New taxa and combinations in *Ficus* (*Moraceae*) of Africa

C. C. Berg*

Summary. From continental Africa 4 new species and 4 new subspecies of *Ficus* are described: *F. chirindensis*, *F. faulkneriana*, *F. muelleriana*, *F. pachyneura*, *F. ottoniifolia* subsp. *macrosyce* & subsp. *multinervia*, *F. polita* subsp. *brevipedunculata*, and *F. scassellatii* subsp. *thikaensis*; thirteen new combinations at subspecific rank are made. For *F. calyptrata* Vahl a neotype is designated.

Studies on *Ficus*, especially for the Flora of Tropical East Africa and Flora Zambesiaca, has led to the recognition of new taxa, the reduction of several species to subspecific level, and to one neotypification. The species are arranged alphabetically.

1. Ficus ardisioides *Warb.* in Bot. Jahrb. 20: 171 (1894). Type: Zaire, Munsa, *Schweinfurth* 3352 (holotype B!; isotype K!).

a. subsp. **ardisioides**

Figs on peduncles 0·2–0·9 cm long.

Distribution. Zaire (Equateur and Orientale) and the adjacent part of the Central African Republic.

b. subsp. **camptoneura** (*Mildbr.*) *C. C. Berg* stat. et comb. nov.

F. camptoneura Mildbr. in Bot. Jahrb. 46: 233 (1911). Type: Cameroun, Buea, *Deistel* s.n. (holotype B!).

F. camptoneura Mildbr. var. *angustifolia* Mildbr. in tom. cit. 234. Type: Zaire, Mawambi, *Mildbraed* 3107 (holotype B!; isotype BR!).

F. arcuato-nervata Hutch. in Bull. Misc. Inf., Kew 1915: 339 (1915). Type as *F. camptoneura* var. *angustifolia*.

Distribution. SE Nigeria to E Zaire, also in N Zambia; possibly in Ivory Coast.

2. Ficus calyptrata *Thonn.* ex *Vahl*, Enum. 2: 186 (1805); Schumacher, Beskr. Guin. Pl. 27 (1827). Type: Ghana ['Danish Guinea'], *Thonning* s.n. (C, not found). Neotype: Ivory Coast, ca. km 20 Guiglo-Taï, *Berg & Wiebes* 1497 (neotype U, chosen here; isoneotypes BG, BR, LISC, K, MO, P, PRE, WAG).

F. mallotoides Mildbr. & Hutch. in Bull. Misc. Inf., Kew 1915: 334 (1915). Type: Cameroun, Bange, *Mildbraed* 4379 (holotype B!; isotypes HBG!, K!).

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F. djalonensis A. Chev. in Bull. Soc. Bot. France 61 (Mém. 8): 301 (1917). Type: Guinea, Soya, *Chevalier* 29372 (holotype P!).

Only a few species of *Ficus* subg. *Urostigma* sect. *Galoglychia* have the well-developed, calyptrate bud covers as described by Thonning for *F. ovata* Vahl and *F. calyptrata*. Further taxa possessing such bud covers are *F. amadiensis* De Wild. (East and Central Africa), *F. craterostoma* Mildbr. & Burret (throughout tropical Africa), and *F. natalensis* subsp. *natalensis* (eastern and southern tropical Africa). Material matching the most extensive descriptions of *F. calyptrata* (Thonning's notes published in somewhat modified form by Schumacher, 1828) has probably not been collected again in Ghana (the late J. B. Hall, pers. comm.). However, Thonning's description also largely matches the material described as *F. mallotoides* Mildbr. & Hutch. and *F. djalonensis* A. Chev. and thus reinstatement and neotypification of *F. calyptrata* appears to be justified. Distribution patterns of *Ficus* species occurring in West Africa suggest that *F. calyptrata* will be refound in Ghana.

3. Ficus chirindensis *C. C. Berg* sp. nov.

Arbor. Lamina oblonga vel elliptica vel ovata, 6–12 × 3·5–5 cm, apice acuminata vel subacuminata, basi cordata usque emarginata, utraque facie glabra vel costa minute puberula; venae laterales 9–12-jugae; petiolus 2–4 cm longus; stipulae 0·3–0·5 cm longae, appresse albo-puberulae, caducae. Syconia in calcaribus ad ramos vestustiores inserta; pedunculus 1·5–2 cm longus; bracteae basales caducae; receptaculum globosum, 2·5–3 (statu sicco 1·5–2·5) cm diametro. Typus: Zimbabwe, Chipinga Distr., Chiringa Forest, June 1964, *Goldsmith* 23/64 (holotypus SRGH; isotypi BR, K, LISC, WAG).

Tree up to 35 m tall, often(?) with pillar-roots. Leafy twigs 1·5–3 mm thick, minutely puberulous, when dry mostly dark brown to blackish. Leaves in spirals; lamina oblong to elliptic to subovate or ovate, (4–)6–12(–16) × (2·5–)3–5·5(–7·5) cm, (sub)coriaceous, apex acuminate to subacuminate, base cordate to emarginate to truncate, sometimes rounded or obtuse), margin entire; upper surface minutely puberulous on the midrib or glabrous, lower surface minutely puberulous on the main veins, sometimes glabrous; lateral veins (6–)8–12 pairs, tertiary venation reticulate; petiole (1·5–)2–4(–6) cm long, 1·5–2 mm thick; stipules 0·3–0·5 cm (on flush up to 4 cm long), outside with appressed (on long stipules with patent) white hairs, caducous. Figs up to 3 together on spurs up to 2 cm long on the older wood, down to the main branches; bud-scales of the spurs glabrous or sparsely puberulous; peduncle (1–)1·5–2(–4) cm long, c. 1·5 mm thick; basal bracts c. 2·5(–3) mm long, caducous; receptacle globose or subglobose, when fresh 2·5–4 cm, when dry 1·5–3 cm diam., minutely puberulous, at maturity greenish to pale yellow with brown spots; wall when dry c. 1 mm thick; all ostiolar bracts descending. Staminate flowers dispersed; pedicels up to 2 mm long; tepals 3, free, c. 2 mm long. Pistillate flowers: tepals 3(–4), 2–2·5 mm long; stigma 1; seed flowers sessile or on pedicels up to 0·5 mm long, style (including stigma) c. 1·5–3 mm long; gall flowers on pedicels up to 2 mm long, style (including stigma) 0·5–2 mm long; fruits ellipsoid to ovoid, 1·5–2 mm long; "gall fruits" obovoid to ellipsoid, 2·5–4 mm long, mostly (up to 2 mm long) stipitate. Interfloral bracts up to 3 mm long. Fig. 1.

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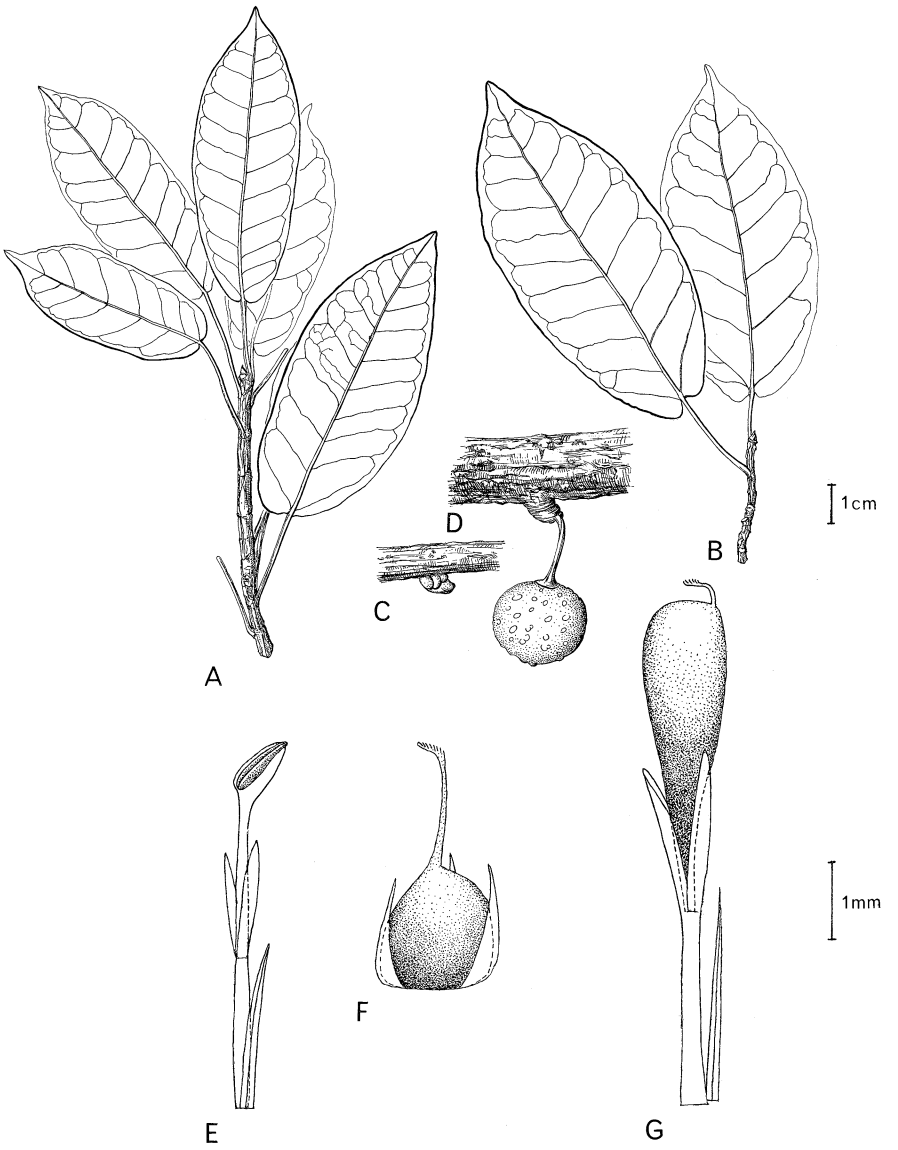


FIG. 1. *Ficus chirindensis*. **A** leafy twig (from *Goldsmith* 23/64); **B** leafy twig; **C** spur; **D** spur with fig (from *Chase* 8526); **E** staminate flower; **F** seed flower; **G** gall flower with interfloral bract (from *Berg, Müller & Campbell* 1335). Drawn by Miss E. M. Hupkens van der Elst & Mr T. Schipper.

