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VOLUME 1

P.S. Short & I.D. Cowie (eds)



MORACEAE

D.J. Dixon

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MORACEAE

D.J. Dixon

Shrubs, trees, climbers or herbaceous plants, monoecious or gynodioecious, usually with milky latex. *Leaves* simple, entire or palmate, mostly alternate, occasionally opposite in *Ficus*, usually with cystoliths; stipules present. *Inflorescence* axillary, ramiflorous, cauliflorous, or geocarpic, unisexual or bisexual, paniculate, racemose, spicate, discoid, capitate, or urceolate. *Flowers* small, unisexual, apetalous. *Tepals* 2–8, free or united, imbricate or valvate, persistent or absent. *Interfloral bracts* present or absent. *Stamens* as many as and opposite tepals, or 1–3; filaments straight, free or connate, or inflexed; anthers large and mucronate to small, bilobate and non-mucronate. *Ovary* superior, inferior or immersed in sockets in the inflorescence, usually 1-locular; styles 1 or 2; stigma simple or bifid; ovule 1, anatropous or campylotropous, generally apical. *Pistillode* present or absent in male flowers. *Fruit* drupaceous, free, or connate in fleshy syncarps or syconia (figs), or achenes. *Seeds* small to large, with endocarp; testa membranous or disintegrated; embryo curved or straight; cotyledons plicate, conduplicate, or flat.

A pantropical family of 37 or 38 genera and *c.* 1,100 species, with few incursions into temperate latitudes. Seven genera and 50 species in Australia, with five genera and 23 species in the N.T., all of which are treated here.

The Moraceae contain important food plants such as *Ficus* (Figs), *Morus* (Mulberry) and *Artocarpus* (Breadfruit and Jackfruit).

Taxonomic reference: Berg *et al.* (2006).

1	Florets inside an infolded receptacle closed off by numerous bracts	Ficus
1:	Florets not enclosed in an infolded receptacle	2
2	Herbs, latex absent	Fatoua
2:	Trees or woody climbers, latex present	3
3	Woody climbers	Trophis
3:	Trees	4
4	Male inflorescence discoid; male flowers with 2–4 stamens; fruit not a fleshy syncarp	Antiaris
4:	Male and female inflorescence capitate, globose to clavate; male flowers with 1 stamen; fruit a fleshy syncarp	Artocarpus

ANTIARIS Lesch.

Trees, monoecious, with latex. *Leaves* alternate, often distichous, simple. *Stipules* free. *Male inflorescence* many-flowered, with an involucre of bracts. *Male flower* with tepals 2–7; stamens 2–4; filaments straight; pistillode absent. *Female inflorescence* with 1 or 2 flowers, with an involucre of bracts. *Female flowers* with tepals 4; ovary partly adnate to receptacle; stigmas 2. *Fruit* a drupe, ellipsoidal to pyriform. *Embryo* straight.

Monotypic genus; the single species has been divided by Berg (1977) into four infraspecific taxa, one of which occurs in Australia.

Taxonomic references: Corner (1962); Berg (1977); Berg *et al.* (2006).

A. toxicaria var. **macrophylla** (R. Br.) Corner

Tree 10–28 m tall, deciduous. *Stems* with appressed to ascending pilose hairs. *Petiole* 5–10 mm long. *Lamina* ovate to oblong, 4–21 cm long, 3–8 cm wide, coriaceous; base rounded, oblique to unequally cordate; margins serrate, dentate or

entire; apex acuminate; upper surface with scattered appressed hairs, lightly scabrous to hispid, glabrescent; lower surface with scattered appressed to ascending hairs, glabrescent; lateral veins in 9–16 pairs, intercostal veins prominent. *Stipules* triangular, 5–6 mm long, caducous. *Male*

inflorescence discoid, 5–7 mm diam. *Peduncle* to 7 mm long. *Male flowers* to 2 mm long; tepals 4; stamens 4. *Female flowers* with 4 tepals; stigmas 2, divided to base. *Infructescence* obovoid, 20–40 mm long, 9–20 mm diam., densely covered with short brown vesiculose hairs, red at maturity. *Flowering & fruiting*: July–Mar.

Fig. 1 (Brennan 2629); Pl. 1 (unvouchered).

Tropical Africa, Asia, Australia (N.T., Qld) and Pacific islands. Found across the Top End. In the D.R. recorded from the Tiwi Islands, East Point and the Channel Point area.

Antiaris toxicaria var. *macrophylla* is most often found in monsoon vine thickets on laterite-derived soils but is occasionally recorded from coastal dune systems.

Used to make canoes and ornamental carvings by the Rirratjinji (Yunupingu *et al.* 1995) and fibre by the Iwaidja (Blake *et al.* 1998) and traditional owners of Milingimbi (Wightman & Smith 1989).

This species is poisonous and should be handled with caution.

ARTOCARPUS J.R. Forst. & G. Forst.

Trees, monoecious with latex. *Leaves* alternate, distichous, or spiral, entire or lobed. *Stipules* paired, caducous. *Inflorescence* cauliflorous, unisexual, pedunculate, capitate, head globose or clavate to cylindrical, without involucre bracts. *Flowers* numerous; perianth lobes fused to each other and between flowers to form a syncarp of several to many flowers. *Male flowers* with stamens 1; filament straight in bud; pistillode absent. *Female flowers* with perianth tubular, lower part thin-walled, enclosing ovary, upper part thick-walled, often connate; styles exerted through perianth lobes. *Fruit* a syncarp developed from 1–many flowers. *Seed* large; embryo straight to slightly curved.

Genus of 50 species, with two in Australia and one in the N.T.

Taxonomic references: Jarrett (1960); Berg *et al.* (2006).

A. glaucus Blume

Tree to 26 m. *Twigs* with appressed puberulous hairs, glabrescent. *Petiole* 6–15 mm long, puberulous. *Lamina* ovate to elliptic, 5–25 cm long, 3–8 cm wide, base cuneate to rounded, often slightly asymmetric, margin entire or occasionally lobed, juvenile plants with lobed leaves; apex attenuate to acuminate; lateral veins 6–14 pairs, arching, prominent below; upper surface glabrous, midvein with appressed to erect hairs glabrescent; lower surface often grey-glaucous, puberulous to glabrescent and restricted to veins. *Stipules* to 3–5 mm long, pubescent. *Inflorescence* solitary or paired, pedunculate; inter-

floral bracts peltate, fringed with hairs. *Male head* clavate, 3–10 mm long, 2–3.5 mm diam. *Peduncle* 2–4 mm long. *Male flowers* 0.6 mm long; tepals 2 or 3; stamens to 0.8 mm long; filament cylindrical. *Female head* globose. *Syncarp* subglobose, often lobed, to 20 mm diam., 16 mm long, maturing orange-red. *Peduncle* 2.6–4.4 mm long. *Flowering*: Jan.–Oct. *Fruiting*: May–Nov.

Fig. 1 (Dunlop 8000; Parker 674; Russell-Smith 6241).

Malesia and Australia (N.T.). Found across the Top End and recorded throughout the D.R. Mostly found in monsoon vine forest and along permanent watercourses on sandy loam.

FATOUA Gaudich.

Herbs, monoecious, without latex. *Leaves* alternate, simple, petiolate. *Stipules* small. *Inflorescence* a bisexual, capitate cyme. *Perianth* parts free or slightly connate, lightly villous. *Male flowers* with tepals 4; stamens 4; filaments inflexed in bud; pistillode present. *Female flowers* with tepals 4–6; ovary obovoid, often stipitate; style lateral, with a minute branch at base; stigma filiform. *Fruit* an achene, warted, asymmetrically globular to ovoid, slightly compressed, enclosed by persistent perianth; embryo curved with cotyledons equal.

Ditypic genus, with one species in Australia.

Taxonomic reference: Berg *et al.* (2006).

Antiaris toxicaria var. *macrophylla*

Artocarpus glaucus

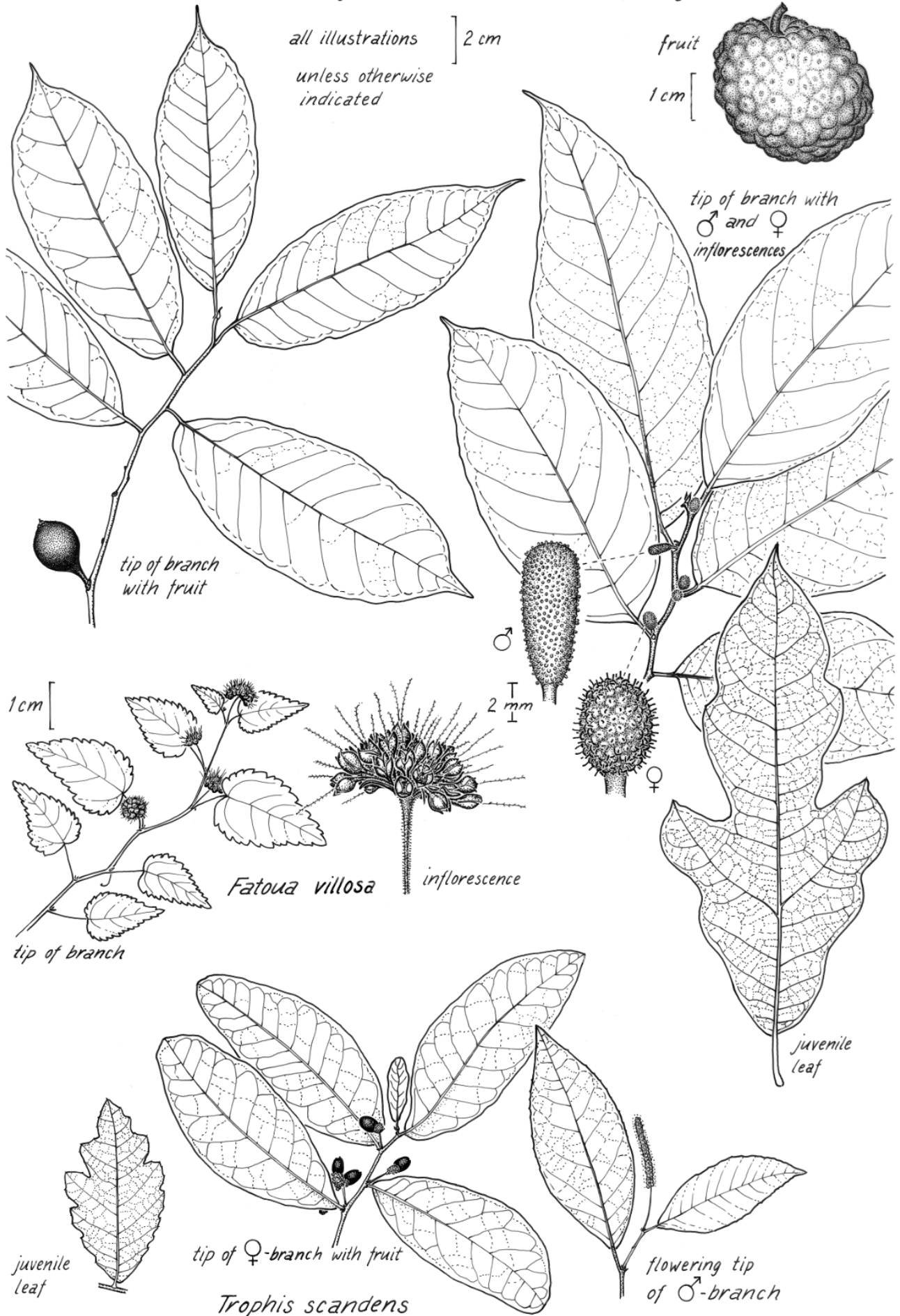


Fig. 1

F. villosa (Murray) Nakai*F. pilosa* Gaudich.

Herbs to 1 m high, rootstock present. *Twigs* densely covered with erect hyaline, sometimes ferruginous uncinata hairs. *Petiole* 2–25 mm long. *Lamina* ovate, broadly ovate to triangular, 8–48 mm long, 6–40 mm wide, chartaceous; base rounded to cordate, occasionally oblique; margin dentate to serrate; apex acute to acuminate; lateral veins 4–8 pairs; upper and lower surface sparsely armed with short stiff hairs. *Stipules* narrow, 2–4 mm long, caducous. *Inflorescence* c. 7.5 mm diam., shorter than leaves. *Male flowers* pedicellate; tepals 4; stamens 4; pistillode minute. *Female flowers* subsessile; tepals 4 or 5. *Flowering & fruiting*: June–May.

Fig. 1 (*Cowie 8911*).

South-east Asia, Malesia and Australia (W.A. N.T., Qld). Recorded from open woodland and vine thickets on dolomite, sand and limestone-derived soils. It is also been recorded as a lithophyte on sandstone. Not recorded from the D.R.

Plants often die back to a persistent rootstock during the dry season.

Sometimes confused with *Laportea interrupta* (Urticaceae) from which it can be distinguished by the caducous stipules and the inflorescence that is shorter than the leaves.

