m alt., in primary forest, 9-7-1969 (type).

*Notes*. The early collections of this species consisted of bathyphylls and intermediate leaves which I named *F. tulipifera* on the supposition that they were the young sterile stages. The latest collection, *S 28606*, comes from a lofty climber and has true acrophylls along with old cauliflorous clusters of figs. It shows that the leaf is persistently lanceolate and longer than in *F. tulipifera*, more symmetric and almost acuminate, while the stomatal pits are glabrous; the hairs on the twigs and leaves are also much shorter than in *F. tulipifera*. Both species are close and suggest merely varieties of one, but they impinge on *F. cataupi* (Mindanao) which complicates the problem. In leaf-shape and short petiole *F. cataupi* agrees with *F. tulipifera* and, as both lack the large intermediate leaves which occur in *F. sarawakensis*, they emphasize this obvious distinction. But, in the very short hairs and glabrous stomatal pits, *F. cataupi* agrees with *F. sarawakensis*. It seems, too, that the figs of *F. cataupi* are larger than in the Bornean species and, possibly, may not become cauliflorous. The exact relationships, geographical and systematic, between the three species (or subspecies) may be discovered from further and more critical field-study. Neither *F. cataupi* nor *F. tulipifera* have been found in the lowlands, and *F. sarawakensis* has not been reported from Sabah, in spite of much collecting in the lowlands. The following key brings out the distinctions, so far as known.

Leaves acute, almost acuminate, very coriaceous; petiole 10—35 mm long. Acrophylls lanceolate, subsymmetric, with 9—12 pairs of lateral veins; intermediate leaves with more elliptic lamina — 20 × 8 cm, with narrowly subcordate base; bathyphylls acutely subacuminate. Stomatal pits glabrous. Hairs on twigs and petioles 0.1—0.3 mm long, on the young figs — 1 mm, on the underside of the leaf — 0.5 mm. Fig. 13—20 mm wide (dried), cauliflorous. Stipules subsistent. *Sarawak, lowland and montane.*

*F. sarawakensis*

Leaves subacute, not acuminate; petioles 2—10 mm long. Acrophylls distinctly asymmetric; intermediate leaves not large; bathyphylls subacute.

Lateral veins 7—11 pairs. Stomatal pits densely hairy. Hairs on twigs and petioles — 1.5 mm long. Gall-figs 25—32 mm wide (dried), cauliflorous. Stipules subsistent. *Kinabalu, montane*. *F. tulipifera*

Lateral veins 5—9 pairs. Stomatal pits almost or quite glabrous. Hairs on twigs and petioles — 0.3 mm long. Gall-figs 50 × 40 mm (dried), ? not cauliflorous. *Mindanao, montane* . . . . . *F. cataupi*

### 382 *A. Ficus spadicea* Corner, *sp. nov.* (sect. *Adenosperma* ser. *Amphigenae*). — **Figure 2.**

Arbor ut *F. mollior* Benth. sed ramulis foliis receptaculisque pilis rigidis spadiceis 1—2 mm longis vestitis; lamina ovato-acuminata, basi rotundata v. subtruncata; costis lateralibus utrinsecus 5 vel 6, basalibus elongatis; petiolo 14—30 mm longo; receptaculis axillaribus (immaturis). Typus: *NGF 45806* (CGE).

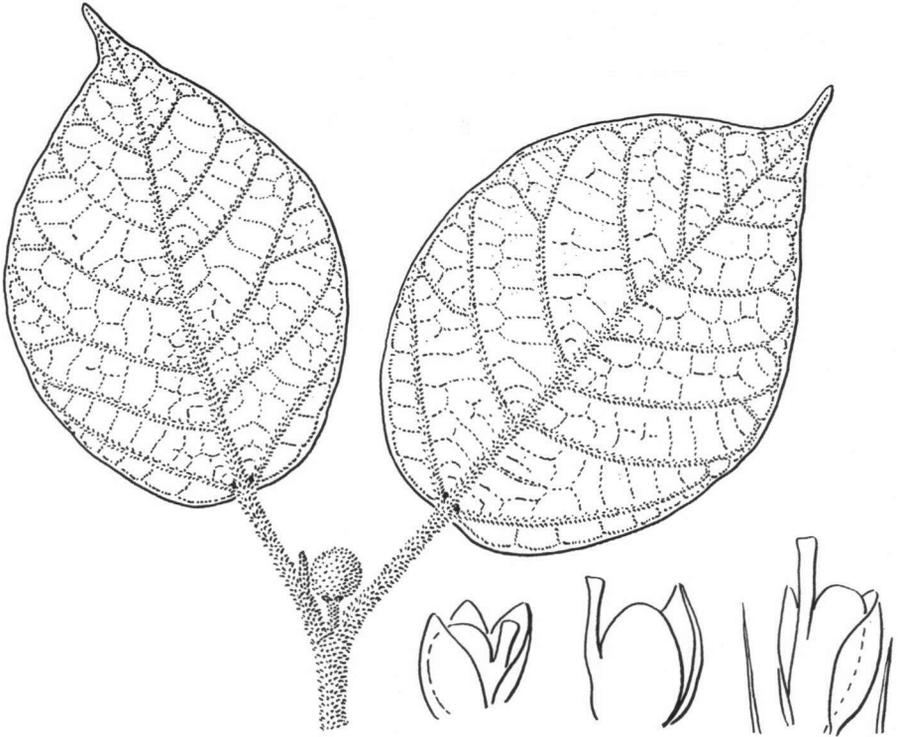


Figure 2. *F. spadicea*; NGF 45806; twig  $\times \frac{1}{2}$ , flowers  $\times 10$ .