ZAIRE. Oriental Prov., near Nioka, Mutshapa, 7 Nov. 1945, *Wilbaux* 324 (BR).

KENYA. Thika, Thika R., near Bulley's Tannery, c. 1600 m, 24 May 1967, *Faden* 67/149 (K).

TANZANIA. Moshi District: Kibosho, July 1930, *Doughty* 16 (K). Rungwe District: Kyimbila Station, 1600–1700 m, 1913, *Stolz* 1907 (K, WAG), 1913, *Stolz* 2048 (BM) & 8 Jan. 1914, *Stolz* 2415 (BM, BR, K).

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MOZAMBIQUE. Tete: Ulongue, Serra Domue, 9 Dec. 1980, Macuacua (LM) 1487 (U); Zobue, 3 Oct. 1942, *Medonça* 578 (LISC).

MALAWI. Northern Region: Misuku Hills, Mugesse Forest, c. 1700 m, 27 Feb. 1983, *Dowsett-Lemaire* 642 (FHO). Central Region: Chiradzulu, Lisau Forest, 1300–1400 m, 8 Sept. 1983, *Dowsett-Lemaire* Ecol. 226 (FHO); Thyolo Mt, 1150–1400 m, 2 Nov. 1983, *Dowsett-Lemaire* Ecol. 271 (FHO) & April 1984, *White* 1407 (FHO); Ntchisi Forest, 1450–1600 m, 30 Jan. 1983, *Dowsett-Lemaire* 587 (FHO, K); Chipalumbe Gorge, c. 1250 m, 15 May 1968, *Chapman* 567 (K); Mulange, Ruo Gorge, above Liyeri Tea Estate, 3 June 1984, *Meredith* s.n. (U). Southern Region: Mpita lowland, near Thondwe, c. 1100 m, 8 Sept. 1983, *Meredith* s.n. (U); Tobacco Estate, Thondwe, 1100 m, 4 May 1982, *Chapman & Tawakili* 6167 (K).

ZIMBABWE. Umtali District: W of Murakwa's Hill, Commonage, c. 1250 m, 12 June 1962, *Chase* 7759 (K), 29 Aug. 1962, *Chase* 7801 (K) & 15 Feb. 1969, *Chase* 8526 (SRGH); Vumba Mts, c. 1570 m, 11 Feb. 1982, *Berg, Müller & Campbell* 1355 (K); Ziani Forest, March 1935, *Gilliland* 1778 (BM, K). Chipinga District: Chirinda Forest, c. 1250 m, June 1964, *Goldsmith* 22/64 (K, SRGH), c. 1200 m, June 1964, *Goldsmith* 24/64 (K) & c. 1300 m, 19 May 1906, *Swynnerton* 431 (BM).

F. chirindensis is apparently a component of submontane forest at altitudes between 1000 and 1600 m.

The new species belongs to subgen. *Urostigma* sect. *Galoglychia*. It can be easily confused with *F. sansibarica* subsp. *sansibarica* and *F. ottoniifolia* subsp. *ulugurensis*. This fact, and the scarce representation of the species in herbaria, often with incomplete material, are the main causes that the species has been so far overlooked.

The three taxa can be told apart by characters of the stipules: *F. sansibarica* subsp. *sansibarica* has ciliate stipules; in *F. chirindensis* the outside of the stipules bears appressed (or on long stipules of flush shoots patent) white (short!) hairs, and *F. ottoniifolia* subsp. *ulugurensis* has glabrous stipules.

4. F. chlamydocarpa *Mildbr. & Burret* in Bot. Jahrb. 46: 244, t. 5 (1911). Type. Cameroun, *Lederman* 1733 (holotype B!; isotype K!).

a. subsp. **chlamydocarpa**

F. clarencensis Mildbr. & Hutch. in Bull. Misc. Inf., Kew 1915: 333 (1915). Type: Fernando Po, *Mildbraed* 6408 (holotype B!; isotypes HBG!, K!).

Plants ± hairy, at least on the stipules. Basal bracts 1·5–2·5(–3) cm long.

DISTRIBUTION. Cameroun and Fernando Po; 1300–2000 m.

b. subsp. **fernandesiana** (*Hutch.*) *C. C. Berg* stat. et comb. nov.

F. fernandesiana Hutch. in Exell, Suppl. Cat. Vasc. Pl. Sao Tome 43 (1956). Type: São Tomé, *Espirito Santo* 47 (holotype BM!).

Plants entirely glabrous, even on the stipules. Basal bracts c. 0·5 cm long.

DISTRIBUTION. São Tomé (and probably introduced in Gabon, Libreville); low altitudes.

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c. subsp. **latifolia** (*Hutch.*) *C. C. Berg* stat. et comb. nov.

F. eriobotryoides Kunth & Bouché var. *latifolia* Hutch. in Prain, Fl. Trop. Afr. 6 (2): 161 (1916). Type: Annobon, *Mildbraed* 6517 (lectotype K!, chosen here).

Plants ± hairy, at least on the stipules. Basal bracts c. 0·5 cm long.

Distribution. Annobon; low altitudes.

5. Ficus cordata *Thunb.*, Diss. Fic. 8 (1786). Type: herb. Thunberg nr. 24343 (UPS, microfiche seen).

a. subsp. **cordata**

Urostigma cordatum (Thunb.) Gasp., Ricerch. Caprific. Fic.: 82 (1845). Type as for *F. cordata*.
F. tristis Kunth & Bouché in Index Sem. Hort. Berol. 1846: 19 (1847). Type: Hort. Bot. Berol. 17 Sept. 1846 (holotype B!).
U. thunbergii Miq. in London Journ. Bot. 6: 556 (1847) nom. illegit., superfl. Type as *F. cordata*.
F. welwitschii Warb. in Bot. Jahrb. 20: 160 (1894). Type: Angola, Zenza do Galungo, *Welwitsch* 6356 (lectotype K!, chosen Berg *et al.* 1985 and here; isolectotype P!).
F. welwitschii var. *beroensis* Hiern, Cat. Afr. Pl. Welw. 4: 99 (1900). Type: Angola, Mossamedes, Bero R, *Welwitsch* 6379 (lectotype BM!, chosen Berg *et al.* 1985 and here; isolectotype K!).
F. cordata var. *fleckii* Warb. in Viert. Nat. Ges. Zürich 51: 137 (1906). Type: Namibia, *Fleck* 387a (lectotype Z!, chosen Berg *et al.* 1985).
F. cordata var. *marlothii* Warb. in loc. cit. Type: Namibia, *Fleck* 395 (lectotype Z!, chosen Berg *et al.* 1985).
F. cordata var. *tristis* (Kunth & Bouché) Warb. in loc. cit. Type as for *F. tristis*.

Leafy twigs usually ± densely puberulous to pubescent. Lamina usually cordiform to ovate to elliptic, (2–)4–9 × (1–)2–4·5 cm, apex acuminate to subcaudate, base cordate, truncate or rounded (to subacute); petiole 1–2(–6) cm long, mostly drying yellowish to brown; stipules 0·2–1 cm (on flush up to 5 cm) long, usually puberulous to pubescent. Figs sessile, sometimes subsessile.

Distribution. South Africa (Cape Province), Namibia, NW Botswana, and Angola.

b. subsp. **lecardii** (*Warb.*) *C. C. Berg* stat. et comb. nov.

F. lecardii Warb. in Ann. Mus. Congo VI, 1: 24, t. 11 (1904). Type: Senegal, *Lecard* 197 (holotype BR!; isotype K!).
F. salicifolia var. *latifolia* Hutch. in Fl. Trop. Afr. 6 (2): 116 (1916). Type: Central African Republic, Ndellé, *Chevalier* 6767 (holotype K!; isotype B!).

Leafy twigs glabrous to puberulous. Lamina ovate to subovate to oblong (or lanceolate), apex acuminate to subacute, base cordate, rounded or obtuse (to subacute); petiole 0·8–4·5 cm long, often drying dark brown to blackish; stipules 0·5–1 cm long. Figs mostly on peduncles up to 0·3 cm long, sometimes sessile.

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DISTRIBUTION. Senegal through northern Cameroun and the Central African Republic.

c. subsp. **salicifolia** (*Vahl*) *C. C. Berg* stat. et comb. nov.