FICUS L.

Trees, shrubs or scramblers; stranglers, rock-splitters, free-standing or terrestrial. *Leaves* simple, entire or palmately lobed, petiolate, glands often present at base or apex of petiole. *Stipules* caducous or rarely persistent. *Inflorescence* a urceolate syconium, axillary, ramiflorous, cauliflorous, or geocarpic. *Tepals* 2–8, free or connate, entirely gamophyllous or absent. *Male florets* (flowers) with stamens 1–8; anthers mucronate, introrse; pistillode usually absent. *Female florets* with ovary 1, unilocular; stigma bifid or simple; ovule 1, anatropous. *Gall florets* with ovary bloated, sterile and containing a fig-wasp; style short; stigma funnel-shaped. *Fruit* a drupelet, the woody endosperm forming a pyrene.

Genus of c. 750 species; 44 recorded in Australia, 19 in the N.T. and 12 in the D.R.

Flowering and fruiting occurs throughout the year for all species of figs.

Taxonomic references: Corner (1959a–d); Berg & Corner (2005); Dixon (2001a & b, 2002, 2003, 2007).

1	Stipules persistent	F. racemosa
1:	Stipules caducous	2
2	Internodes hollow in cross section	3
2:	Internodes solid in cross section	5
3	Lower leaf surface glabrous	F. adenosperma
3:	Lower leaf surface hispid	4
4	Flat gland absent at junction of stem and petiole	F. congesta
4:	Flat gland present at junction of stem and petiole	F. hispidia
5	Leaves deeply lobed	F. carica
5:	Leaves not deeply lobed	6
6	Upper or lower leaf lamina scabrid, hispid, or with aculeate hairs	7
6:	Upper or lower leaf lamina glabrous or variously hairy, but not scabrid, hispid or aculeate	11
7	Intercostals deeply sunken to form areola	F. aculeata
7:	Intercostals not deeply sunken	8
8	Leaves obovate	F. scobina
8:	Leaves elliptic, ovate	9

- 9 Leaf base asymmetric **F. tinctoria**
 9: Leaf base symmetric or almost so **10**
- 10 Lateral veins 11–18 pairs **F. carpentariensis**
 10: Lateral veins 20–46 pairs **F. coronulata**
- 11 Basal bracts of syconium persistent; banyan with aerial roots from
 large branches **12**
 11: Basal bracts caducous; lithophytes or free-standing trees, aerial roots
 from large branches absent **13**
- 12 Lateral veins 15–20 pairs; basal bracts 2 **F. benjamina**
 12: Lateral veins 6–16 pairs; basal bracts 3 **F. virens**
- 13 Ostiolar bracts imbricate **F. henneana**
 13: Ostiolar bracts valvate **14**
- 14 Intercostals deeply sunken to form areola **15**
 14: Intercostals not deeply sunken **16**
- 15 Basal bracts 2–8 mm long, peduncles slender, 1–2 mm diam. **F. cerasicarpa**
 15: Basal bracts 6–29 mm long, peduncles thick, 2–5 mm diam. **F. platypoda**
- 16 Plants prostrate woody shrubs, often clinging to vertical rock faces;
 ferruginous hairs absent **F. lilliputiana**
 16: Plants erect shrubs or trees; glabrous or with hyaline and ferruginous hairs **17**
- 17 Leaf lamina mealy (under high magnification), grey-green; syconia yellow
 at maturity **F. subpuberula**
 17: Leaf lamina glabrous or with weak ferruginous hairs, ascending hyaline
 hairs may be present; syconia red to reddish-brown at maturity **18**
- 18 Plants glabrous in all parts **F. atricha**
 18: Plants variously pubescent (if appearing glabrous check developing leaves
 by removing a stipule) **F. brachypoda**

F. aculeata Miq.

F. opposita var. *aculeata* (Miq.) R.J.F. Hend.

Tree or shrub, to 15 m tall, dioecious. *Twigs* 1.3–4.4 mm diam., scabrid, puberulous-pilose, villous, or occasionally pilose-aculeate, glabrescent, internodes solid. *Leaves* opposite or alternate, sometimes both conditions occurring on same individual; flat gland present at junction of petiole and lamina. *Petiole* 2–38 mm long, 0.8–3.1 mm diam., scabrid, puberulous, or pilose-villous, occasionally pilose-aculeate, shallowly channelled on the upper surface, periderm persistent. *Lamina* widely ovate to ovate, occasionally obovate, narrowly elliptic to widely elliptic, or rarely lanceolate, 17–182 mm long, 13–96 mm wide, crustaceous; base oblique, rounded, obtuse, or cordate; margin recurved, rarely flat, aculeate; apex acute, rounded or obtuse-retuse; lateral veins 4–13 pairs, intercostals sunken, areola obscured by grey pilose-villous hairs or visible with puberulous-pilose hairs in the pits, basal

veins distinct; upper surface smooth, scabrid or scabrid-aculeate; lower surface scabrid, occasionally aculeate along mid and lateral veins or grey pilose-villous; cystoliths visible as raised dots on upper surface. *Stipules* lateral, 4–15 mm long, puberulous-pilose, usually caducous, occasionally tardily caducous. *Syconia* axillary, ramiflorous, depressed-globular to globular, 6–17 mm long, 6–18 mm diam., scabrid, pilose-villous or aculeate, dark maroon-red at maturity. *Ostiole* closed off by 3–5 imbricate bracts. *Peduncle* absent or to 8.5 mm long, 0.8–1.4 mm diam. *Basal bracts* 3, 1–2.4 mm long, imbricate, occasionally evenly spaced along peduncle, or one becoming lateral on the wall of the syconium, persistent. *Male florets* in 1 row around the ostiole, pedicellate; tepals 4 or 5. *Female and gall florets* sessile or pedicellate; tepals 3–5. *Interfloral bracts* absent.
Sandpaper Fig.

Australia (W.A., N.T., Qld).

There are two varieties of *F. aculeata* and both have diverse habitat preferences. They have been recorded from hummock grassland, riparian forest, eucalypt woodland, vine thickets, *Melaleuca* shrubland and woodland, *Allosyncarpia* forest, and floodplain margins. However, they are most commonly encountered in eucalypt woodland. No particular substrates are favoured with records indicating alluvium, loams, heavy clay soils, coastal sand and calcareous dunes, and soils derived from granite, limestone, laterite, quartz and basalt.

This species was previously treated as two varieties under *Ficus opposita*. Dixon (2007) has reinstated the species and considers *Ficus opposita* to be confined to the east coast of Queensland.

Ficus aculeata is sometimes confused with the uncommonly collected and closely related species *F. carpentariensis* which has narrowly elliptic to elliptic leaves, a longer peduncle, and raised reticulate venation as opposed to the sunken areolae of *F. aculeata*. *Ficus aculeata* is also predominantly a woodland species, while *F. carpentariensis* is associated with riparian and monsoon forests. *Ficus aculeata* is also often confused with *F. scobina*, from which it is distinguished by the usually obovate leaves and the absence of foveolate areola on their lower surface.

The species is used medicinally, as a food, and as sandpaper by many Aboriginal people across the Top End (Blake *et al.* 1998; Liddy *et al.* 2006; Lindsay *et al.* 2001; Puruntatameri *et al.* 2001; Smith *et al.* 1993; Wightman *et al.* 1991; Wightman *et al.* 1992; Wightman *et al.* 1994; Wijnjorrotj *et al.* 2005).

- | | | |
|----|--|----------------------|
| 1 | Lower leaf surface densely grey pilose-villous or pilose-aculeate; opening of areole obscured by hairs | var. aculeata |
| 1: | Lower leaf surface scabrid; opening of areole not obscured by hairs; hairs in the pits | var. indecora |

var. **aculeata**

Twigs puberulous-pilose, villous or occasionally pilose-aculeate, glabrescent. *Petiole* 3–38 mm long, pilose-villous or occasionally pilose-aculeate. *Lamina* widely ovate to ovate or narrowly elliptic to widely elliptic, 19–149 mm long, 14–96 mm wide, margin recurved, aculeate; upper surface scabrid-aculeate; lower surface grey pilose-villous, occasionally with mid and lateral veins aculeate.

Syconia 6–17 mm long, 6–18 mm diam., pilose-villous or aculeate.

Fig. 2 (*Mangion 1066*); Pl. 2 (*Stuckey 692*).

Australia (W.A., N.T., Qld). Widespread across the north of Australia, but uncommon in the D.R.

var. **indecora** (Miq.) D.J. Dixon

F. opposita var. *indecora* (Cunn. ex Miq.) Corner

Twigs puberulous or scabrid, glabrescent. *Petiole* 2–25 mm long, scabrid or puberulous. *Lamina* widely elliptic to narrowly elliptic, ovate or occasionally obovate, 17–182 mm long, 13–81 mm wide, margin recurved, rarely flat, aculeate; upper surface smooth, scabrid; lower surface scabrid along mid and lateral veins. *Syconia* 7–14 mm long, 6–14 mm diam., scabrid, aculeate or occasionally pilose.

Fig. 2 (*Rankin 1568*); Pl. 3 (unvouchered).

Australia (W.A., N.T.). Ranges from the western Top End, including the D.R., to the Kimberley and Pilbara regions of W.A. There is one collection from the Gove area of eastern Arnhem Land.

F. adenosperma Miq.

Tree to 10 m tall, dioecious. *Twigs* 2–4 mm diam., pilose, glabrescent, internodes hollow. *Leaves* alternate. *Petiole* 6–36 mm long, 1–2 mm diam., pilose, glabrescent, periderm brown and flaking off. *Lamina* ovate, narrowly elliptic to elliptic or narrowly rhombic to rhombic, 27–136 mm long, 15–68 mm wide, coriaceous; base cordate or occasionally oblique; margin entire; apex acute; upper surface glabrous or with scattered appressed hairs, often with dried water marks; lateral veins 5–12 pairs, intercostals not sunken, basal veins distinct, flat gland in each axil of basal veins; upper and lower surfaces glabrous, mid and lateral veins pilose, glabrescent; cystoliths visible as raised dots on upper and lower surface. *Stipules* amplexicaul 15–20 mm long, glabrous, or with villous midrib, margins entire or ciliate, caducous. *Syconia* axillary, or just below the leaves, in pairs, 8–11 mm long, 8–13 mm diam., occasionally stipitate, broadly obovoid, smooth to tuberculate, deep purple at maturity. *Ostiole* closed off by 3–5 imbricate bracts. *Peduncle* 2–12 mm long, 0.5–1 mm diam. *Basal bracts* 3, 0.7–1.2 mm long, puberulous, imbricate, persistent. *Male florets* in 1 row around the ostiole; tepals 4 or 5. *Female and gall florets* sessile; tepals 3 or 4. *Interfloral hairs* present.

Fig. 3 (*Russell-Smith 6325*).

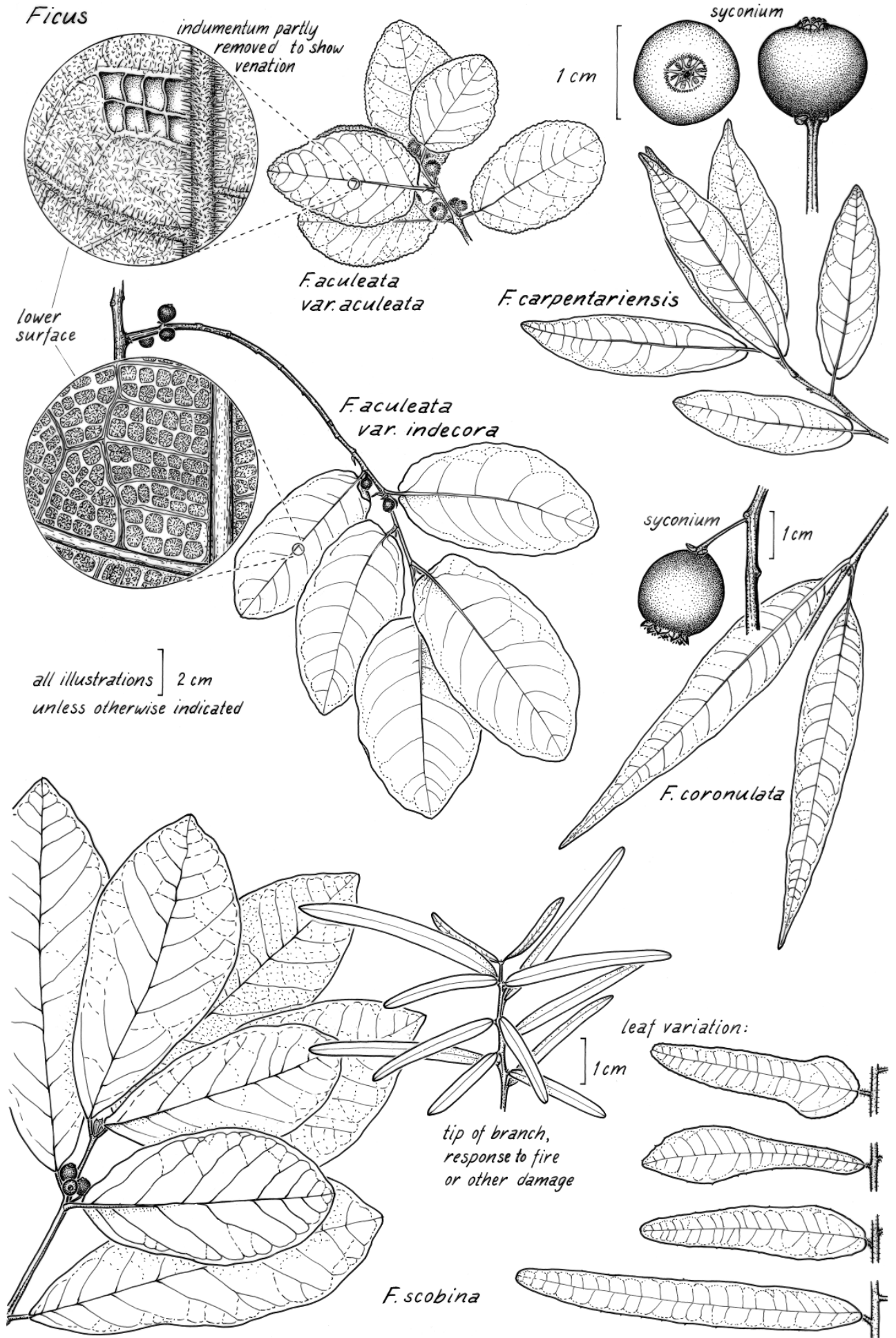


Fig. 2

Malesia, Solomon Islands, New Hebrides and Australia (N.T., Qld). Uncommon in the D.R. Occurs in vine thickets and riparian vegetation associated with permanent water.