Tree; leaves spirally arranged. Twigs, petioles, and main veins on the underside hispid villous with spreading, persistent, dark brown hairs 1–2 mm long; on the smaller veins, on the upperside of the midrib, and on the figs paler and shorter, 0.2–1 mm long. Twigs 3–4 mm thick, drying rugulose. Stipules 9–14 mm long, brown hairy or with glabrous sides, caducous. Lamina 8–14  $\times$  4.5–10 cm, ovate with acuminate apex —12 mm long, base rounded to subtruncate, entire, subcoriaceous, not scabrid, hispid villous beneath, subglabrous above, drying fuscous brown or blackish brown above, greenish brown to brown beneath; lateral veins 5 or 6 (7) pairs, prominent beneath; intercostals —6, finely raised, areolae glabrous; basal veins 1 or 2 pairs, the larger reaching  $\frac{1}{4}$ — $\frac{1}{3}$  of the lamina, with 2 basal glands; petiole 14–30 mm long. Figs axillary, solitary, immature, brown villous; peduncle 4–7 mm long; basal bracts 3, 1.5–2 mm long, hairy; body c. 10 mm wide, without lateral bracts, with 5 umbonate apical bracts; internal bristles —1 mm long, sparse, pallid; sclerotic cells in the endocarp of the fig-wall. Female flowers sessile; tepals 3, free, membranous, shortly oblong-acute, pallid or pinkish; ovary red-brown, compressed, with lateral style. Leaf with cystoliths on both sides.

Habitat: in primary forest at 2000 m alt., New Guinea.

NEW GUINEA. Southeast. Western Dist. D. B. Foreman & M. Galore NGF 45806, Kiunga Subdist., near Berlin Camp-site, Ok Tedi R.



Figure 3. *F. theophrastoides* var. *angustifolia*; BSIP 17410; leaves  $\times \frac{1}{2}$ ; leaf-base from the underside,  $\times 3$ .

**Notes.** These twigs indicate a tree allied with the common and variable *F. mollior*, but distinguished at once by the firmer leaves, drying an unusually dark colour, the more regular ovate-subcordate lamina and, above all, by the villous indumentum of dark snuff-brown, stiff hairs. Superficially it resembles the hairy state of *F. gul*, but the flowers are unmistakably those of sect. *Adenosperma*. In other sections of subgen. *Ficus* dark hairs occur among the more primitive species, and this may be their indication in *F. spadicea*.

**405. *Ficus theophrastoides*** Seem., Fl. Vit. (1868) 252; Corner, Phil. Trans. Roy. Soc. B 253 (1967) 132, f. 51, 52.

**b. var. *angustifolia*** Corner, *var. nov.* — **Figure 3.**

Frutex —70 cm alta, foliis brevipetiolatis angustis lanceolatis; lamina 20—30 × 1.5—2.2 cm; costis lateralibus utrinsecus 18—20. Typus: BSIP 17410 (L.)

Shrub — 70 cm high, glabrous except the young stem and petioles which are thinly puberulous with minute, white, appressed, and finely hooked hairs —0.3 mm long, soon glabrous. *Stem* 2—3 mm thick in the leafy part, the leaves spirally arranged. *Stipules* —13 mm long, subpersistent, paired, glabrous. *Lamina* 20—30 × 1.5—2.2 cm, lanceolate, apex attenuate and shortly mucronate, base attenuate and narrowly auricled on both sides, entire, subcoriaceous, smooth, drying brown; lateral veins 18—20 pairs, slightly raised beneath, many with a small axillary gland; intercostals 0 or 1; basal veins 4 or 5 pairs, very short or minute, with a large basal gland on each side of the midrib; petiole 5—10 mm long. *Figs* axillary, paired, immature but evidently as in var. *theophrastoides*; peduncle 3—4 mm long; basal bracts 3, 1—1.5 mm long; body *c.* 10 mm wide; internal bristles none. *Male flowers* ostiolar; stamen 1. *Gall-flowers* sessile and shortly pedicellate; perianth short, wide, cupular, covering the lower third of the white ovary, colourless. Cystoliths abundant on both sides of the lamina.

**Habitat:** among rocks by a stream at low altitude, Solomon Islands.

SOLOMON ISLANDS. Choiseul. I. Gafui BSIP 17410, Ologhata Harbour, alt. 80 m.

Young plants of *F. theophrastoides*, about the height of this variety, are commonly seen in coconut estates, in secondary forest, and occasionally by streams in the primary forest; they have rather narrow leaves 4—7 cm wide. This collection evidently represents a very narrow-leafed riparian form, worthy of recognition because this willow-leafed form is the final state of leaf-evolution in very diverse species of *Ficus*. The single stamen, the auricled leaf-base, the short petiole, the shape of the fig, the amphigenous cystoliths, and the minutely hooked hairs prove the connection with the robust *F. theophrastoides*.

#### REFERENCE

CORNER, E. J. H. 1965. Check-list of *Ficus* in Asia and Australasia. Gdns' Bull., Singapore 21: 1—186.