F. indica Forssk., Fl. Aegypt.-Arab.: 179 (1775), non L. (1753). Type: Yemen, *Forsskål* s.n. (holotype C!).
F. religiosa Forssk. in tom. cit. 170, non L. (1753). Type: Yemen, *Forsskål* s.n. (holotype C!; isotype B!).
F. salicifolia Vahl, Symb. Bot. 1: 82, t. 23 (1790). Type as for *F. religiosa* Forssk.
Urostigma salicifolium (Vahl) Miq. in London Journ. Bot. 6: 556 (1847).
F. salicifolia var. *australis* Warb. in Viert. Nat. Ges. Zürich 51: 139 (1906). Type: South Africa, Transvaal, *Rehmann* s.n. (holotype Z!).
F. pretoriae Burtt Davy in Trans. Roy. Soc. S. Afr. 2: 365 (1912). Types: South Africa, Transvaal, Magaliesberg, *Burtt Davy* 2750 & 2806 (syntypes PRE!; isosyntypes K!).
F. teloukat Battand. & Trabut in Bull. Soc. Bot. France 58: 674, t. 22 (1912). Type: Algeria, Hoggar, *Trabut* s.n. (holotype MPU!).
F. eucalyptoides Battand. & Trabut in tom. cit. 676, t. 23 (as *Myrtus eucalyptoides*). Type: Algeria, Tasssali, N'Ajjer, *Laparrine* in herb. *Trabut* s.n. (holotype MPU!).
F. salicifolia var. *teloukat* (Battand. & Trabut) Maire in Bull. Soc. Hist. Nat. Afr. Nord 20: 202–3 (No. 737) (1929). Type as for *F. teloukat*.
F. salicifolia forma *eucalyptoides* (Battand. & Trabut) Maire in loc. cit. Type as for *F. eucalyptoides*.

Leafy twigs usually minutely puberulous to glabrous. Lamina subovate to oblong to lanceolate, sometimes ovate or elliptic, 2–17 × 1–5·5 cm, apex acute to (faintly) acuminate (to rounded), base rounded, cordate or obtuse (to subacute); petiole 0·5–4(–6·5) cm long, usually drying yellowish to brown; stipules 0·5–1·5 cm long, glabrous or ciliolate. Figs usually on peduncles up to 0·3 cm long, sometimes subsessile.

DISTRIBUTION. South Africa (Transvaal) to the southern Arabian Peninsula and Socotra, also in NW Uganda, NE Zaire, Sudan, Egypt, and the Sahara region (Algeria, Chad, Libya, Niger).

6. Ficus cyathistipula *Warb.* in Bot. Jahrb. 20: 173 (1894). Type: Tanzania, Bukoba, *Stuhlmann* 3779 (lectotype B!, chosen Berg *et al.* 1984).

a. subsp. **cyathistipula**

F. callescens Hiern, Cat. Afr. Pl. Welw. 4: 1001 (1900). Type: Angola, Golungo Alto, *Welwitsch* 6395 (lectotype BM!, chosen Berg *et al.* 1984; isolectotypes B!, C!, K!, P!).
F. rhynchocarpa Mildbr. & Burret in Bot. Jahrb. 46: 235 (1911). Type: Tanzania, Lushoto Distr. Mguelo [Ngwelo], *Kummer* 25 (lectotype B!, chosen Berg *et al.* 1984).
F. nyanzensis Hutch. in Bull. Misc. Inf., Kew 1915: 327 (1915). Type: Uganda, Nyanza, *Bagshawe* 690 (holotype K!: isotype BM!).
F. rederi Hutch. in Bull Misc. Inf., Kew 1915: 329 (1915). Type: Cameroun, Buea, *Reder* 395 (lectotype B!, chosen Berg *et al.* 1984).

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Figs pedunculate.

DISTRIBUTION. Ivory Coast to Tanzania, Angola, N Zambia, and Malawi.

Material from West Africa (Ivory Coast) with relatively slender twigs, small leaves, and short (0·5–0·7 cm long) stipules might represent another subspecies.

b. subsp. **pringsheimiana** (*Braun & K. Schumann*) *C. C. Berg* stat. et comb. nov.

F. pringsheimiana Braun & K. Schumann in Mitteil. Deutsche Schützgeb. 2: 162 (1889). Type: Cameroun, *Braun* 142 (holotype B!).

Figs sessile.

DISTRIBUTION. Cameroun.

Subsp. *pringsheimiana* can be easily confused with *F. tesselata* Warb. (Syn.: *F. winkleri* Mildbr. & Burret; *F. camptoneuroides* Hutch.), but can be distinguished by the spongy wall of the figs. The receptacle of subsp. *pringsheimiana* is smooth, subglabrous and often stipitate, whereas that of *F. tesselata* is usually verru(cul)ate and yellow-hirtellous to -hispidulous and never stipitate. Moreover, the lenticels are inconspicuous and dispersed on the twigs of subsp. *pringsheimiana* whereas they are conspicuous and concentrated on the uppermost parts of the internodes in *F. tesselata*.

7. Ficus faulkneriana *C. C. Berg* sp. nov.

Arbor. Lamina obovata vel elliptica, 1·5–7 × 0·8–3·5 cm, apice rotundata vel obtusa, basi rotondata vel emarginata; facie utraque glabra; venae laterales 5–8-jugae; petiolus 0·2–1 cm longus; stipulae 0·2–0·6 cm longae, puberulae, subpersistentes. Syconia axillaria; pedunculus 0·3–1·5 cm longus; bracteae basales persistentes; receptaculum statu sicco 0·4–0·8 cm diametro. Typus: Tanzania, Tanga District, Magunga Estate, Vigai, 16 March 1953, *Faulkner* 1168 (holotypus K).

Tree up to 10 m tall, ? terrestrial. Leafy twigs 1·5–3 mm thick, minutely puberulous, when dry pale brown to grey, periderm persistent. Leaves in spirals, sometimes subopposite; lamina coriaceous to subcoriaceous, obovate to elliptic, sometimes subovate to oblong, 1·5–7 × 0·8–3·5 cm, (sub)coriaceous, apex rounded to obtuse, sometimes very shortly and bluntly acuminate or emarginate, base rounded to emarginate or obtuse, margin entire; both surfaces glabrous; lateral veins (3–)5–8 pairs, midrib often not reaching the apex of the lamina, tertiary venation reticulate (tending to be parallel to the lateral veins); petiole 0·2–1(–1·5) cm long, c. 1–1·5 mm thick; stipules 0·2–0·6 cm long, sparsely puberulous or only ciliolate, often subpersistent. Figs in pairs in the leaf axils or just below the leaves; peduncle 0·3–1·5 cm long, c. 1 mm thick, sparsely minutely puberulous; basal bracts 2, broadly ovate, 1·5–2 mm long, sparsely minutely puberulous, persistent; receptacle globose to obovoid, when dry 0·4–0·8(–1·2) cm diam., glabrous or nearly so, yellow to reddish at maturity; all ostiolar bracts descending. Staminate flowers dispersed, few, subsessile; tepals 3, free, c. 1·5 mm long; stamen 1, filament short, anther c. 1 mm long. Pistillate flowers: tepals 3, free, c. 1 mm long; seed flowers sessile, style (including stigma) c. 1–1·5 mm long; gall flowers up to 0·8 mm long pedicellate or

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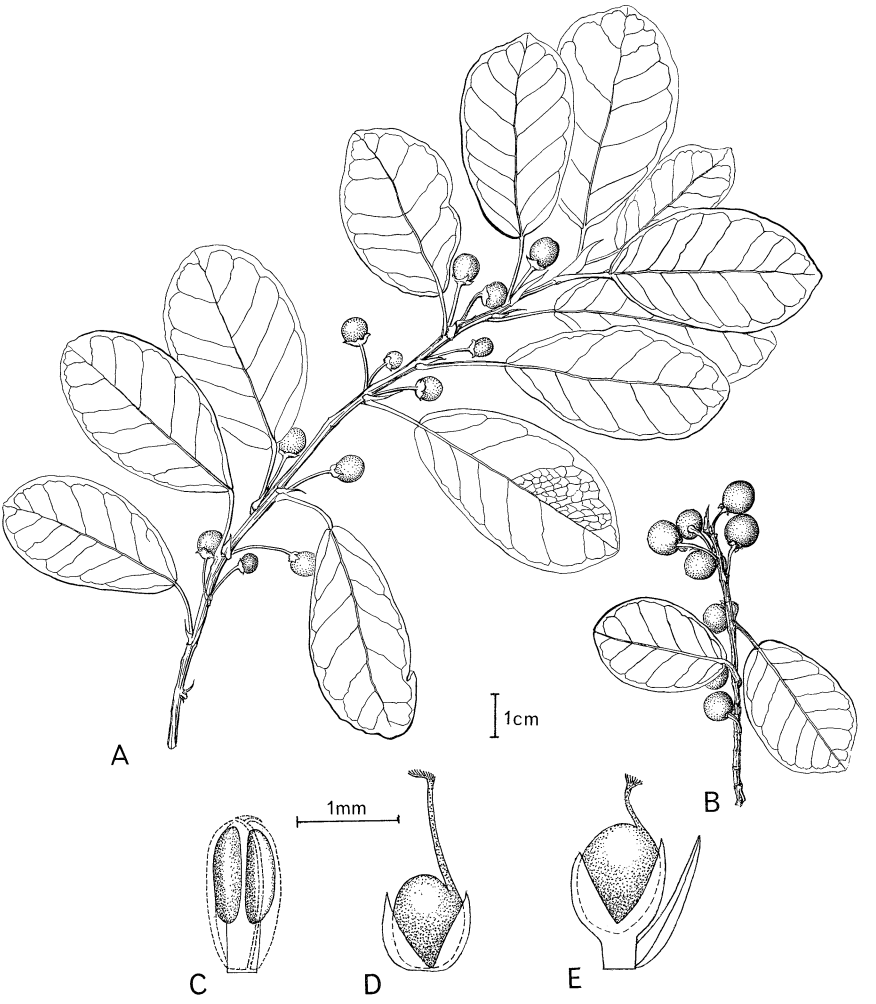


FIG. 2. *Ficus faulkneriana*. **A** leafy twig with figs (from *Magodo & Glover* 10); **B** leafy twig with figs; **C** staminate flower; **D** seed flower; **E** gall flower (from *Faulkner* 1168). Drawn by Miss E. M. Hupkens van der Elst & Mr T. Schipper.

sessile, style (including stigma) c. 0·5–1 mm long; fruits ellipsoid to ovoid or subovoid, 1–1·2 mm long; "gall fruits" subglobose to ellipsoid to ± ovoid, c. 1–1·2 mm long. Interfloral bracts up to 2 mm long. Fig. 2.