F. atricha D.J. Dixon

F. platypoda var. *cordata* Specht

Tree or shrub, to 10 m, monoecious, lithophytic; all parts glabrous. *Twigs* 1–5 mm diam., internodes solid. *Leaves* alternate, waxy gland present at base of midvein at junction with petiole. *Petiole* 3–41 mm long, 1–4 mm wide, periderm persistent. *Lamina* ovate to very widely ovate, oblong to elliptic, 16–154 mm long, 8–111 mm wide, coriaceous; base cordate, truncate, rounded, obtuse or cuneate; margin entire; apex acute, obtuse or rounded; lateral veins 17–72 pairs, intercostals not sunken, basal veins indistinct; cystoliths indistinct. *Stipules* amplexicaul, 14–50 mm long, caducous. *Syconia* axillary, in pairs, transversely ellipsoid, obloid, spheroid or ovoid, 6–17 mm long, 6–16 mm diam., yellow, brownish-yellow, orange, pink, red or burnt red. *Ostiole* triradiate, bracts valvate. *Peduncle* 2–12 mm long, 0.4–3.1 mm diam. *Basal bracts* 3, 2.3–3.5 mm long, imbricate, caducous. *Male florets* interspersed with the female and gall florets, pedicellate; tepals 3–4; anthers 1. *Female florets* sessile; tepals 3–5; stigma simple. *Gall florets* pedicellate; tepals 3–5. *Interfloral bracts* present. **Bald Rock-fig.**

Fig. 5 (*Craven 5945; Mangion 223*); Pl. 4 (*Brennan 6461*).

Australia (N.T., W.A.). Commonly encountered across the Top End of the N.T. but absent from the D.R. A lithophytic species restricted mainly to sandstone outcrops but also found on limestone, laterite, and quartzite rock formations.

This species may be confused with individuals of *F. brachypoda* and *F. lilliputiana* with which it is sympatric for part of its range. *Ficus atricha* is most easily distinguished from *F. brachypoda* by all of its parts being glabrous. It differs from *F. lilliputiana* by its erect habit.

Used as a food source by many Aboriginal people across the Top End (*Liddy et al. 2006; Lindsay et al. 2001; Smith et al. 1993; Wightman et al. 1992; Wijnjorrotj et al. 2005*).

F. benjamina L.

Tree to 15 m tall, monoecious, banyan, hemi-epiphytic, or lithophytic scrambler; aerial roots usually present. *Twigs* 1–3 mm diam., glabrous or

puberulous, glabrescent, internodes solid. *Leaves* alternate, sub-distichous, waxy gland absent or present at base of midvein at junction with petiole. *Petiole* 7–18 mm long, 1–2 mm diam., periderm persistent. *Lamina* lanceolate to oblanceolate, elliptic or ovate, 36–125 mm long, 16–51 mm wide, coriaceous; base cuneate, obtuse, rounded or occasionally cordate; margin entire; apex acuminate to acute; lateral veins 15–20 pairs, intercostals flush with lamina surface, basal veins distinct or occasionally indistinct; upper and lower surfaces glabrous; cystoliths visible as raised dots on the upper surface. *Stipules* amplexicaul, 11–20 mm long, glabrous, caducous. *Syconia* axillary in pairs, ellipsoidal, ovoid, obovoid, or rarely subglobose, 9–10 mm long, 8–12 mm diam., indistinctly tuberculate, dark red at maturity. *Peduncle* absent. *Ostiole* closed off with 3 flat imbricate bracts. *Basal bracts* of unequal size, usually 2, occasionally 3, to 1.5 mm long, concealed beneath the syconium body, persistent. *Male florets* interspersed with the female and gall florets, pedicellate; tepals 3. *Female florets* sessile and pedicellate; tepals 3 or 4. *Gall florets* sessile or pedicellate; tepals 3 or 4. *Interfloral hairs* absent.

Weeping Fig.

Fig. 4 (*Russell-Smith 5174*); Pl. 5 (unvouchered).

South-east Asia, Malesia, Solomon Islands and Australia (N.T., Qld); recorded in the D.R. Occurs in rainforests and has occasionally been recorded as a lithophyte in sandstone gorges.

A variable species that is no longer considered to have infraspecific taxa (*Berg & Corner 2005*). It is a large species with a weeping habit, frequently planted in parks and large gardens around Darwin. Some specimens have been recorded with a scrambling lithophytic habit and may warrant further investigation.

The bark is used for fibre by people of the Tiwi Islands (*Puruntatameri et al. 2001*).

F. brachypoda (Miq.) Miq.

F. platypoda var. *minor* (Miq.) Benth.

Tree or shrub, to 10 m tall, monoecious, lithophytic; indumentum on all organs puberulous or pilose, with or without weak interspersed ferruginous hairs, or with weak ferruginous hairs only, glabrescent; some organs may be entirely glabrous but indumentum always present on other organs. *Twigs* 2–6 mm diam., internodes solid. *Leaves* alternate, waxy gland absent or present at base of midvein at junction with petiole. *Petiole*

Ficus

F. congesta

F. adenosperma

all illustrations] 2 cm
unless otherwise indicated

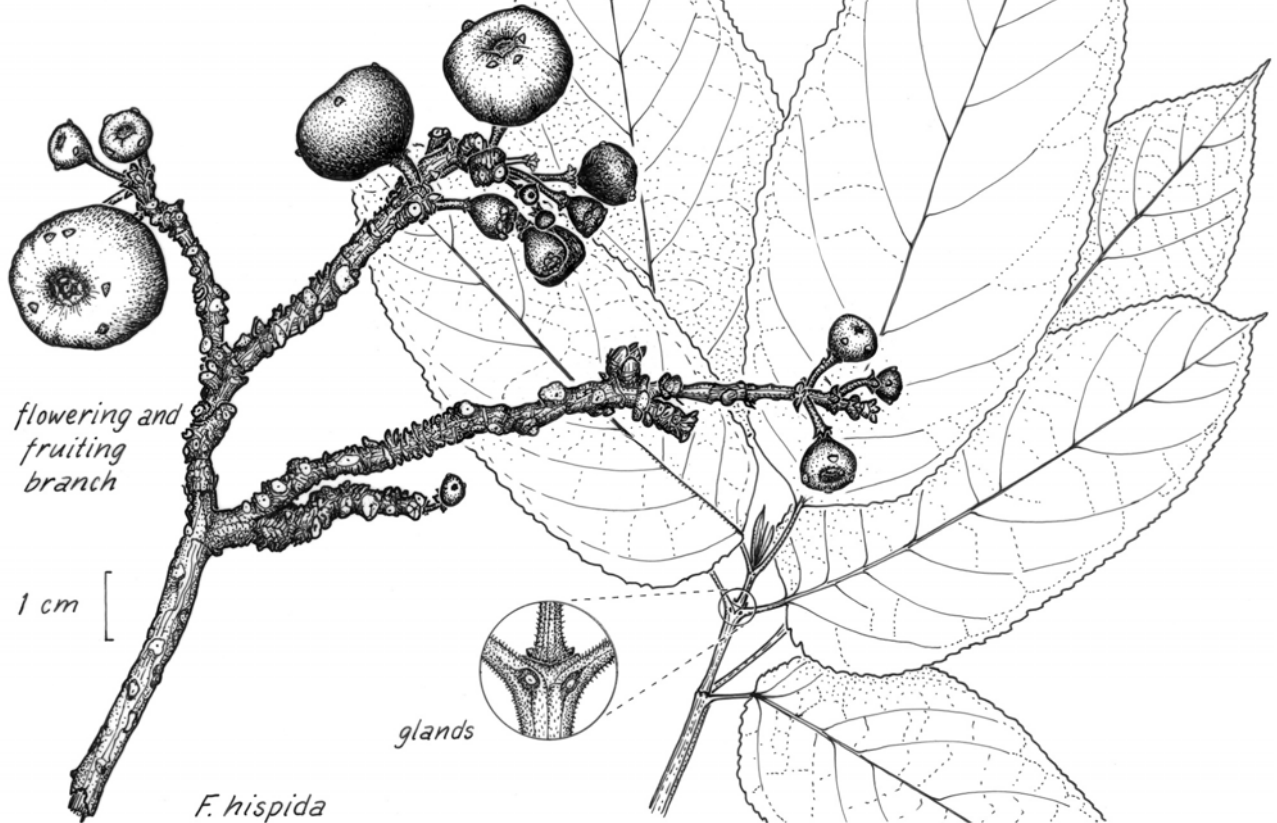
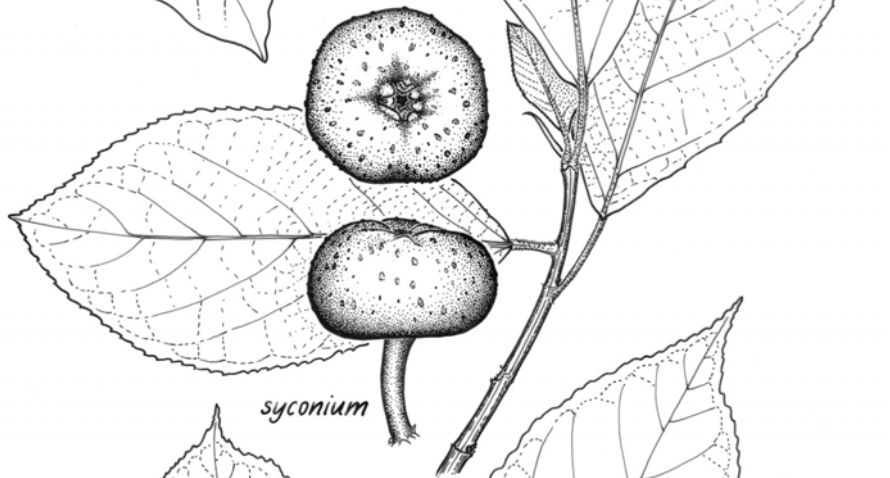
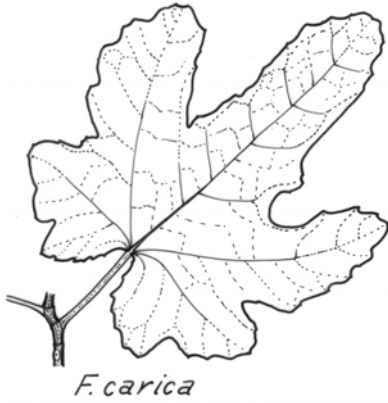


Fig. 3

3–40 mm long, 1–3.5 mm wide, periderm persistent. *Lamina* ovate, narrowly elliptic to elliptic or lanceolate, 19–126 mm long, 6–69 mm wide, coriaceous; base cordate, rounded, obtuse or cuneate; margin entire; apex acute to obtuse; lateral veins 21–68 pairs, intercostals not sunken, basal veins indistinct or distinct; cystoliths indistinct or visible as raised dots on lower leaf surface. *Stipules* amplexicaul, 14–76 mm long, caducous. *Syconia* axillary, spheroid to obloid, 4–18 mm long, 4–17 mm diam., pale yellow, yellow, orange, burnt orange-red or red. *Ostiole* triradiate, bracts valvate. *Peduncle* 1–11 mm long, 0.5–1.8 mm diam. *Basal bracts* usually 3 or rarely 2, to 4 mm long, imbricate, caducous. *Male florets* interspersed with the female and gall florets, sessile or pedicellate; tepals 3 or 4; anthers 1. *Female florets* embedded in wall of receptacle, sessile, or pedicellate; tepals 3 or 4; stigma simple. *Gall florets* sessile, subsessile, or pedicellate; tepals 3 or 4. *Interfloral bracts* present. **Common Rock-fig:**

Fig. 5 (Rankin 1905; Smith 3161); Pl. 6 (unvouchered).

Malesia and Australia (W.A., N.T., S.A., Qld). It is common throughout its range, which includes the D.R., and is the only fig species found in central Australia. A lithophyte, it is commonly found on outcrops of sandstone, limestone, quartz, granite, and occasionally basalt and laterite.

Ficus brachypoda is a variable species which may be mistaken for *F. atricha*, with which it is sympatric for part of its range. It is distinguished from *F. atricha* by its parts being variously hairy. Populations of *F. brachypoda* from drier areas of its distribution have leaves which are narrower and stiffly coriaceous compared to the elliptic and coriaceous leaves of northern populations.

Used as a food source and for fibre by Aboriginal people throughout the Top End (Liddy *et al.* 2006; Lindsay *et al.* 2001 as *F. platypoda*; Puruntatameri *et al.* 2001; Smith *et al.* 1993 as *F. platypoda*; Wightman *et al.* 1992 as *F. platypoda*; Wijnjorrotj *et al.* 2005; Yunupingu *et al.* 1995 as *F. platypoda*).

***F. carica L.**

Shrub or small tree to 1.5 m, dioecious, deciduous. *Leaves* alternate. *Lamina* palmately lobed, 10–20 cm long, 10–20 cm wide; base cordate; margin often lobed or toothed in the expanded upper parts of the main lobes, with sparse stiff hairs concentrated along the veins. *Syconia* pyriform, 50–80 mm long, brown to dark purple at maturity. **Edible Fig.**

Fig. 3 (Latx 12808).

An Asian species introduced to the Mediterranean, the Middle East and elsewhere (Morton 1987), being commonly cultivated for its edible fruit. It is naturalised in W.A. (Rye 1987) and S.A. (Jessop 1986). A specimen from Ilbilla Soak in the central-southern district of the N.T. is held at DNA but the species is doubtfully naturalised. Commonly cultivated throughout the N.T., including the D.R.

F. carpentariensis D.J. Dixon

Ficus D17207 Roper River

Ficus D17207 *carpentariensis*, N.T. Herbarium

Ficus sp. *carpentariensis* (W.B. Spencer 01/Jul/11)

Tree to 12 m tall, dioecious. *Twigs* 1–3 mm diam., puberulous-pilose or occasionally scabrid, glabrescent, internodes solid. *Leaves* opposite or alternate, waxy gland present at base of midvein at junction with petiole. *Petiole* 6–23 mm long, 1–2 mm diam., puberulous-pilose or occasionally scabrid, channelled on the upper surface, periderm persistent. *Lamina* narrowly elliptic to elliptic, 42–188 mm long, 16–65 mm wide, coriaceous; base cuneate, oblique, rounded, obtuse or occasionally truncate; margin recurved, aculeate or smooth; apex acute; lateral veins in 11–18 pairs, intercostals not sunken, basal veins distinct; upper surface scabrid or occasionally aculeate; lower surface scabrid, puberulous-pilose or occasionally villous, with raised reticulate venation; cystoliths visible as raised dots on upper surface. *Stipules* lateral or interpetiolar, to 12 mm long, puberulous-pilose, caducous. *Syconia* axillary, globular, 11–21 mm long, 10–12 mm diam., puberulous-pilose or occasionally villous; ostiole closed off by 5 imbricate bracts. *Peduncle* 6–14 mm long, 0.6–1.1 mm diam. *Basal bracts* 3, 1.2–4.5 mm long, puberulous, persistent, occasionally evenly spaced along peduncle. *Male florets* in 1 or 2 rows around the ostiole, pedicellate; tepals 4 or 5; stamens 1. *Female and gall florets* sessile or pedicellate; tepals 5 or 6. *Interfloral bracts* absent.

Carpentaria Fig.

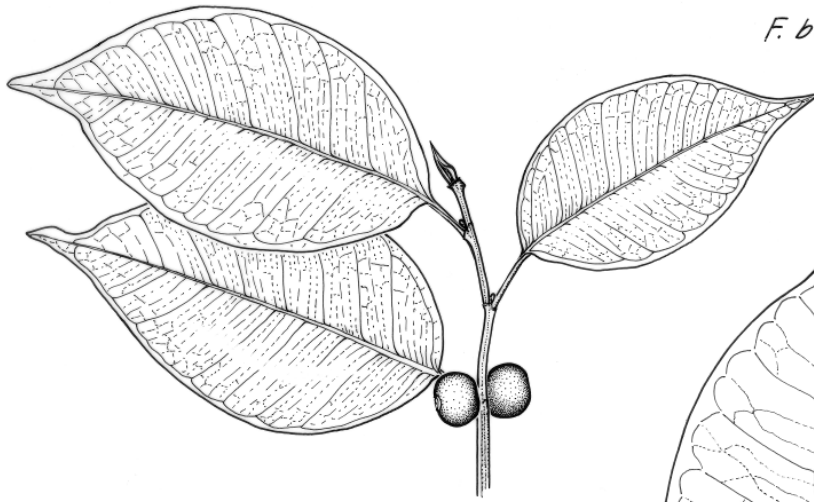
Fig. 2 (Brennan 5784).

Australia (N.T.). Only known from Koolpin Gorge, Abner Range, Wologorang Homestead, Elsey N.P., Ngukurr, Angus Springs and Nunns Springs. Frequently associated with riparian vegetation or monsoon forest associated with sandstone.

Ficus carpentariensis is an uncommonly collected species closely related to *F. aculeata*. Notes for

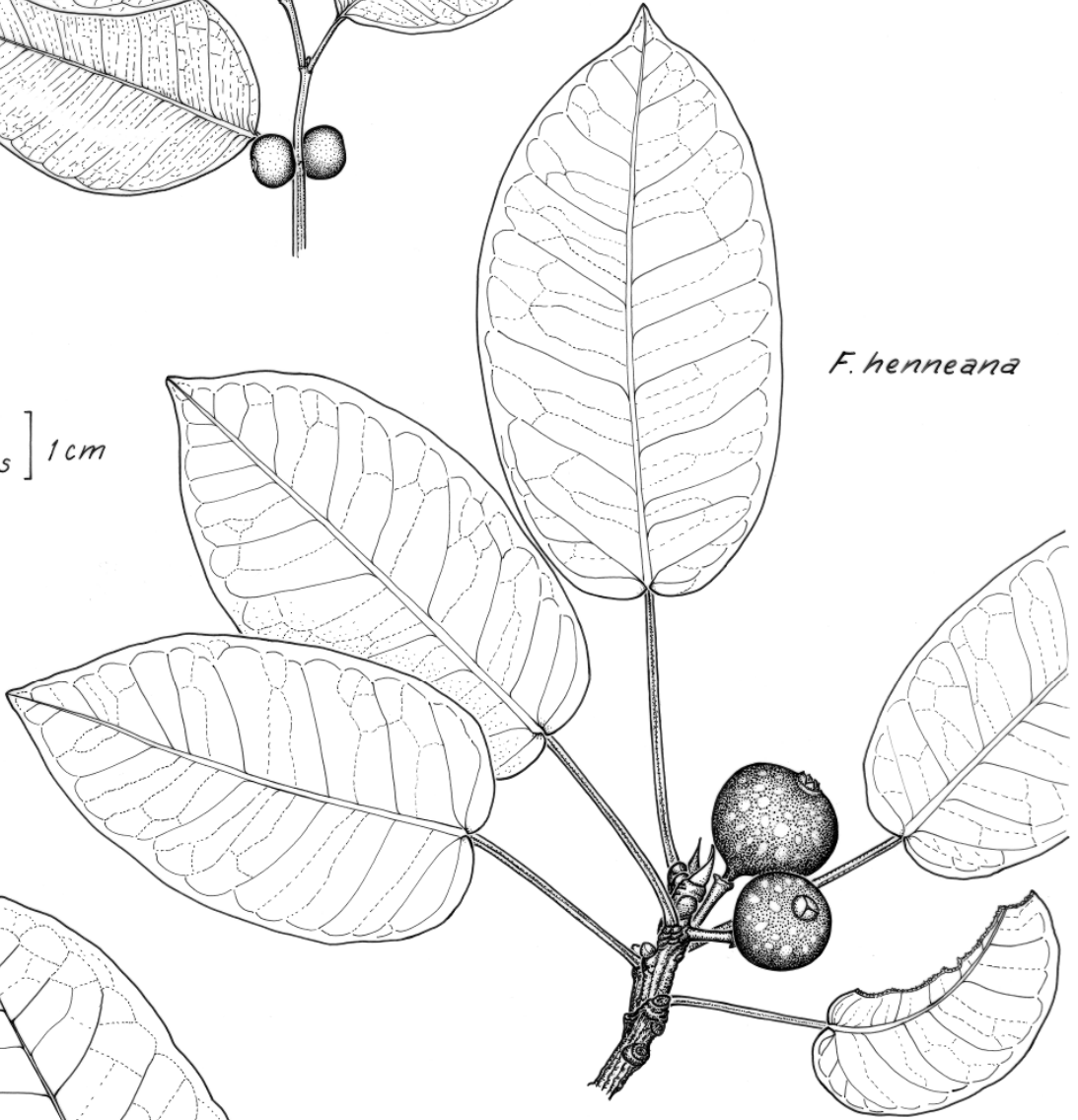
Ficus

F. benjamina



F. henneana

all illustrations } 1 cm



F. tinctoria
subsp. tinctoria

Fig. 4

distinguishing the two species are given under *F. aculeata*.

F. cerasicarpa D.J. Dixon

Tree to 13 m tall, monoecious, lithophytic. *Twigs* 1.6–5.3 mm diam., pilose, villous with or without interspersed weak ferruginous hairs, internodes solid. *Leaves* alternate, waxy gland present at base of midvein at junction with petiole. *Petiole* 5–20 mm long, 0.7–3 mm wide; puberulous, pilose, velutinous or villous with or without weak ferruginous hairs, periderm persistent. *Lamina* elliptic, ovate, 27–124 mm long, 14–73 mm wide, coriaceous; base cordate, truncate, rounded or obtuse; margin entire; apex obtuse to acute; lateral veins 17–44 pairs, intercostals sunken to form areola, basal veins indistinct; upper surface puberulous, pilose, velutinous or villous, with or without interspersed weak ferruginous hairs, glabrescent; lower surface villous-velutinous with or without interspersed weak ferruginous hairs; cystoliths indistinct or visible as raised dots on the upper leaf surface. *Stipules* amplexicaul, 16–63 mm long, puberulous, pilose, velutinous or villous, with or without interspersed weak ferruginous hairs, caducous. *Syconia* axillary in pairs, obloid, spheroid to broadly ellipsoid, 10–21 mm long, 9.8–21 mm diam., puberulous, pilose or villous, with or without interspersed weak ferruginous hairs, punctuate, yellow, pink, red or burgundy red. *Ostiole* triradiate, bracts valvate. *Peduncle* 2–36 mm long, 0.6–1.8 mm wide, puberulous, pilose or villous, with or without interspersed weak ferruginous hairs. *Basal bracts* usually 3, very rarely 2, imbricate, 2.5–7.8 mm long, puberulous, pilose or villous, with or without interspersed weak ferruginous hairs, caducous. *Male florets* interspersed with the female and gall florets, pedicellate; tepals 3 or 4; anthers 1. *Female florets* sessile, pedicellate; tepals 3 or 5. *Gall florets* sessile, pedicellate; tepals 3 or 4. *Interfloral bracts* present. **Cherry Rock-fig.**

Fig. 5 (Russell-Smith 6221).

Australia (W.A., N.T., Qld). Rarely collected in the D.R. A lithophyte frequently found on sandstone outcrops, and less frequently on limestone and quartzite.

Ficus cerasicarpa can be confused with *F. platypoda* with which it is sympatric for part of its range. It can be distinguished from this species by the smaller basal bracts (2.5–7.8 mm long in *F. cerasicarpa*, 7–29 mm in *F. platypoda*) and the

width of the peduncle (0.6–1.8 mm in *F. cerasicarpa*, 2–5 mm in *F. platypoda*).