KENYA. Kwale District: Shimba Hills, Lango ya Mwagandi, 10 Feb. 1968, *Magogo & Glover* 10 (K).

TANZANIA. Lushoto District: Korogwe, Kwedikwazu, 6 May 1966, *Semsei* 4018 (K). Tanga District: Magunga Estate, Vigai, 16 Dec. 1953, *Faulkner* 1309 & 1310 (B, K, SRGH). Pangani District: Mwera, 29 March 1957, *Tanner* 3666 (K); Mkwaja, 10 Oct. 1957, *Tanner* 3715 (K).

The collections are from coastal bushland and wooded grassland, at altitudes up to 450 m.

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The new species belongs to subgen. *Urostigma* sect. *Galoglychia*. It is reminiscent of *F. natalensis* Hochst. and *F. thonningii* Bl. It differs from *F. natalensis* in the persistent basal bracts and from the pedunculate forms of *F. thonningii* in the sparse and minute hairs on the twigs, stipules, and peduncle, and/or the glabrous lamina and petiole. The species is probably most closely related to *F. lingua* following.

8. Ficus lingua *Warb.* ex *De Wild. & T. Durand* in Ann. Mus. Congo III, fasc. 2: 216 (1901). Type: Zaire, Lokandu, *Dewèvre* 1136 (holotype BR!; isotype B!).

a. subsp. **lingua**

F. buxifolia De Wild. in Fedde Repert. 12: 302 (1913). Type: Zaire, Haut-Aruwini, *Pynaert* 692 (holotype BR!).

F. micropison Mildbr. in Mitteil. Bot. Gart. Berlin (= Willdenowia) 1: 128 (1953). Type: Cameroun, between Bipindi and Ebolowa, *Mildbraed* 7616 (holotype B!; isotype K!).

Leafy twigs with brownish hairs; stipules usually subpersistent. Peduncle usually glabrous; basal bracts caducous.

Distribution. Uganda to Cameroun, also in West Africa (Ivory Coast).

b. subsp. **depauperata** (*Sim*) *C. C. Berg* stat. et comb. nov.

F. depauperata Sim, For. Fl. Port. E. Afr. 98, t. 40 (1909). Type: Mozambique, *Sim* 5031 (holotype K!).

Leafy twigs with whitish hairs; stipules caducous. Peduncle usually minutely puberulous; basal bracts persistent.

Distribution. Mozambique to Kenya.

9. Ficus muelleriana *C. C. Berg* sp. nov.

Frutex. Lamina ovata, 4·5–9·5 × 3–5 cm, apice acuta vel subacuminata, basi cordata, facie superiore sparse puberula, inferiore albo-hirtella vel albo-tomentosa; venae laterales 5–8-jugae; petiolus 1·5–5·5 cm longus; stipulae 1–1·5 cm longae, caducae. Syconia axillaria, subsessilia; bracteae basales persistentes; receptaculum statu sicco c. 0·5 cm diam. Typus: Mozambique, Manica e Sofala, 1 km E of Makurupini Falls, in rock crevices, July 1971, *Rich* s.n. (holotypus SRGH).

Shrub. Leafy twigs 2·5–3 mm thick, densely white-puberulous, when dry red-brown, solid, periderm not flaking off. Leaves in spirals; lamina coriaceous to subcoriaceous, ovate, 4·5–9·5 × 3–5 cm, apex acute to somewhat acuminate, base cordate, margin entire; upper surface sparsely, on the midrib more densely white-puberulous, lower surface on the midrib white-puberulous, on the lateral veins to white-hirtellous, on the smaller veins to white-tomentose; venation above obscure, beneath prominent; lateral veins 5–8 pairs, tertiary venation reticulate; petiole (1·2–)3·5–5·5 cm long, 1–1·5 mm thick, puberulous; stipules 1–1·5 cm long, minutely puberulous, caducous. Figs in pairs in the leaf axils, subsessile; basal bracts 2, broadly ovate to semi-circular, 1·5–2 mm long, membranous, puberulous, persistent; receptacle subglobose, when dry c. 0·5 cm diam., densely white-puberulous; all ostiolar bracts descending.

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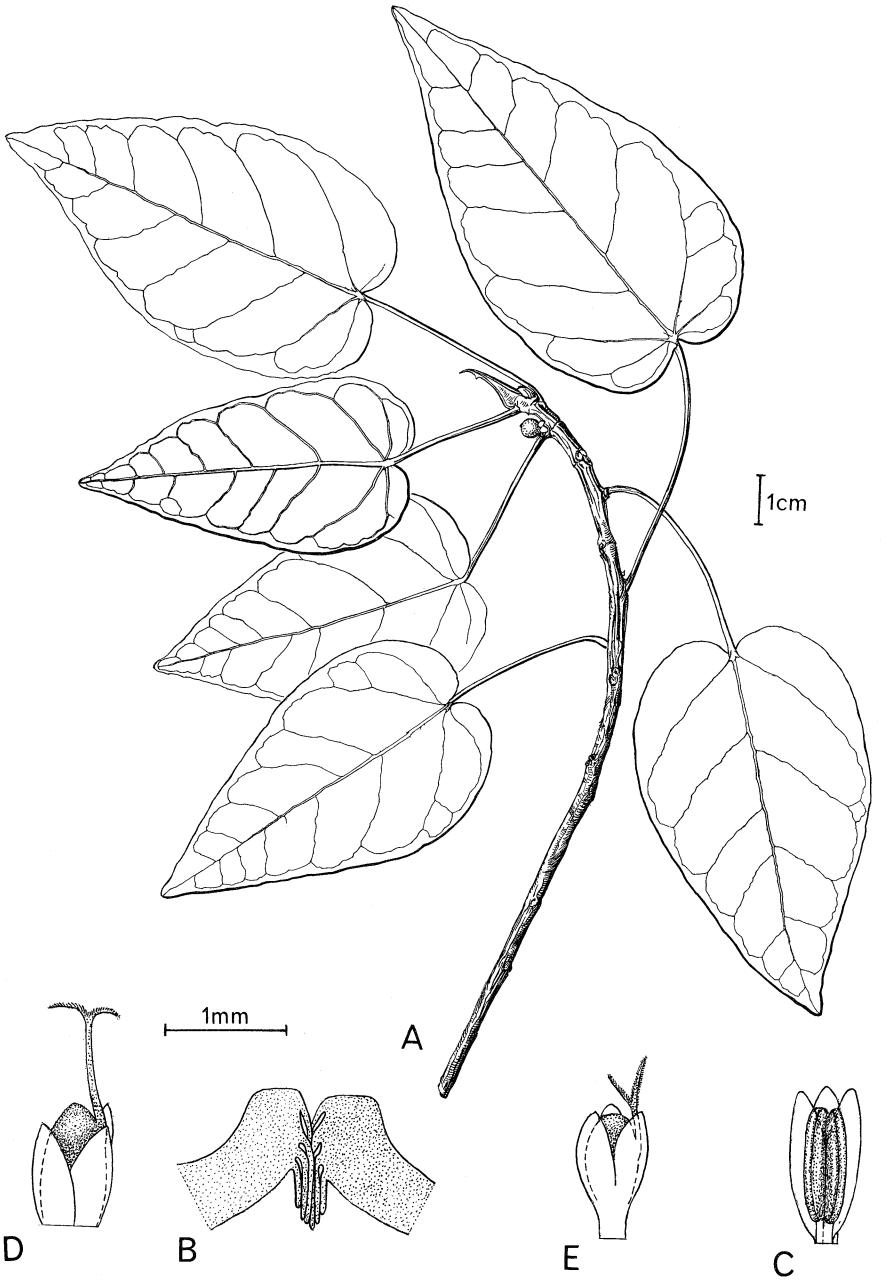


FIG. 3. *Ficus muelleriana*. **A** leafy twig with figs; **B** ostiole; **C** staminate flower; **D** seed flower; **E** gall flower (from *Rich* s.n.). Drawn by Miss E. M. Hupkens van der Elst & Mr T. Schipper.

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Staminate flowers dispersed; tepals 3, free, c. 1 mm long. Pistillate flowers: tepals 3–4, free, c. 0·6–1 mm long, stigmas 2; seed flowers sessile, style c. 0·5–0·8 mm long; gall flowers on pedicels up to 0·4 mm long or subsessile, style c. 0·2–0·4 mm long. Interfloral bracts up to 1 mm long. Fig. 3.