F. congesta Roxb.

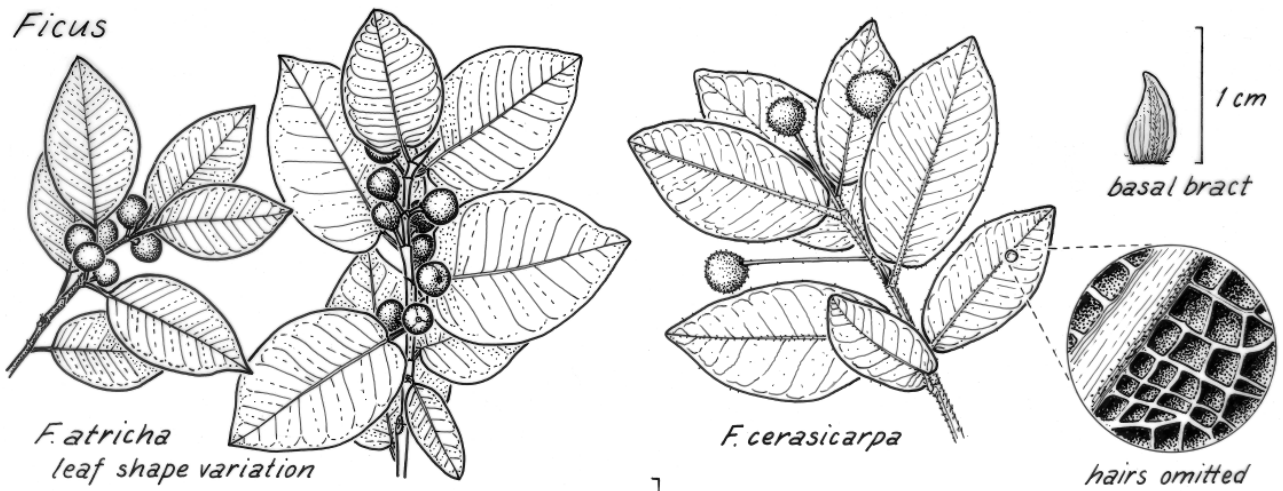
Tree, often multi-stemmed and to 8 m tall, dioecious. *Twigs* 1–7 mm diam., pilose or hispid, glabrescent, internodes hollow. *Leaves* spirally alternate, occasionally opposite, flat glands present in the axils of the primary and some secondary veins. *Petiole* 10–57 mm long, 1–4 mm diam., hispid, periderm flaking off. *Lamina* broadly or narrowly elliptic, elliptic to broadly or narrowly rhombic, rhombic, rarely ovate or obovate, 80–271 mm long, 39–132 mm wide, chartaceous; base rounded to cuneate, often cordate or occasionally oblique; margin crenulate, denticulate, serrulate, or serrate; apex acute to acuminate; lateral veins 8–15 pairs, intercostals not sunken, basal veins distinct; upper surface hispid, scabrid or smooth, glabrescent, often with dried water marks; lower surface hispid or scabrid; cystoliths visible as raised white dots on lower surface. *Stipules* lateral or rarely interpetiolar, 14–34 mm long, villous along midrib, caducous. *Syconia* axillary, ramiflorous or cauliflorous on pendulous, sometimes leafy branchlets to 40 cm long, occasionally stipitate, pyriform to discoid, 13–23 mm long, 13–30 mm diam., ribbed, lateral bracts absent, scabrid or hispid, glabrescent, lemon-yellow, tuberculate. *Ostiole* depressed, 2–3 mm diam., with up to 5 protruding apical bracts. *Peduncle* 17–36 mm long, 1–2 mm diam., hispid or pilose. *Basal bracts* 3, 1.4–2.5 mm long, pubescent, persistent. *Male florets* in 1 or 2 rows around the ostiole; tepals 2; stamen 1. *Female and gall florets* similar, sessile, subsessile, or pedicellate; perianth a cupule at base of ovary. *Interfloral bracts* absent. **Red-leafed Fig.**

Fig. 3 (Russell-Smith 7992).

Malesia and Australia (W.A., N.T., Qld). Commonly encountered across the Top End of the N.T., including the D.R. Usually associated with wet habitats, being mostly found along permanent streams and in spring-fed vine thickets.

A variable species considered by Berg & Corner (2005) to have no infraspecific taxa. However, they did state that Australian material is aberrant and have excluded some Australian types in their list of synonyms even though *F. fasciculata* and *F. trichostyla* are also based on eastern Australian material and are included synonyms.

Ficus



all illustrations } 2 cm
unless otherwise indicated

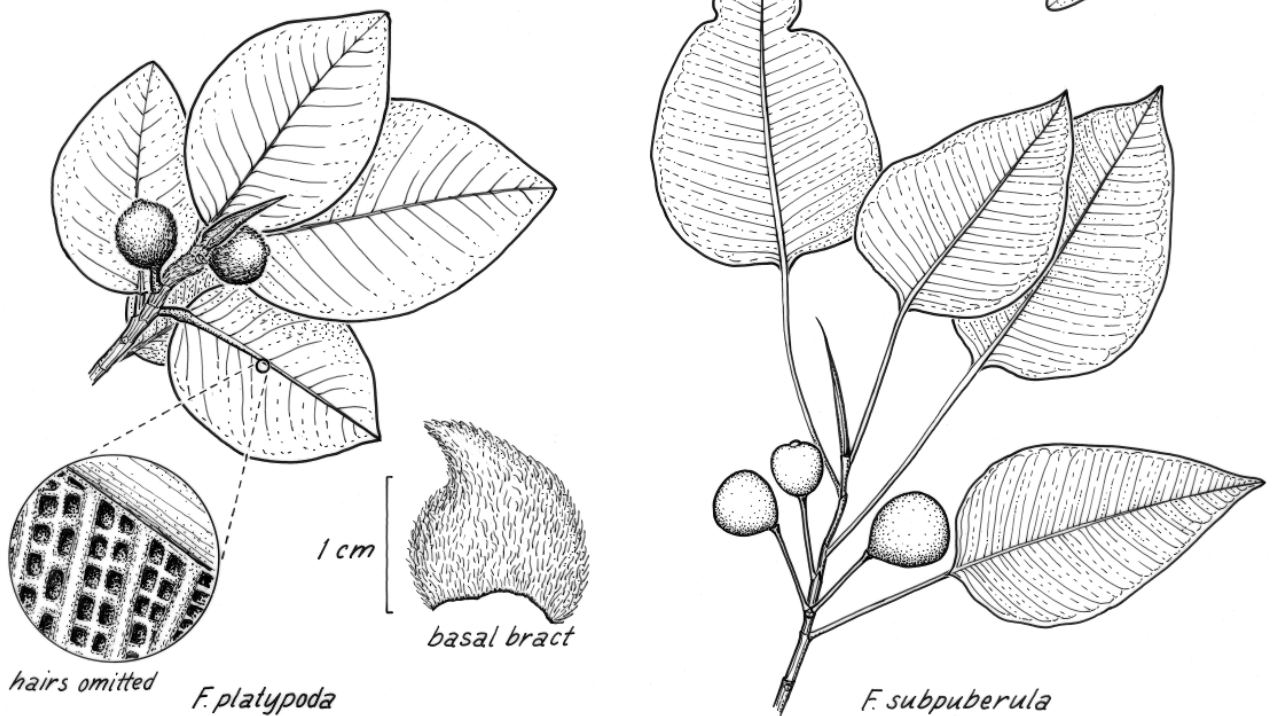
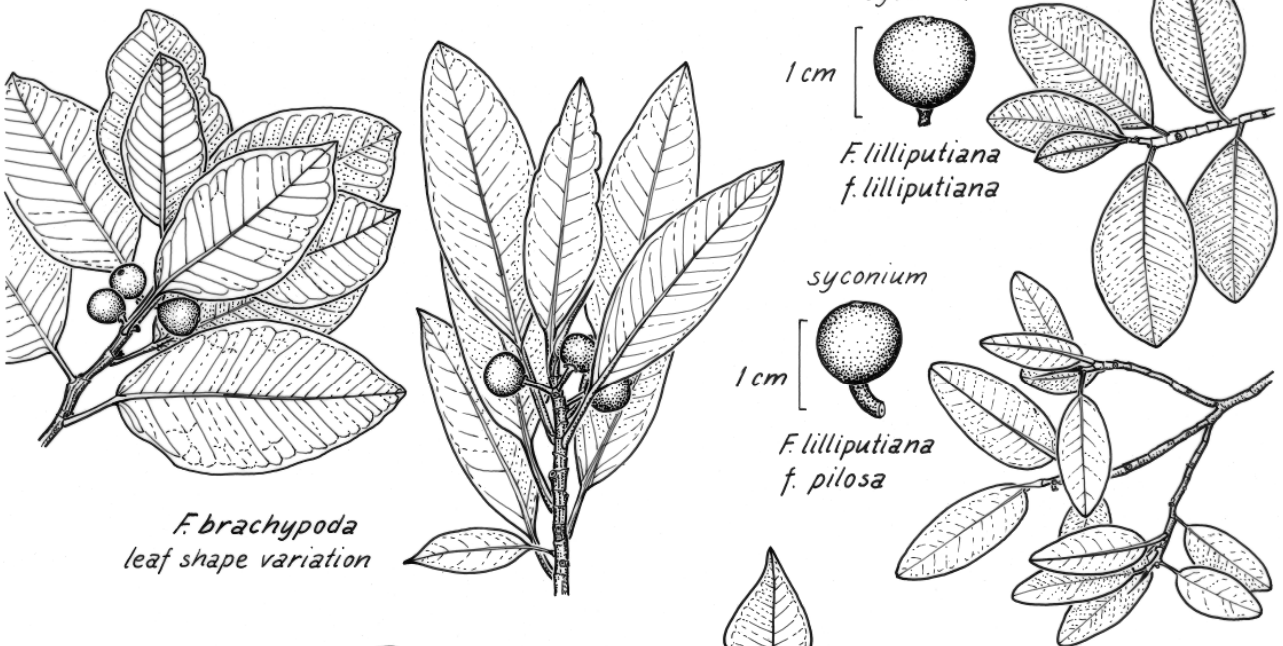


Fig. 5

Ficus congesta is often confused with *F. hispida* as both have similar habitat requirements. *Ficus hispida* is easily distinguished by its green new growth, not copper-coloured new growth as in *F. congesta*. In *F. hispida* there is also a flat gland at the junction of the stem and the petiole and the syconia have lateral bracts. Both of these features are not found in *F. congesta*. Furthermore, the leaves are almost always elliptic to oblong and opposite-decussate in *F. hispida* as opposed to elliptic to rhombic and spirally alternate in *F. congesta*, although Wheeler (1992) does mention that individuals of *F. hispida* sometimes appear with alternate leaves as a result of one of the leaf pair being caducous.

F. coronulata Miq.

Tree to 15 m tall, dioecious. Twigs 1–6 mm diam., pendulous with appressed hyaline hairs, glabrescent, internodes solid. Leaves alternate or occasionally opposite, waxy gland absent or present at base of midvein at junction with petiole. Petiole 13–34 mm long, 1–2 mm diam., scabrid or with scattered ascending hyaline hairs, deeply channelled on the upper surface, periderm persistent. Lamina narrowly elliptic to lanceolate, very rarely linear, 50–333 mm long, 12–105 mm wide, chartaceous; base cuneate; margin entire recurved; apex acuminate; lateral veins in 20–46 pairs, intercostals not sunken, basal veins distinct, occasionally indistinct; upper and lower surface lightly scabrid, occasionally with scattered appressed longer hyaline hairs on lower surface; cystoliths visible as raised opaque dots on upper surface. Stipules lateral or rarely interpetiolar to 21 mm long, with scattered appressed hyaline hairs, margin ciliolate, caducous. Syconia axillary and ramiflorous, globular, to 21 mm long, to 21 mm diam., occasionally stipitate, lightly scabrid. Ostiole protruded into a crown with numerous ciliolate bracts, green to yellowish-green at maturity. Peduncle 21 mm long, 0.6–1 mm diam. Basal bracts 3, to 4 mm long, with appressed hyaline hairs, margin ciliolate, persistent, occasionally becoming lateral at the base of the syconium. Male florets in 1–4 rows around the ostiole, pedicellate; tepals 4 or 5, ciliolate; stamens 1 or 2. Female and gall florets sessile and pedicellate; tepals 5, ciliolate. Interfloral bracts absent. **Crown Fig, River Fig.**

Fig. 2 (Booth 1232; Russell-Smith 4132); Pl. 7 (unvouchered).

Australia (W.A., N.T). It is common across the Top End and commonly encountered in the D.R. Usually found growing along streams.

Not usually confused with other species, being most distinctive for its mature syconia being green or yellowish-green and by the narrowly elliptic or lanceolate leaves.

Used medicinally and as a food by Aboriginal people across the Top End (Liddy *et al.* 2006; Smith *et al.* 1993; Wightman *et al.* 1991; Wightman *et al.* 1992; Wightman *et al.* 1994; Wijnjorrotj *et al.* 2005). The Jawoyn also use it to make fire-sticks (Wijnjorrotj *et al.* 2005).

F. henneana Miq.

F. superba var. *henneana* (Miq.) Corner

Tree to 10 m tall, terrestrial, rarely hemi-epiphytic or lithophytic, monoecious. Twigs 2–5 diam., minutely puberulous, or glabrous, internodes solid. Leaves spirally alternate, waxy gland present at base of midvein at junction with petiole or in axils of basal veins. Petiole 16–85 mm long, 1–2 mm diam., glabrous or occasionally minutely puberulous at base, periderm persistent. Lamina ovate to elliptic, 42–151 mm long, 18–88 mm wide, coriaceous; base rounded, cordate or rarely cuneate; margin entire; apex acute or obtuse; lateral veins 7–13 pairs, intercostals flush with lamina surface, basal veins distinct or indistinct; upper and lower surfaces glabrous; cystoliths visible as raised dots on the upper and lower surfaces. Stipules amplexicaul, to 81 mm long, minutely puberulous to puberulous or glabrous, caducous. Syconia axillary, spheroid, 18–25 mm long, 17–24 diam., stipitate, yellow turning purple-black with paler pinkish spots, glabrous. Ostiole umbonate, bracts 3, imbricate, minutely puberulous. Peduncle 5–11 mm long, 1.2–2.1 mm diam., with scattered hyaline hairs near apex, or glabrous. Basal bracts 3, 1.5–2 mm long, minutely puberulous or glabrous, caducous and leaving a collar scar. Male florets in 1 or 2 rows around the ostiole, pedicellate; tepals 3. Female and gall florets pedicellate or sessile; tepals 3–5. Interfloral bracts absent. **Superb Fig.**

Fig. 4 (Russell-Smith 4968).

Australia (N.T., Qld, N.S.W.). In the N.T. restricted to north-east Arnhem Land. Mainly associated with monsoon vine thickets on coastal dune systems. Rarely recorded as a hemi-epiphyte or hemi-lithophyte on sandstone and limestone.

Previously known in Australia as a variety of *F. superba*, *F. henneana* was reinstated as a species by Berg & Corner (2005). *Ficus superba* is now only considered to occur in south-east Asia and Malesia.

Used as a food source by the Rirratjingi (Yunupingu *et al.* 1995).

F. hispida L.f.

Tree to 13 m tall, dioecious. *Twigs* 3–8 mm diam., hispid, glabrescent, internodes hollow, with a flat gland at the junction with the petiole. *Leaves* opposite-decussate, occasionally alternate. *Petiole* 8–120 mm long, 1–3.5 mm diam., hispid, periderm persistent. *Lamina* narrowly elliptic to elliptic, narrowly oblong to oblong or rarely ovate; 87–340 mm long, 37–150 mm wide, chartaceous; base rounded, subcordate to cordate or oblique; margin serrulate to serrate; apex acuminate; lateral veins 5–13 pairs, intercostals not sunken, basal veins distinct, waxy glands and occasionally pocket domatia present in the axils of the primary lateral veins; upper and lower surface hispid, glabrescent; cystoliths visible as raised dots on lower surface. *Stipules* interpetiolar or rarely lateral, 7–22 mm, villous along midrib, caducous, occasionally tardily caducous. *Syconia* ramiflorous, cauliflorous on pendulous, sometimes leafy, branchlets up to 70 cm long, geocarpic or rarely axillary, depressed-globose, 10–37 mm diam., densely pubescent, minutely tuberculate; ostiole closed off by 5–10 imbricate bracts, lateral bracts present, yellow at maturity. *Peduncle* 5–24 mm long, 1.5–2.8 mm diam. *Basal bracts* 3, to 1.5 mm long, densely pubescent, persistent. *Male florets* in 1–3 rows around the ostiole. *Female and gall florets* sessile, subsessile to pedicellate; perianth a cupule at base of ovary. *Interfloral hairs* absent. **Hairy Fig.**

Fig. 3 (Brennan 2948; Dunlop 7269).

Southern Asia, Malesia and Australia (W.A., N.T., Qld). Commonly encountered in the D.R. Grows wherever permanent moisture prevails, such as monsoon vine thickets, springs and riparian vegetation.

Often confused with *F. congesta*; for distinguishing features see under that species. Now not recognised as having infraspecific taxa (Berg & Corner 2005).

Used as a food source and to flavour food by the MalakMalak and Matngala (Lindsay *et al.* 2001) and as a food source by the Wagiman and Mangarrayi (Liddy *et al.* 2006; Wightman *et al.* 1992).

F. lilliputiana D.J. Dixon

Shrub, prostrate to 45 cm high, spreading to 100 cm diam., monoecious, lithophytic. *Twigs* 1–3 mm diam., glabrous or puberulous, glabrescent, internodes solid. *Leaves* alternate, waxy gland present at base of midvein at junction with petiole. *Petiole* 2.5–16 mm long, 0.5–1.5 mm wide, glabrous or puberulous, periderm persistent. *Lamina* obovate, ovate, oblong, elliptic or narrowly elliptic, 8–67 mm long, 6–41 mm wide, coriaceous; base cordate, rounded or obtuse; margin entire; apex rounded, obtuse or acute; lateral veins 17–46 pairs, intercostals not sunken, basal veins indistinct; upper and lower surfaces glabrous, or puberulous to pilose; cystoliths indistinct. *Stipules* amplexicaul, 10–24 mm long; glabrous or puberulous, caducous. *Syconia* axillary, spheroid to obloid, 5.4–11.5 mm long, 5.3–13 mm diam., glabrous, or minutely puberulous to puberulous, occasionally punctuate, yellow, orange, red, purple or maroon. *Ostiole* triradiate, bracts valvate. *Peduncle* 1–7 mm long, 0.5–1.2 mm diam., glabrous, or puberulous. *Basal bracts* 3, 0.7–2.3 mm long, imbricate, glabrous, or puberulous to pilose, usually caducous, rarely persistent. *Male florets* interspersed with the female and gall florets, sessile or pedicellate; tepals 3 or 4; anthers 1. *Female florets* embedded in wall of receptacle, sessile or pedicellate; tepals 3 or 4. *Gall florets* sessile or pedicellate; tepals 3 or 4. *Interfloral bracts* present. **Lilliput's Rock-fig.**

Australia (W.A., N.T.). Both forms have a limited distribution, being restricted to the north-east Kimberley region of W.A. and the adjacent Keep River N.P. of the N.T. A lithophyte growing in rock crevices of older sandstone formations.

Easily recognised in the field as it is the only prostrate species. If collected without reference to its habit *F. lilliputiana* f. *pilosa* may be confused with *F. brachypoda*. It can be distinguished from this species by the absence of ferruginous hairs. Both forms grow together and in some instances have been collected as one specimen.

Ficus lilliputiana has immense horticultural appeal because of its prostrate habit.

- | | | |
|----|---|------------------------|
| 1 | Leaves and other parts glabrous | f. lilliputiana |
| 1: | Leaves hairy, other parts variously hairy | f. pilosa |

f. lilliputiana

All parts glabrous.

Fig. 5 (Dixon 424).

f. **pilosa** D.J. Dixon

Upper and lower lamina surface minutely puberulous to pilose.

Fig. 5 (Dixon 449).

F. platypoda (Miq.) A. Cunn. ex Miq.

F. leucotricha (Miq.) Miq.

F. leucotricha var. *megacarpa* F. Muell. ex Corner

F. leucotricha var. *sessilis* Corner

Tree to 10 m tall, monoecious, lithophytic. *Twigs* 4.4–7.1 mm diam., puberulous, pilose or villous, with or without interspersed weak ferruginous hairs, internodes solid. *Leaves* alternate, waxy gland present at base of midvein at junction with petiole. *Petiole* 7–36 mm long, 1–5 mm wide, pilose or villous with or without interspersed weak ferruginous hairs, periderm persistent. *Lamina* ovate or elliptic to widely elliptic, 53–167 mm long, 31–133 mm wide, coriaceous; base cordate, truncate, rounded or obtuse; margin entire; apex acute, obtuse or rounded; lateral veins 25–60 pairs, intercostals sunken to form areola, basal veins indistinct; upper surface puberulous, pilose or villous with or without interspersed weak ferruginous hairs; lower surface pilose, villous, with or without interspersed weak ferruginous hairs; cystoliths indistinct. *Stipules* amplexicaul 27–72 mm long, puberulous, pilose or villous with or without interspersed weak ferruginous hairs, caducous. *Syconia* axillary, obloid to spheroid to broadly ellipsoid, 9–28 mm long, 10–28 mm diam., pilose or villous, pale yellow, orange, pink, red or purple. *Ostiole* triradiate, bracts valvate. *Peduncle* 2–19 mm long, 2–5 mm wide, villous. *Basal bracts* 3, 7–29 mm long, pilose to villous with or without interspersed weak ferruginous hairs, caducous. *Male florets* interspersed with the female and gall florets, pedicellate; tepals 3 or 4; anthers 1. *Female florets* sessile, pedicellate; tepals 3 or 4. *Gall florets* sessile, pedicellate; tepals 3 or 4. *Interfloral bracts* present. **Large-leaf Rock-fig.**

Fig. 5 (Cowie 5078; Parker 444).

Australia (W.A., N.T.). Only found in the Victoria River region of the N.T. A lithophytic species mostly restricted to sandstone outcrops but occasionally found on limestone.

Ficus platypoda may be confused with *F. cerasicarpa*; for distinguishing features see under *F. cerasicarpa*.

Used as a food source by the Ngarinyman (Smith *et al.* 1993).

F. racemosa L.

Tree to 30 m tall, buttressed, monoecious. *Twigs* 1–5 mm diam., puberulous to pilose, glabrescent, internodes solid. *Leaves* alternate, waxy gland present at base of midvein at junction with petiole and in axils of basal veins, or in axils of basal veins. *Petiole* 8–96 mm long, pilose, periderm flaking off. *Lamina* ovate, elliptic to narrowly elliptic or rarely oblong, 43–247 mm long, 19–110 mm wide, coriaceous; base cuneate, oblique, obtuse or occasionally cordate; margin entire on mature trees, coarsely serrate on juvenile and coppice growth; apex acute; lateral veins 4–12 pairs, intercostals not sunken, basal veins distinct; upper and lower surfaces with scattered hyaline appressed hairs more dense along the mid and lateral veins; cystoliths visible as raised dots on lower surface; occasionally with dried water marks on upper surface. *Stipules* amplexicaul to 28 mm long and 8 mm wide, persistent on leafy twigs. *Syconia* ramiflorous and cauliflorous, in clusters on branchlets to 36 cm long or very occasionally occurring singly below leaves of small twigs, spheroid to obloid, to 40 mm long and 40 mm diam., occasionally stipitate, sparsely pubescent, or tomentose. *Ostiole* closed off by 5 or 6 apical bracts in a disc 2–3 mm diam. *Peduncle* to 12 mm long, 1.3–2.7 mm diam. *Basal bracts* 3, to 3 mm long, persistent. *Male florets* in 1 row around the ostiole; tepals 3; anthers 2 with filaments fused at their base. *Female florets* sessile; tepals 3 with drawn out tips. *Gall florets* pedicellate; tepals 3. *Interfloral bracts* absent. **Cluster Fig.**

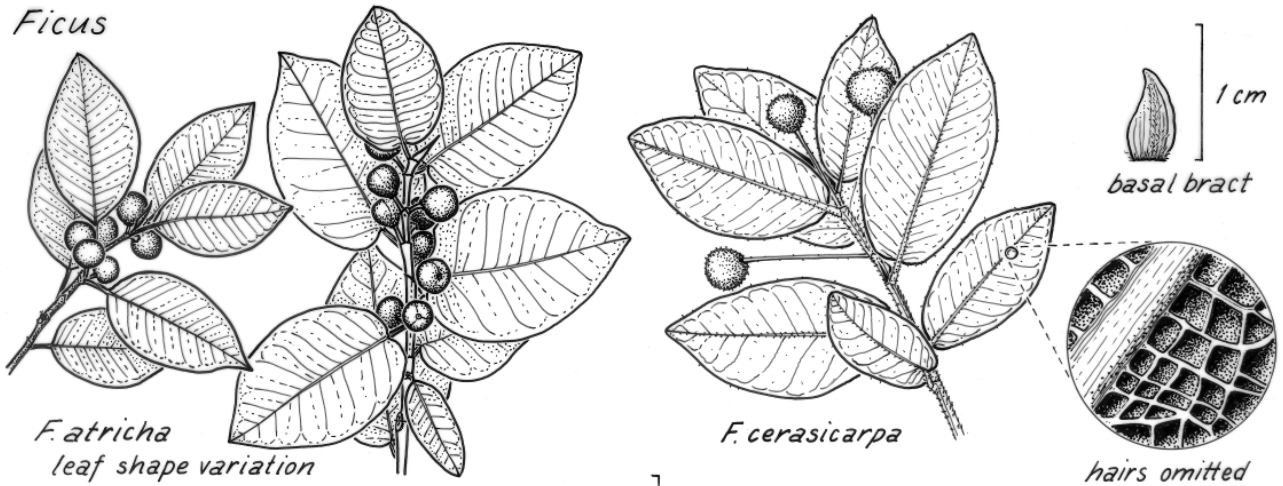
Fig. 6 (Booth 1296; Dunlop 9924); Pl. 8 (unvouchered).