MOZAMBIQUE. Manica e Sofala: Maronga, 13 Aug. 1945, *Simão* 462 (LISC).

The new species belongs to subg. *Urostigma* sect. *Galoglychia*. It shows morphological affinities with *F. tettensis* from which it differs in the shape of the lamina (distinctly longer than broad, being reniform and almost as long as broad in *F. tettensis*), in the sparser indument on the upper surface of the lamina, in the longer stipules, and the persistent periderm of the branches.

The species is named after Tom Müller (Director of the Botanic Garden and Herbarium, Harare, Zimbabwe) to honour him for his contributions to botany and that of *Ficus* in particular.

10. Ficus natalensis *Hochst.* in Flora 28: 88 (1845). Type: South Africa, Port Natal, *Krauss* 276 (lectotype BM!, chosen Berg *et al.* 1984 and here; isolectotype K!).

a. subsp. **natalensis**

Urostigma natalense (Hochst.) Miq. in London Journ. Bot. 6: 556 (1847). Type as *F. natalensis*.

F. volkensii Warb. in Bot. Jahrb. 20: 167 (1894). Type: Tanzania, Usambara Mts, Derema, *Volkens* 136 (holotype B!).

F. durbanii Warb. in Viert. Nat. Ges. Zürich 51: 142 (1906). Type: South Africa, Durban, *Rehmann* 9009 (lectotype Z!, chosen Berg *et al.* 1984; isolectotype B!).

F. natalensis var. *latifolia* Warb. in loc. cit. Type: South Africa, near Konigha, *Bachmann* 426 (whereabouts unknown).

F. natalensis var. *pedunculata* Sim, For. Fl. Port. E. Afr.: 98, t. 90–A (1909). Type: Mozambique, *Sim* 5729 (whereabouts unknown).

F. variabilis De Wild. forma *obtusifolia* De Wild. in Ann. Soc. Sci. Brux. 40: 283 (1921). Type: Zaire, Ruwenzori, *Bequaert* 3974 (holotype BR!).

F. variabilis forma *subacuminata* De Wild. in Ann. Soc. Sci. Brux. 40: 282 (1921). Type: Zaire, Irumu, *Bequaert* 2847 (holotype BR!).

F. mammosa Lebrun in Mem. Inst. Roy. Col. Belge (Sect. Sci. Nat. & Med.) 8vo, 3 (1): 67 (1934). Type: Zaire, Penge, *Bequaert* 2244 (holotype BR!).

F. scuata Lebrun in tom. cit. 68, t. 4–a (1934). Type as *F. variabilis* forma *obtusifolia*.

F. subacuminata (De Wild.) Lebrun in tom. cit. 70, t. 4–b. Type as *F. variabilis* forma *subacuminata*.

Tree or shrub. Leafy twigs glabrous or sparsely puberulous. Lamina oblong to subobovate or elliptic to obovate, sometimes broadly obovate to obtriangular, apex acuminate to rounded or emarginate, margin flat; midrib usually terminating near the apex of the lamina, lateral veins 6–13 pairs; stipules glabrous or sparsely and minutely puberulous. Calyptrate bud cover enclosing the young figs often conspicuous (up to 1 cm long). Figs 0·8–1·5 cm diam. when dry; basal bracts caducous.

DISTRIBUTION. South Africa (Natal) to E Zaire and N Zambia (Copperbelt Province).

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The two subspecies are probably allopatric.

b. subsp. **leprieurii** (*Miq.*) *C.C. Berg* stat. et comb. nov.

F. leprieurii Miq., Ann. Mus. Bot. Lugd.-Bat. 3: 219 (1867). Type: "Senegambia", *Leprieur* s.n. (holotype U!; isotypes L!, P!).
F. chrysocerasus Warb. in Bot. Jahrb. 20: 167 (1894). Type: Angola, Libongo, *Welwitsch* 637 (holotype B!; isotypes BM!, K!).
F. excentrica Warb. in tom. cit. 168. Type: Cameroun, near Douala, *Buchholz* 174 (holotype B!).
F. furcata Warb. in tom. cit. 173. Type: Zaire, Monbuttu, near Munza, *Schweinfurth* 3356 (holotype B!; isotypes K!, P!).
F triangularis Warb. in tom. cit. 174. Type: Cameroun, Barombi [Kumba], *Preuss* 544 (holotype B!; isotypes BM!, K!).
F. leprieurii var. *intermedia* Hutch. in Prain, Fl. Trop. Afr. 6 (2): 159 (1916). Type: Cameroun, Banyo, *Ledermann* 2202 (lectotype B!, chosen Berg *et al.* 1984).
F. leprieurii var. *sessilis* Hutch. in loc. cit. Type as for *F. furcata*.
F. brevipedicellata De Wild. in Ann. Soc. Sci. Brux. 40: 279 (1921). Type: Zaire, Leopoldville, *Bequaert* 7346 (holotype BR!).

Tree or shrub, sometimes lianescent. Leafy twigs glabrous, minutely puberulous or sometimes white- to yellowish-hirtellous. Lamina elliptic, oblong, broadly obovate or obtriangular, apex acuminate to rounded, emarginate or truncate, margin often revolute; midrib often terminating well before the apex of the lamina, lateral veins (3–)6–10 pairs; stipules usually white- to yellowish-subsericeous to -hirtellous, at least at the base, sometimes puberulous or almost glabrous. Calyptrate buds enclosing the young figs minute. Figs 0·5–1 cm diam. when dry; basal bracts caducous, sometimes subpersistent.

Distribution. Senegal to Zaire, Angola, and NW Zambia.

The material from West Africa (Senegal through the Central African Republic to northern Zaire) usually has ± broadly obtriangular to obovate leaves and relatively small figs; in Central Africa it is more variable in the shape of the leaves and the dimensions of the figs.

11. Ficus ottoniifolia (*Miq.*) *Miq.* in Ann. Mus. Bot. Lugd.-Bat. 3: 288 (1867).

a. subsp. **ottoniifolia**

Urostigma ottonifolium Miq. in London Journ. Bot. 7: 536, t. 13–B (1848). Type: Fernando Po, *Vogel* 176 (holotype K!).
F. buettneri Warb. in Bot. Jahrb. 20: 157 (1894). Type: Togo, Bismarckburg, *Buettner* 714 (holotype B!).
F. dewevrei Warb. ex De Wild. & T. Durand in Ann. Mus. Congo III, 2: 215 (1901). Type: Zaire, Lokandu, *Dewèvre* 1102 (holotype BR!; isotype B!).
F. polybracteata Warb. ex De Wild. & T. Durand in tom. cit.: 216. Type: Zaire, Equateur, *Dewèvre* 1168a (holotype BR!; isotype B!).
F. gilletii Warb. in Ann. Mus. Congo VI, 1: 19, t. 1 (1904). Type: Zaire, Kisantu, *Gillet* 1120 (holotype B!; isotype BR!).
F. ealaensis De Wild. in Fedde Repert. 12: 194 (1913). Type: Zaire, Eala, *M. Laurent* 1359 (holotype BR!).

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F. pynaertii De Wild. in tom. cit. 197. Type: Zaire, Eala, *Pynaert* 1314 (holotype BR!; isotype P!).
F. viridimaculata De Wild. in tom. cit. 197. Type: Zaire, Eala, *M. Laurent* 717 (holotype BR!).
F. umangiensis De Wild. in tom. cit. 198. Type: Zaire, Umangi, *Em. & M. Laurent* s.n. (holotype BR!).
F. umangiensis var. *laurentii* De Wild. in tom. cit. 198. Type: Zaire, Eala, *M. Laurent* 1350 (holotype BR!).
F. maculosa Hutch. in Bull. Misc. Inf., Kew 1915: 324 (1915). Type: Togo, Sokode, *Kersting* 545A (holotype K!; isotype B!).
F. fasciculiflora Hutch. in tom. cit. 324. Type: Cameroun, Lake Tibati, *Ledermann* 2410 (holotype K!; isotype B!).
F. buettneri var. *globicarpa* Mildbr. & Burret in Bot. Jahrb. 46: 225 (1911). Type: Cameroun, Johan-Albrechtshohe [Kumba], *Staudt* 896 (holotype B!; isotype BM!).
F. dewevreoides De Wild. in Ann. Soc. Sci. Brux. 40: 280 (1921). Type: Zaire, Avakubi, *Bequaert* 1820 (holotype BR!).

Tree, treelets or sometimes lianas. Leafy twigs usually drying pale brown. Lamina coriaceous to subcoriaceous, 8–22 × 3–9 cm, usually broadest in the middle, apex acuminate, base usually rounded to obtuse, sometimes subacute or emarginate; lateral veins 6–10(–11) pairs; petiole 2–13·5 cm long, when dry 1–2 mm thick. Peduncle 1–2·5 cm long, when dry 1–2 mm thick; basal bracts caducous; receptacle ellipsoid to subglobose, when fresh 2–2·5 cm, when dry 1–1·5 cm diam. at maturity pale orange-green to pale yellow with paler green to white spots.

Distribution. Uganda to Sierra Leone (or ? to Senegal).

b. subsp. **multinervia** *C. C. Berg* subsp. nov. a subspeciebus aliis venis lateralibus pluribus atque circumscriptione laminae plus minusve recedit. Typus: Liberia, Njala, March 1930, *Deighton* 1820 (holotypus K; isotypus BM).