South-east Asia, Malesia and Australia (W.A., N.T., Qld). Common across the Top End, including the D.R. Commonly encountered in monsoon forest or along watercourses.

A variable species now not recognised as having infraspecific taxa (Berg & Corner 2005).

Used as a food or to flavour food, or to make implements by many Aboriginal groups across the Top End (Blake *et al.* 1998; Liddy *et al.* 2006; Lindsay *et al.* 2001; Smith *et al.* 1993; Wightman *et al.* 1992; Wightman *et al.* 1994; Wijnjorrotj *et al.* 2005).

Ficus



all illustrations } 2 cm
unless otherwise indicated

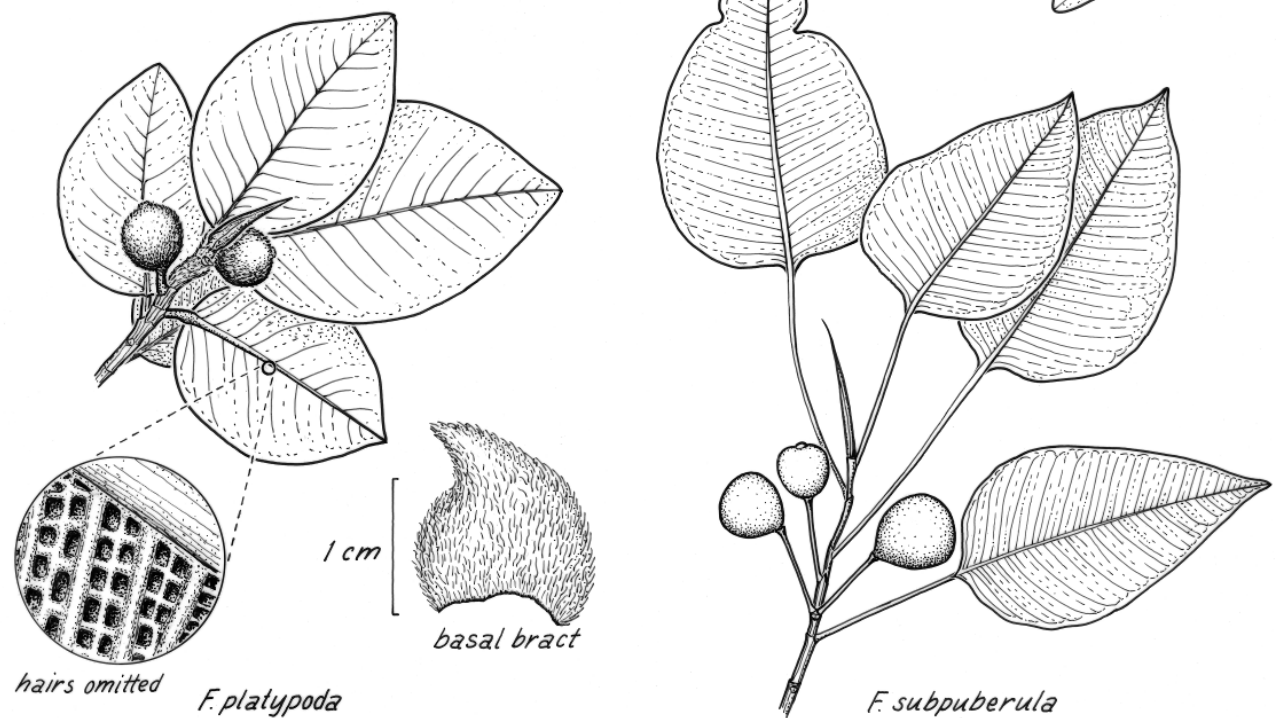
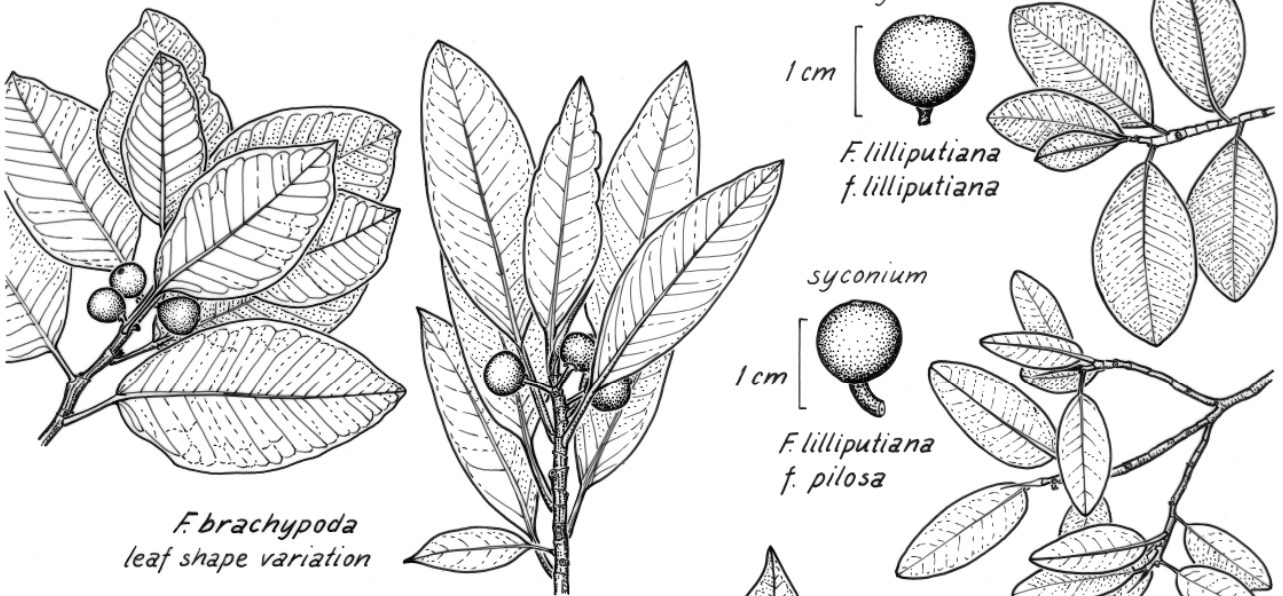


Fig. 5

F. scobina Benth.

Tree to 8 m tall, dioecious, rarely deciduous. *Twigs* 1–5 mm diam., densely villous to pilose, occasionally becoming somewhat glabrescent, with scattered erect scabrous hairs, occasionally absent, internodes solid. *Leaves* opposite or alternate, occasionally in whorls or pseudo-whorls of 3, waxy gland present at base of midvein at junction with petiole or in axils of basal veins. *Petiole* absent, or 1–38 mm long, 1–2 mm diam., periderm persistent. *Lamina* obovate, rarely pentagonal or rarely elliptic, narrowly linear in coppice growth, with some individuals showing transition from narrow linear leaves to the more typical obovate leaves, rarely shallowly trilobed at base, 25–212 mm long, 10–120 mm wide, chartaceous; base rounded and often narrowed; margin entire, aculeate; apex obtuse, rarely acute; lateral veins 5–34 pairs, intercostals not sunken, basal veins distinct; lower and upper surfaces strongly scabrid; cystoliths indistinct or as visible raised dots on the lower lamina surface. *Stipules* lateral, to 9 mm long, caducous. *Syconia* axillary, occasionally ramiflorous, rarely cauliflorous, globular, to 14 mm long and 14 mm diam., occasionally stipitate, occasionally with lateral bracts, scabrid, deep maroon, red or black. *Ostiole* to 3 mm, closed off by 5 imbricate bracts, slightly raised, with protruding apical bracts. *Peduncle* 1–12 mm long, 0.4–1 mm diam. *Basal bracts* 3, to 1.5 mm long, persistent, occasionally with one spaced along the peduncle. *Male florets* in 1 row around the ostiole; tepals 4 or 5; stamens 1 or 2. *Female florets* pedicellate, gall florets sessile; tepals 5. *Interfloral bracts* present. **Sandpaper Fig.**

Fig. 2 (Byrnes 824; Cowie 1474; Lazarides 225; Martens 433; Munir 5782; Thomson 3278); Pl. 9 (unvouchered).

Australia (N.T.). Commonly encountered in the D.R. Grows in vine thickets, rainforest, or occasionally on sandstone and is often associated with riverine vegetation.

Ficus scobina is often confused with *F. aculeata*; notes for distinguishing them are given under the latter species.

This species has previously been thought to occur in W.A. but specimens cited by Wheeler (1992) in the *Flora of the Kimberley Region* are *F. aculeata* var. *indecora* (Dixon 2007). Narrow-leaf forms of *F. scobina* occurring in the N.T. have previously been confused with *F. podocarpifolia* Corner from W.A. However, apart from three DNA specimens

(Munir 5782, Rankin 2207, Dunlop 4400), all accessions show a transition from narrowly oblong to the obovate leaf shape typical for *F. scobina*. Unlike the true *F. podocarpifolia* which in most cases has been collected with syconia, accessions of the narrow-leaved forms of *F. scobina* are sterile. Mature plants that have been damaged can also revert to the narrow-leaf form.

Used medicinally and as a food source by various Aboriginal groups across the Top End of the N.T. The leaves are also valued as a sandpaper. (Blake *et al.* 1998; Liddy *et al.* 2006; Lindsay *et al.* 2001; Puruntatameri *et al.* 2001; Wiyonjorrotj *et al.* 2005; Yunupingu *et al.* 1995).

F. subpuberula Corner

Tree to 13 m tall, lithophytic, monoecious. *Twigs* 2–4 mm diam., glabrous or minutely puberulous to pilose, glabrescent, internodes solid. *Leaves* alternate, waxy gland present at base of midvein at junction with petiole. *Petiole* 7–81 mm long, 1–3 mm wide, glabrous, minutely puberulous to pilose, periderm persistent. *Lamina* widely ovate, ovate, narrowly elliptic to widely elliptic or lanceolate; 27–143 mm long, 11–68 mm wide, coriaceous; base cuneate, obtuse, rounded or cordate; margin entire; apex acuminate, acute or obtuse; lateral veins 16–49 pairs, intercostals not sunken, basal veins indistinct; upper and lower surfaces glabrous or mealy to minutely puberulous; cystoliths indistinct. *Stipules* amplexicaul, 20–65 mm long, glabrous, minutely puberulous to puberulous, caducous. *Syconia* axillary, widely oblong, broadly oblong, oblong to narrowly oblong, spheroid or broadly ellipsoid, 10–24 mm long, 9–23 mm diam., glabrous, minutely puberulous to puberulous, yellow, orange or red. *Ostiole* triradiate, bracts valvate. *Peduncle* 3–27 mm long, 1–2.1 mm diam., glabrous, minutely puberulous to pilose. *Basal bracts* 3, (1.6) 3.3–9 mm long, glabrous or minutely puberulous to pilose, caducous. *Male florets* interspersed with female and gall flowers, pedicellate; tepals 2 or 3; anthers 1. *Female florets* sessile or pedicellate; tepals 3 or 4. *Gall florets* pedicellate; tepals 4 or 5. *Interfloral bracts* present. **Blue Rock-fig.**

Fig. 5 (Parker 650); Pl. 10 (unvouchered).

Australia (W.A., N.T., Qld). It occurs from the extreme western edge of Qld across the Top End of the N.T. to the Kimberley area of W.A. Common in the D.R. A lithophytic species of exposed situations on a variety of substrates.

Readily recognised as the foliage is often sparse, pendulous, and a dull grey-green colour.

Used as a food source and for fibre by the Wagiman (Liddy *et al.* 2006).

F. tinctoria G. Forst.

Tree to 15 m or shrub, terrestrial or hemi-lithophytic, dioecious. *Twigs* 1–4 mm diam., glabrous or minutely hispidulous to puberulous, scabrous or glabrous, internodes solid. *Leaves* alternate, distichous, waxy glands in the axils of one or both basal veins. *Petiole* 4–10 mm long, 1–3 mm wide, hispidulous, periderm flaking off. *Lamina* widely elliptic to elliptic, oblong, ovate-lanceolate or occasionally subrhombic, 23–171 mm long, 10–74 mm wide, coriaceous; base oblique, cuneate, obtuse, rounded, truncate or cordate; margin entire; apex acute to obtuse; lateral veins 4–11 pairs, intercostals not sunken, basal veins distinct; upper surface glabrous or hispidulous, often shiny; lower surface glabrous or hispidulous, smooth or scabridulous; cystoliths indistinct. *Stipules* amplexicaul, 10–12 mm long, sparsely minutely puberulous or glabrous, margin ciliate or entire, caducous. *Syconia* axillary or just below the leaves, in pairs or solitary, sometimes ramiflorous, with a stipe 2.2–7 mm long; spheroid to obloid, 9–11 mm long, 10–13 mm diam., sparsely minutely hispidulous or scabridulous, without lateral bracts, yellow to orange or dark red at maturity. *Ostiole* to 1 mm diam. closed off by 3–5 bracts, slightly umbonate. *Peduncle* very short. *Basal bracts* 3, 0.5–1 mm long, valvate at the base of the stipe, persistent. *Male florets* in 1 or 2 rows around the ostiole. *Female florets* sessile or pedicellate; tepals 3–5; styles glabrous. *Interfloral hairs* minute or absent.