Trees, treelets or sometimes lianas. Leafy twigs usually pale-brown when dry. Lamina coriaceous to subcoriaceous, (4–)10–21 × (1·2–)4–6·5 cm, usually broadest above the middle, apex acuminate (or rounded), base acute (to obtuse); lateral veins (4–)10–15; petiole (1–)2–11 cm long, when dry 1–1·5 mm thick. Peduncle 1–2 cm long, when dry 1–1·5 mm thick; basal bracts caducous; receptacle ellipsoid, 1–1·2 cm diam. when dry.

Senegal. Boukitigmo, 17 Feb. 1964, *Berhaut* 5693 (P); Colobane, 16 April 1963, *Berhaut* 7022 (P); Efok, 21 Feb. 1964, *Berhaut* 7062 (P).
Gambia. Akuku Nature Reserve, July 1979, *Starin* s.n. (U).
Guinea-Bissau. Boene, 25 Jan. 1945, *Espirito Santo* 1695 (K, P); Bafata, Granja de Madina, 26 Dec. 1960, *Espirito Santo* 4077 (P, LISC, WAG).
Sierra Leone. Njala, 8 Feb. 1927, *Deighton* 518 (K) & 30 April 1952, *Deighton* 5867 (K).
Liberia. Without locality, *Adam* 20153 (P); Sinoe Co., Butaw, 17 March 1948, *Baldwin* 11487 (K); Peahtah, 6 Oct. 1926, *Linder* 928 (K).
Guinee. Lale, March 1905, *Chevalier* 12374 (P); Konakry, 15 June 1895, *Dybowski* 3 (P); Iles de Los, 1905, *Pobéguin* 1236 (P).

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IVORY COAST. Lamto, 13 Nov. 1982, *Berg & Wiebes* 1438 & 1449 (U); Moronou, 13 Nov. 1982, *Berg & Wiebes* 1447 (U) & 2 Dec. 1909, *Chevalier* 22474 (P); Guideko, 27–29 May 1907, *Chevalier* 16473 (P); Tabou, Dec. 1932, *Service Forestier* 1744 (P); Port Bouët, Jan. 1933, *Service Forestier* 1762 (P); 9 km W of Grand Bassam, 24 July 1969, *Versteeg & den Outer* 573 (U, WAG); arboretum of Banco Forest, 6 Dec. 1956, *J. de Wilde* 986 (WAG).

In the number of lateral veins and the shape of the lamina this subspecies is reminiscent of *F. artocarpoides* Warb. (Syn.: *F. elegans* (Miq.) Miq., nom. illegit.). In *F. artocarpoides* the petiole is mostly up to 2 cm long and on the same twig rather constant in length; moreover, the figs are (usually) globose and when dry 2–3·5 cm in diameter (cf. Michaloud *et al.* 1985). Aubréville (1959: 96, 98, t. 22), has already reported the occurrence of two forms of *F. ottoniifolia* in Ivory Coast.

c. subsp. **lucanda** (*Ficalho*) *C. C. Berg* stat. et comb. nov.

F. lucanda Ficalho, Pl. Ut. Afr. Port. 269 (1884). Type: Angola, Golungo Alto, *Welwitsch* 6392 (holotype LISU; isotypes B!, K!, P!).
F. sterculioides Warb. in Bot. Jahrb. 20: 175 (1894). Type: Tanzania, Bukoba, *Stuhlmann* 1019 (holotype B!).
F. longepedunculata De Wild. in Fedde Repert. 12: 195 (1913), non Elmer (1906), non Rechinger (1912). Type: Zaire, Bomaneh, *M. Laurent* 1352 (holotype BR!).

Tree or treelets. Leafy twigs usually pale-brown when dry. Lamina coriaceous to subcoriaceous, 4·5–15(–17·5) × 2–8 cm, mostly broadest at or below the middle, acuminate to subcaudate, base rounded to subacute or to emarginate; lateral veins (3–)4–8 pairs; petiole 1·5–12 cm long, 1–1·5 mm thick when dry. Peduncle 0·5–2·5 cm long, 1–1·5 mm thick; basal bracts caducous; receptacle ellipsoid to subglobose, when fresh 1·5–2 cm, when dry 0·7–1·2(–1·5) cm dia.

DISTRIBUTION. Angola, Zaire, Uganda, NW Tanzania, and Gabon.

Specimens with characters intermediate between subsp. *lucanda* and subsp. *ottoniifolia* occur in Zaire.

d. subsp. **macrosyce** *C. C. Berg* subsp. nov., a subspeciebus aliis, inter alia, syconiis majoribus recedit. Typus: Zambia, North-western Province, 5 km S of Solwezi, 26 Feb. 1982, *Berg & Bingham* 1421 (holotypus U: isotypi BG, K, SRGH, WAG).

Liana or treelet, sometimes a tree. Lamina chartaceous, (4–)8–16 × (1·2–)3–7 cm, usually broadest in the middle, apex shortly to long-acuminate, sometimes rounded, base emarginate (to subcordate); lateral veins (4–)6–8 pairs; petiole (0·8–)1·5–7 cm long, 0·5–1·5 mm thick when dry. Peduncle 1–1·5(–2) cm long, when dry c. 2 mm thick; basal bracts caducous; receptacle ellipsoid to subglobose when fresh 2·5–4 cm, when dry c. 2–2·5 cm diam., at maturity dark olivaceous or red-brown with pale green to white spots. Fig. 4.

ZAIRE. Shaba: Luiswishi, 12 March 1981, *Malaisse* 11639 (BR) & 28 April 1981, *Malaisse* 11882 (BR); 10 km SSW of Lubumbashi, 12 Aug. 1948, *Schmitz* 1964 (BR); Lubumbashi, 19 April 1949, *Schmitz* 2307 (BR); 10 km SE of

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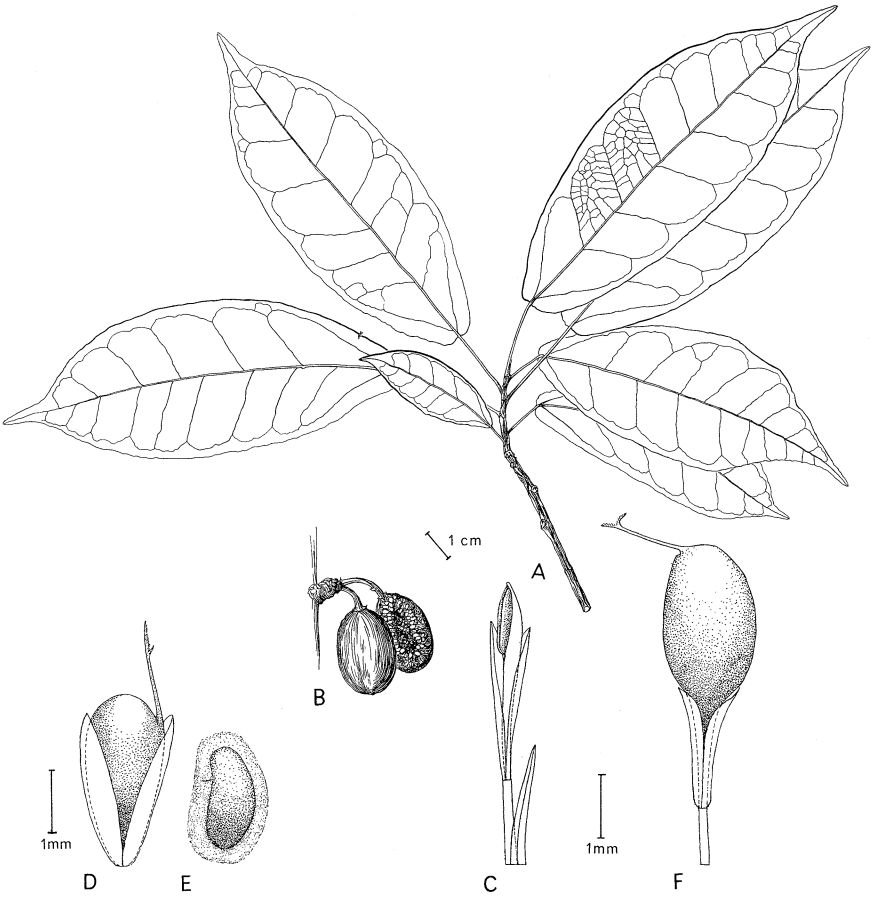


FIG. 4. *Ficus ottoniifolia* subsp. *macrosyce*. **A** leafy twig; **B** spur with figs; **C** staminate flower with interfloral bract; **D** seed flower; **E** endocarp body surrounded by a mucilaginous layer; **F** gall flower (from *Berg & Bingham* 1421). Drawn by Miss E. M. Hupkens van der Elst & Mr T. Schipper.

Lubumbashi, 1 March 1950, *Schmitz* 2753 (BR); Keyberg, 24 Oct. 1957, *Symoens* 4055 (BR).

ZAMBIA. North-western Province: Solwezi River Gorge, 5 km SE of Solwezi, 13 Sept. 1953, *Angus* 435 (BR, FHO). Barotse: Zambesi R, Chavuma, 13 Sept. 1952, *White* 3496 (BM, FHO). Copperbelt Province: Mufulira, 25 Aug. 1955, *Fanshawe* 2429 (K, SRGH).