Fig. 4 (Thomson 1066; Wilson 11424).

South-east Asia, Malesia, Australia and Pacific Islands (W.A., N.T.). In the N.T. only known from a single specimen collected in Judbarra (Gregory) N.P. This single specimen was collected at the base of a limestone cliff. In W.A. it is associated with vine thickets or riparian vegetation (Wheeler 1992).

Ficus tinctoria has been confused with *F. platypoda* and *F. brachypoda*; however, these species are easily distinguished by the absence of hispid or scabrid hairs on the upper and lower lamina surfaces.

Berg & Corner (2005) recognise two subspecies, subsp. *tinctoria* and subsp. *gibbosa*. Only the former is in Australia.

F. virens Aiton

Tree to 32 m tall, terrestrial, hemi-lithophytic, hemi-epiphytic, or banyan, monoecious, deciduous. *Twigs* 2–9 mm diam., glabrous or minutely puberulous to pilose, yellowish or brown when dry, internodes solid. *Leaves* spirally alternate, waxy gland present at base of midvein at junction with petiole. *Petiole* 8–105 mm long, 1–3 mm diam., glabrous or minutely puberulous, often hairy at base, glabrescent, periderm persistent. *Lamina* elliptic, ovate, oblong, oblanceolate or rarely obovate, 35–189 mm long, 18–102 mm wide, coriaceous; base cuneate, obtuse, rounded, truncate or cordate; margin entire; apex acute, acuminate, rounded, obtuse or becoming caudate; lateral veins 6–16 pairs, intercostals not sunken, basal veins distinct; upper and lower surfaces glabrous; cystoliths indistinct or visible as raised dots on the lower surface of the lamina. *Stipules* amplexicaul, 21–65 mm long, glabrous, or minutely puberulous, tomentose, velutinous or pilose, caducous. *Syconia* axillary, on twigs just below leaves, occasionally on short spurs, ramiflorous, occasionally cauliflorous, broadly ellipsoid, spheroid or very broadly obovoid to broadly depressed-obovoid, 9–15 mm long, 9–15 mm diam., glabrous or minutely puberulous, tomentose to pilose, lateral bracts absent, pink to purple to blackish at maturity. *Ostiole* 2.5–3 mm diam., bracts 2 or 3, imbricate, the third occasionally almost totally obscured by the upper bracts, flat or slightly raised. *Peduncle* absent or to 7.1 mm long, 1.2–2.6 (3.7) diam. when present. *Basal bracts* 3, 1.8–5 mm long, imbricate, persistent. *Male florets* near the ostiole; tepals 3; stamens 1. *Female floret* with tepals 3 or 4. *Interfloral hairs* present. **Banyan, White Fig.**

Sri Lanka, south-east Asia, Malesia and Australia (W.A., N.T., Qld, N.S.W.).

Berg & Corner (2005) did not recognise the infra-specific taxa of *F. virens*. While they included *F. virens* subsp. *sublanceolata* within the synonymy of *F. virens* they neglected to treat the subsp. *dasycarpa* which is endemic to Australia.

- | | | |
|----|------------------------------|-----------------------|
| 1 | Syconia densely pubescent .. | var. dasycarpa |
| 1: | Syconia glabrous | var. virens |

var. **dasycarpa** Corner

Syconia densely pubescent.

Fig. 6 (Russell-Smith 2291).

Australia (W.A., N.T., Qld). Rarely collected.

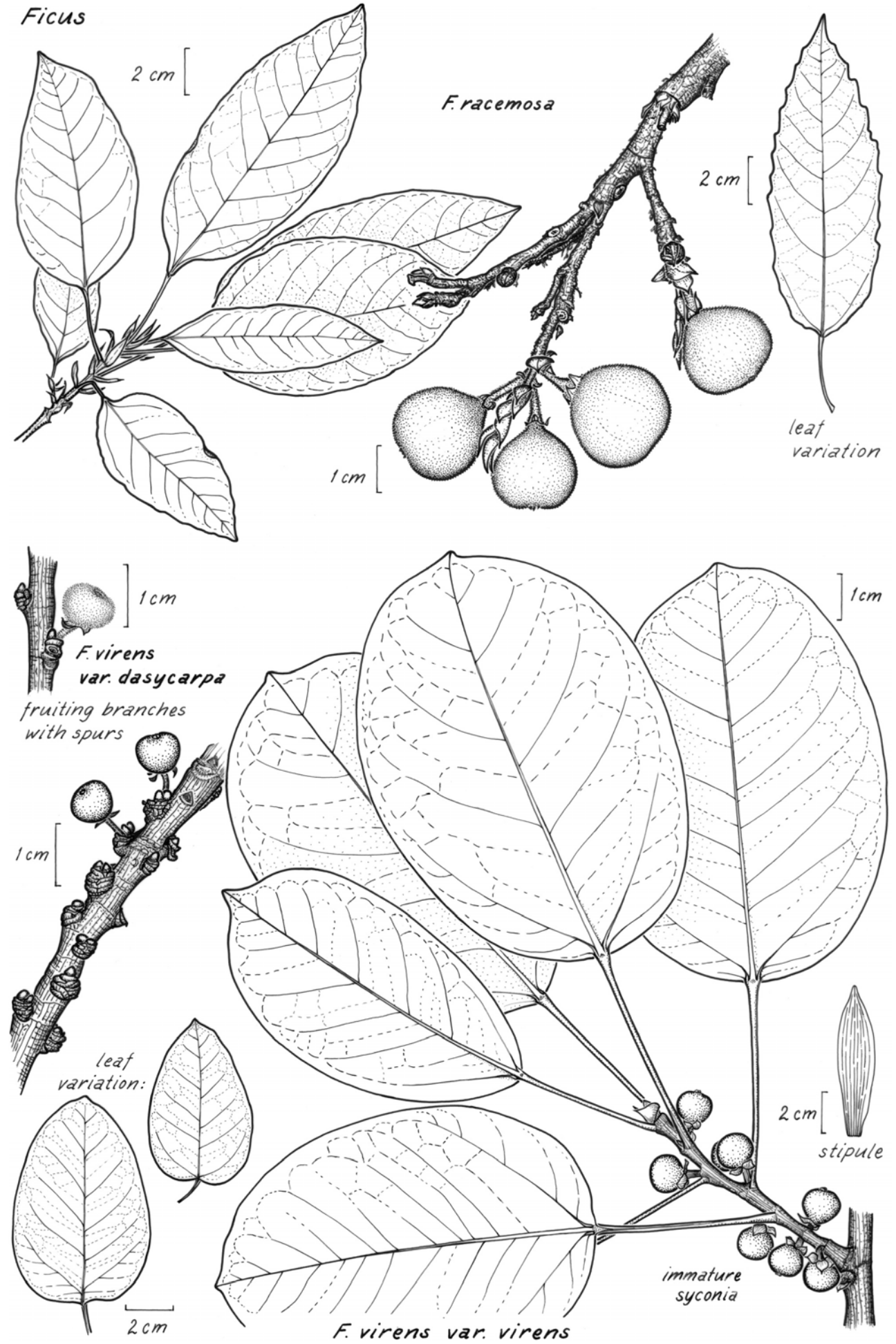


Fig. 6

var. virens

F. virens var. *sublanceolata* (Miq.) Corner

Syconia glabrous.

Fig. 6 (*Dunlop 7333*; *Kerrigan 376*; *Wightman 6478*); Pl. 11 (unvouchered).

Sri Lanka, south-east Asia, Malesia and Australia (W.A., N.T., Qld, N.S.W.). It is widespread across the Top End of the N.T., including the D.R. Found in a variety of habitats.

Used as a food source and to make fibre by many Aboriginal people across the Top End (Blake *et al.* 1998; Liddy *et al.* 2006; Lindsay *et al.* 2001; Puruntatameri *et al.* 2001; Wiynjorrotj *et al.* 2005; Yunupingu *et al.* 1995). The Rirratjingu men also prepare for ceremonies under trees of *F. virens* (Yunupingu *et al.* 1995).

TROPHIS P. Browne

Shrubs or climbers, scrambling, dioecious, deciduous with latex. *Leaves* alternate, simple, petiolate. *Stipules* small. *Inflorescences* unisexual, pedunculate. *Male* inflorescence a spike, densely flowered. *Male flowers* 3- or 4-merous; filaments inflexed in bud; pistillode present. *Female inflorescence* capitate. *Female flowers* with perianth urceolate; a small dentate orifice enveloping ovary; style long; stigma bifid. *Fruit* an achene, ovoid, several in a shallow receptacle.

Tropical genus of three species, with one in Australia.

Taxonomic references: Berg (1988); Berg *et al.* (2006).

T. scandens (Lour.) Hook. & Arn.

Shrub, scrambling or climbing. *Twigs* densely lenticellate, pilose, glabrescent. *Petiole* 3–13 mm long. *Leaves* ovate, elliptic to oblong, 30–155 mm long, 17–80 mm wide, coriaceous; base cuneate to rounded, occasionally cordate, often slightly asymmetrical; margin entire in lower half, denticulate towards apex, juvenile leaves or coppice leaves irregularly lobed; apex acuminate; lateral veins 7–14 pairs; prominent lower surface lightly scabrid. *Stipules* to 3 mm, free or united. *Male spikes* 5–32 mm long; peduncle 6–23 mm long. *Male flowers* sessile, *c.* 1.5 mm long and wide; tepals densely pubescent. *Female capitulum* 4–6 mm diam. *Female flowers* sessile; orifice of perianth tube fringed with hairs; ovary *c.* 1 mm long; stigma

bifid. *Achenes* 6–10 mm long, 5–7.5 mm wide, 1–4 in a shallow receptacle. *Flowering*: Sept.–May. *Fruiting*: Nov.–May. **Crow Ash.**

Fig. 1 (*Cowie 8034*; *Dunlop 8477*); Pl. 12 (unvouchered)

South-east Asia, Malesia, Australia (W.A., N.T., Qld, N.S.W.) and Pacific islands. Found occasionally in the D.R. and across the Top End to Maria Island. Grows in monsoon and coastal vine forests.

Now not considered to have infraspecific taxa (Berg *et al.* 2006).

Used as a food source by the Rirratjingu and to make fibre by the MalakMalak and Matngala (Lindsay *et al.* 2001; Yunupingu *et al.* 1995).

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Pl. 1 *Antiaris toxicaria* var. *macrophylla*
(Photo: I.D. Cowie)



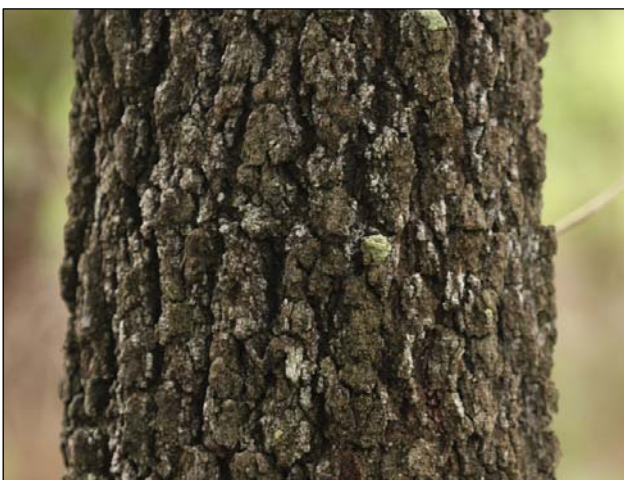
Pl. 4 *Ficus atricha* (Photo: I.D. Cowie)



Pl. 2 *Ficus aculeata* var. *aculeata*
(Photo: B.M. Stuckey)



Pl. 5 *Ficus benjamina* (Photo: J. Brock)



Pl. 3 *Ficus aculeata* var. *indecora*
(Photo: B.M. Stuckey)



Pl. 6 *Ficus brachypoda* (Photo: B.M. Stuckey)



Pl. 8 *Ficus racemosa* (Photo: N.M. Smith)



Pl. 7 *Ficus coronulata* (Photo: B.M. Stuckey)



Pl. 9 *Ficus scobina* (Photos: B.M. Stuckey)



Pl. 10 *Ficus subpuberula* (Photo: B.M. Stuckey)



Pl. 11 *Ficus virens* (Photo: L.L.U. Williams)



Pl. 12 *Trophis scandens* (B.M. Stuckey)