ANGOLA. Benguela: Lunda, 13 April 1937, *Exell & Mendonça* 536 (BM). Luanda: Cuanza District, Camabatela, 11 Jan. 1918, *Gossweiler* 7382 (BM). Malange: Quela Highland, *Nolde* 472 (BM); Chilesso, 16°34′E, 11°35′S, 15 March 1973, *Bamps et al.* 4185 (BR).

Most collections were made in fringing forest or dry forest.

The collection *Schmitz* 2753 shows in its leaves features transitional to subsp. *lucanda*. *De Wilde et al.* 2581 (Cameroun, 6 km NE of Bangante), referred to subsp. *ottoniifolia*, shows similarities to subsp. *macrosyce* in its thin leaves and its large and thick-pedunculate figs.

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e. subsp. **ulugurensis** (*Mildbr. & Burret*) *C. C. Berg* stat. et comb. nov.

F. ulugurensis Mildbr. & Burret in Bot. Jahrb. 46: 226, t. 4 (1911). Type: Tanzania, Uluguru Mts, Mbora, *Stuhlmann* 2022 (not 9022) (lectotype B!, chosen here).

F. scheffleri Mildbr. & Burret in tom. cit. 225. Type: Tanzania, Usambara Mts, Derema, *Scheffler* 215 (holotype B!; isotypes BM!, K!).

Tree up to 10 m tall or shrub. Leafy twigs when dry usually dark brown (to blackish). Lamina coriaceous to subcoriaceous, 7·5–15 × 3–7 cm, apex shortly acuminate, base (subacute to) rounded or subcordate; lateral veins 8–12(–14) pairs; petiole 1·5–4(–5·5) cm long, 1–1·5 mm thick; basal bracts ± persistent; receptacle ellipsoid to subglobose, when fresh 2–2·5 cm, when dry (1–)1·2–1·8 cm diam., at maturity red(?).

DISTRIBUTION. Uganda, Kenya, and Tanzania.

12. F. pachyneura *C. C. Berg* sp. nov.

Arbor. Ramuli foliosi 5–9 cm crassi; lenticellis conspicuis partibus superioribus internodiorum concentratis. Lamina obovata vel oblanceolata, 9·5–27 × 3·5–8 cm, apice acuminata, basi acuta, utraque facie glabra; venae laterales 6–8-jugae, inferiores magis tenues, centrales fortiores; petiolus 1–2·5 cm longus, 2–3·5 mm crassus; stipulae 1–2 cm longae, (sub)persistentes. Syconia sessilia ad axillas foliorum, statu sicco c. 0·8 cm diam. Tepala tria. Typus: Ghana, Ankasa Forest Reserve, 14 Feb. 1971, *Enti* GC.42603 (holotypus K).

Tree. Leafy twigs (2–)5–9 mm thick, glabrous, with conspicuous lenticels on the uppermost part of the internodes. Leaves in spirals; lamina coriaceous, subobovate to oblanceolate, 9·5–27 × 3·5–8 cm, apex acuminate, base acute, margin entire; both surfaces glabrous; lateral veins 6–8 pairs, the lower pairs weak, the middle pairs strong and furcate far from the margin, tertiary venation reticulate; petiole 1–2·5 cm long, 2–3·5 mm thick, glabrous, epidermis ± flaking off; stipules 1–2 cm long, glabrous or nearly so, usually persistent. Figs solitary or up to 4 together in the leaf axils, sessile; basal bracts semicircular, 2–2·5 mm long, glabrous; receptacle globose, c. 0·8 cm diam. when dry, glabrous or white appressed-puberulous; wall when dry 0·5–1 mm thick; ostiole ± prominent to plane. Staminate flowers dispersed; pedicel up to 0·5 mm long; tepals 3, free, 0·7–1·2 mm long; anther c. 0·7 mm long. Pistillate flowers: tepals 3, free, ca. 1 mm long; seed flowers sessile, style (including stigma) 0·5–1·5 mm long; gall flowers on pedicels up to 1 mm long; style (including stigma) 0·2–0·4 mm long; fruits ovoid to ellipsoid, 1–1·5 mm long, bicolourous; "gall fruits" obovoid, 2–2·2 mm long, often ± stipitate, bicolourous. Interfloral bracts few, c. 1·5 mm long, narrow. Fig 5.

LIBERIA. Sinoe Co., Jaurazon, 16 March 1948, *Baldwin* 11479 (K); NE of Bomi Hills, Gola Forest, 29 April 1966, *Bos* 1962 (WAG).

IVORY COAST. Taï Forest, Nov. 1982, *Michaloud* CI. 94 & CI. 131 (U).

GHANA. Ankasa Forest Reserve, 29 June 1966, *Enti & Hall* GC. 35689 (K).

This new species belongs to subgen. *Urostigma* sect. *Galoglychia*. It recalls *F. camptoneura* by its small figs and small number of lateral veins but differs from the latter in the leaf shape, the thickness of the petiole and the leafy twigs, the length of the stipules, and the concentration of conspicuous lenticels on the

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uppermost parts of the internodes. In most of these differentiating characters *F. pachyneura* matches *F. tesselata* Warb. which can be distinguished by the larger figs (when dry (1·2–)1·5–2 cm diam.) with yellow hairs, the leaf base, which is often obtuse to rounded or even subcordate, and also in the larger number of interfloral bracts and larger number of tepals (five). The new species was treated as *F.* aff. *camptoneuroides* by Aubréville (1959: 82, t. 15C.).

13. Ficus polita *Vahl*, Enum. 2: 182 (1805). Type: Ghana, *Isert* s.n. (holotype C!; isotype B!).

a. subsp. **polita**

Urostigma politum (Vahl) Miq. in London Journ. Bot. 6: 553 (1847). Type as *F. polita*.
F. megapoda Baker in Journ. Linn. Soc., Bot. 21: 444 (1885). Type: Madagascar, *Baron* 3305 (lectotype K!, chosen Berg *et al.* 1984; isolectotype B!).
F. podophylla Baker in loc. cit. Type: Madagascar, *Baron* 3223 (holotype K!).
F. syringifolia Warb. in Bot. Jahrb. 20: 170 (1894), non Kunth & Bouché (1847). Type: Cameroun, Barombi [Kumba], *Preuss* 409 (lectotype K!, chosen Berg *et al.* 1984; isolectotype B!).
F. barombiensis Warb. in Ann. Mus. Congo VI, 1: 14, t. 20 (1904) nom. illegit., superfl. Type as for *F. syringifolia* Warb.
F. niamniamensis Warb. in tom. cit. 15. Type: Zaire, Linduku, *Schweinfurth* 3134 (holotype B, not found; isotype K!).
F. umbrosa Sim, For. Fl. Port. E. Afr. 100, t. 88 (1909). Type: Mozambique, Maneja da Costa, *Sim* 5549 (holotype K!).

Lamina ovate to elliptic; lateral veins 5–8(–9) pairs. Peduncle 1–2 cm long; receptacle when fresh (2–)3–4 cm, when dry 2–4 cm diam.

Distribution. Senegal to Uganda, Angola, and South Africa (Natal), also in Madagascar.

b. subsp. **brevipedunculata** *C. C. Berg* subsp. nov. a subsp. *polita* lamina angustiore, venis lateralibus pluribus, pedunculo breviore, et receptaculo minore recedit. Typus: Malawi, Northern Province, Misuku Forest, c. 1700 m, Oct. 1954, *Chapman* 254 (holotypus FHO; isotypi K, PRE).

Lamina oblong to subovate or ovate; lateral veins (8–)10–12 pairs. Peduncle 0·8–1·2 cm long; receptacle when fresh 2–2·5 cm, when dry 1·5–2 cm diam.

Tanzania. Morogoro District: without precise locality, c. 1500 m, 23 Nov. 1932, *Wallace* 477 (K).
Malawi. Northern Province: Misuku, Mapita, 14 April 1981, *White* 13089 (FHO); S. Viphya, Ntungwa Forest, c. 1720 m, 9 July 1983, *Dowsett-Lemaire* Ecol. 155 (FHO).
Zambia. Northern Province: Isoka, Mafinga Mts, c. 2150 m, 21 Nov. 1952, *Angus* 810A (FHO, K).

This subspecies is probably confined to altitudes above c. 1500 m.

14. Ficus sansibarica *Warb.* in Bot. Jahrb. 20: 171 (1894). Type: Zanzibar, *Stuhlmann* 793 (holotype B!).

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a. subsp. **sansibarica**

F. langenburgii Warb. in Bot. Jahrb. 30: 293 (1901). Type: Tanzania, Langenburg [Lumbira], near mouth of Rumbi R, *Goetze* 859 (holotype B!; isotype K!).
F. delagoensis Sim, For. Fl. Port. E. Afr.: 99, t. 92 (1909). Type: Mozambique, Maputo, Delagoa Bay, *Sim* 5171 (holotype K!).

Lamina mostly oblong to lanceolate, often less than 10 cm long; lateral veins 5–10(–14) pairs; stipules ciliolate; fig-bearing spurs up to 3·5(–5) cm long.

Distribution. South Africa (Transvaal, Natal), Mozambique, Tanzania, Kenya, Zimbabwe, and S Zambia (Southern and Central Provinces).

This subspecies is usually found in woodland.

b. subsp. **macrosperma** (*Mildbr. & Burret*) *C. C. Berg* stat. et comb. nov.

F. brachylepis Hiern, Cat. Afr. Pl. Welw. 4: 1011 (1900). Type: Angola, Goluno Alto, *Welwitsch* 6338 (lectotype BM!, chosen here; isolectotypes B!, K!, P!).
F. macrosperma Mildbr. & Burret in Bot. Jahrb. 46: 223 (1911). Type: Cameroun, Bipindi, *Zenker* 2369 (lectotype B!, chosen Berg *et al.* 1984; isolectotypes BM!, BR!, K!, P!, Z!).
F. buntingii Hutch. in Bull. Misc. Inf., Kew 1915: 320 (1915). Type: Liberia, Gola, *Bunting* s.n. (holotype BM!; isotype K!).
F. ugandensis Hutch. in tom. cit.: 321. Type: Uganda, Masaka Distr., Buddu, *Dawe* 256 (holotype K!).
F. gossweileri Hutch. in loc. cit. & fig. Type: Angola, M'Bango woods, *Gossweiler* 1005 (holotype K!).
F. mangenotii A. Chev. in Rev. Bot. Appliq. 29: 246, t. 11 (1949). Type: Ivory Coast, Bingerville, *Chevalier* s.n. (holotype P!).

Lamina oblong to lanceolate and often less than 10 cm long or elliptic to ovate or oblong to subovate and then often over 10 cm long; lateral veins 8–12 pairs; stipules glabrous; fig-bearing spurs up to 10(–15) cm long.

Distribution. Guinea-Bissau to Uganda, Angola and N Zambia.

In the southern part of the area of distribution the lamina is often subovate or ovate and longer than 10 cm. In West and Central Africa the subspecies is associated with rain-forest, but in southern Africa with drier types of forest.

15. Ficus scassellatii Pamp. in Boll. Soc. Bot. Ital. 1915: 15 (1915). Type: Somalia (S), Goscia, Bioli, *Scassellati* Ser. V, 31 (lectotype FT, chosen by Friis 1985).

a. subsp. **scassellatii**

F. kirkii Hutch. in Bull. Misc. Inf., Kew 1915: 343 (1915). Type: Zanzibar, *Kirk* s.n. (lectotype K!, chosen here).
F. michelsonii Boutique & J. Léonard in Bull. Jard. Bot. Brux. 19: 217 (1949). Type: Zaire, Kinyassi, *Michelson* 373 (holotype BR!).

Lamina oblong to subobovate to elliptic, sometimes lanceolate to oblanceolate, up to 20 × 8 cm. Figs on peduncles 0·5–1·5 cm long; receptacle when dry 1·2–2 cm diam. and the apex often ± protruding.

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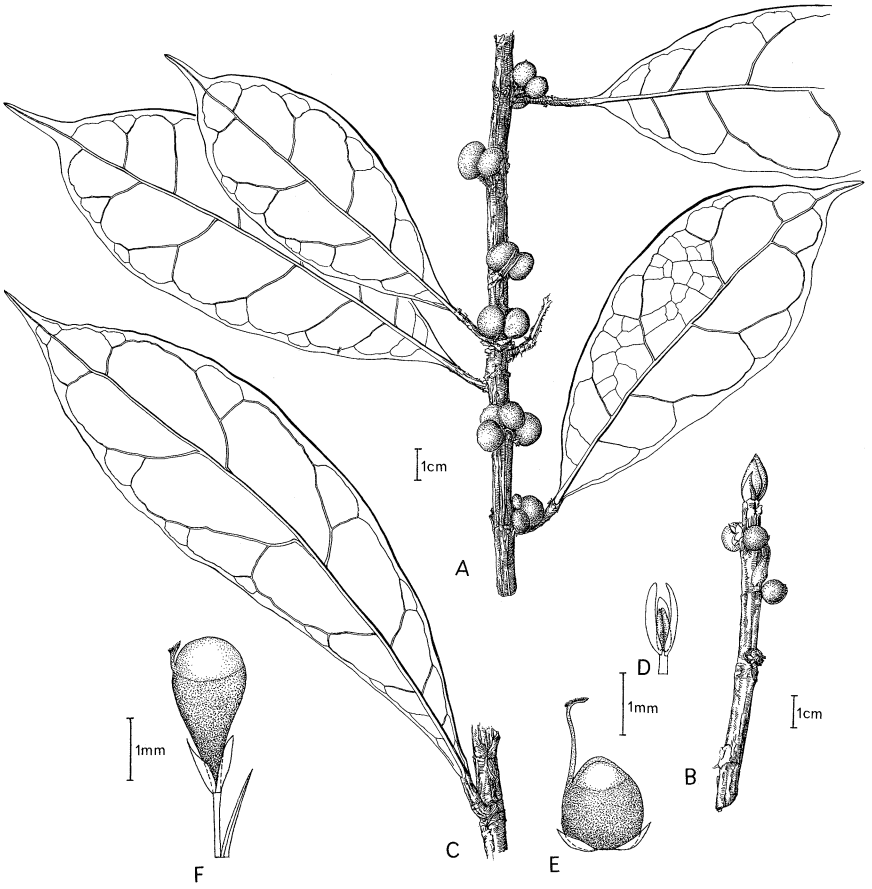


FIG. 5. *Ficus pachyneura*. **A** leafy twig with figs (from *Bos* 1962); **B** twig with figs and stipules; **C** leaf (from *Enti & Hall* GC. 35689); **D** staminate flower; **E** seed flower; **F** gall flower (from *Bos* 1962). Drawn by Miss E. M. Hupkens van der Elst & Mr T. Schipper.

DISTRIBUTION. E Zimbabwe, Mozambique, Malawi, Tanzania, Kenya, Somalia, and E Zaire.

b. subsp. **thikaensis** *C. C. Berg* subspec. nov. a subsp. scassellatii, inter alia, syconiis sessilibus recedit. Typus: Kenya, Fort Hall District, Thika, behind Blue Posts Hotel, 26 Dec. 1968, *Faden* 66/27 (holotypus K).

Lamina mostly oblanceolate, up to 28 × 4·5 cm. Figs sessile or almost so, when dry 2–3 cm diam., apex hardly protruding.

KENYA. Fort Hall District: Thika, 23 March 1967, *Faden* 67/139 (K) & Thika Falls, 18 Feb. 1951, *Greenway & Verdcourt* 8493 (K).

16. Ficus tremula *Warb.* in Bot. Jahrb. 20: 171 (1894). Type: Tanzania, Bagamoyo, *Stuhlmann* 274 (holotype B!).

a. subsp. **tremula**

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F. pulvinata Warb. in tom. cit.: 169. Type: Zanzibar, *Stuhlmann* I–110 (holotype B).

Tree or sometimes a climber. Twigs usually drying yellowish or greyish. Lamina mostly drying brown above and greenish beneath, base rounded to emarginate; petiole up to 3(–4) cm long, when dry c. 0·5(–1) mm thick. Figs ellipsoid to subglobose, when dry 1–1·5 cm diam.

DISTRIBUTION. South Africa to Kenya; altitudes up to 600 m.

The three subspecies are allopatric and ecologically ± different.

b. subsp. **kimuenzensis** (*Warb.*) *C. C. Berg* stat. et comb. nov.

F. kimuenzensis Warb. in Ann. Mus. Congo VI, 1: 23 (1904). Type: Zaire, Kimuenza, *Gillet* 2170 (holotype B!; isotypes BR!, K!).
F. rudens Hutch. in Bull. Misc. Inf., Kew 1915: 323 (1915). Type: Angola, Monte de Lau, *Gossweiler* 4597 (holotype K!; isotype BM!).

Treelet or often a climber. Twigs usually drying dark red-brown to blackish. Lamina drying brownish or greenish and without a strong colour contrast between upper and lower surface, base cordate to rounded; petiole (0·5–)1–3·5(–7), when dry 0·5–1 mm thick. Figs ellipsoid to subglobose, when dry 1·2–1·5 cm diam.

DISTRIBUTION. N Angola through W Zaire to SE Nigeria; at low altitudes.

c. subsp. **acuta** (*De Wild.*) *C. C. Berg* stat. et comb. nov.

F. acuta De Wild. in Ann. Soc. Sci. Brux. 40: 278 (1921). Type: Zaire, Mukule, *Bequaert* 6313 (holotype BR!).

Tree or often a liana, up to 15 m tall. Twigs drying dark brown to blackish, older wood with warty lenticels. Lamina drying brownish without a strong colour contrast between the upper and lower surface; base of the lamina obtuse to rounded (to subcordate); lateral veins 6–9(–12) pairs; petiole 1–3(–4) cm long, when dry 1–1·5 mm thick. Receptacle elliptic to subglobose, when dry 1·2–1·5(–1·8) cm diam.

DISTRIBUTION. E Zaire, Rwanda, Burundi, Uganda, and W Kenya; at altitudes between 1900 and 2300 m.

Subsp. *acuta* differs from subsp. *kimuenzensis* in the (on average) narrower lamina which is often without a subcordate base, and the (on average) shorter (and thicker) petioles. Moreover, the receptacle may be larger and sometimes subglobose. Finally, subsp. *acuta* appears to differ ecologically, as it is apparently confined to montane forest.

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relations entre les stratégies adaptives des figuiers et celles des insectes des figues" (France, Brunoy) and with the BION project "Functional morphology of the receptacles (figs) of African species of *Ficus*". The drawings were prepared by Miss E. M. Hupkens van der Elst and Mr T. Schipper.

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