JOURNAL
OF THE EAST AFRICA NATURAL HISTORY
SOCIETY AND NATIONAL MUSEUM

December 1988 Volume 76, Number 193

FIG TREES (*Ficus*, Moraceae) OF KENYA

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ABSTRACT

An account is given of the wild *Ficus* spp. of Kenya, with a key, descriptions, distribution maps, and line drawings. Preliminary paragraphs deal with the natural history of the genus, particularly with the pollination by Fig wasps *(Agaonidae, Hymenoptera)*, the biotic community associated with Fig trees and the cultivated species found in Kenya.

Introduction

The Fig trees of Kenya are a relatively poorly known group, as there are no easy keys to identify the many species, and a full treatment of their proper scientific names and synonymy still has to appear (Berg, in press). The account in Dale & Greenway (1961) was for many years the only one treating the Kenyan species, and the keys were unsatisfactory. The present article in a precursor to the new "Kenya Trees, Shrubs and Lianas" which is in preparation at the East African Herbarium. This article is based on the study of the collections of the East African Herbarium, and on some fieldwork by the author. The information on the associated biotic communities was provided by Mr. G.R. Cunningham-van Someren.

Natural History of the Fig tree

Many species of *Ficus* start life as an epiphyte on other trees. Birds and mammals eat ripe figs and excrete the seeds, often in the crooks of branches and trunks of other trees; some of the seeds will germinate in such places, and if there is some moss or plant debris in such a place the young *Ficus* will root, and start its life far from the ground. It sends down roots along the trunk of the 'host' tree, and when these reach the ground (this process may take several years) they take root there, and the root system begins to thicken. Slowly the root system will envelop the trunk of the 'host' tree, the branches of the epiphyte spread through the canopy of the 'host' tree; finally the 'host' tree dies, and the *Ficus* stands on its own. In most of the literature the dying of the 'host' tree is ascribed to strangulation by the roots of the *Ficus*. I think that in many cases the Fig tree will be the victor in the competition for water, food and light, due to its enormous root system in the ground and its much-branched and dense crown. However, Professor Corner (pers. comm.) emphasizes that in the Eastern Tropics many species of *Ficus* do strangle their 'host' as their enveloping root-system expands.

Not all *Ficus* species start life as epiphytes, and many of the so-called epiphytic species may also start life as terrestrials. It is unknown whether this is true for all *Ficus* spp., or if there are really obligatory epiphytes.

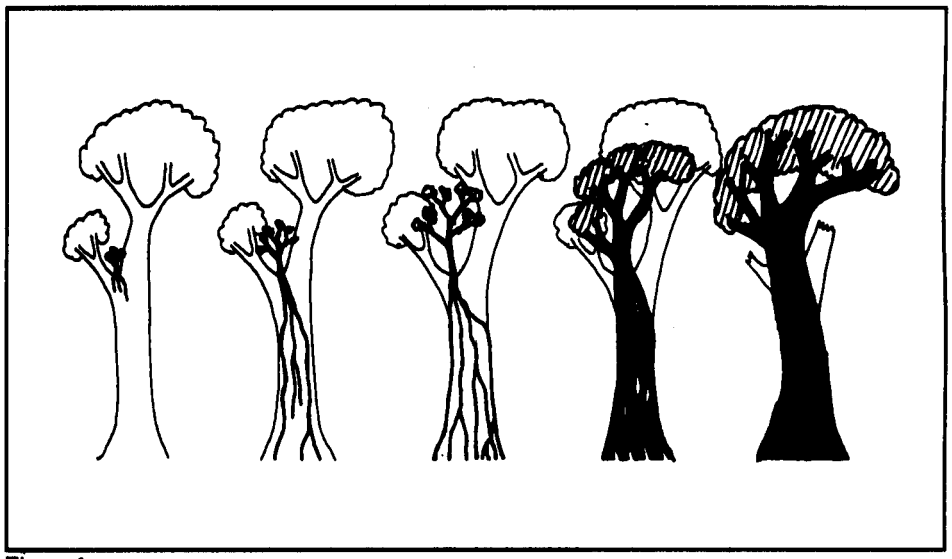


Figure 1.

Most, if not all, species of *Ficus* possess an extensive root system. This allows several species, which seem to be obligatory terrestrials, to grow in localities which are too dry for most other plants: on large rocks and on lava flows (e.g. *Ficus cordata, F. glumosa, F. ingens, F. populifolia, F. wakefieldii*). The root system penetrates the smallest of cracks where water might accumulate. There is also a possibility that Fig trees have a capability of picking up moisture from dew, mist, and moisture-saturated air at night. They probably have a large suction-force, enabling the tree to draw moisture from its enormous root system, as well as from the aerial root system which is often present. This large suction force might be the reason why no parasites such as *Loranthaceae* seem to grow on Fig trees.

Pollination

The pollination system of *Ficus* is a beautiful example of a highly evolved symbiosis.
The fig, or syconium, regarded by most people as a fruit, is a hollow inflorescence with the flowers, and later the fruits, on the inside. The only opening is at the top, and is called the ostiole; this ostiole is partly blocked by overlapping ostiolar bracts (Figure. 2).

Most species of *Ficus* in Kenya are monoecious, i.e. male and female flowers occur together within a single fig; the following description applies to these species. For the dioecious species, with male and female flowers in separate figs, see page 56.

In most monoecious figs, the male flowers are situated near the ostiole, and are few in number. The female flowers are of two kinds: roughly 50% of them have short styles, and the other 50% have long styles; ovules of these two types differ considerably (see Verkerke, 1987). The female flowers are many, up to 2800 in *F. sur* (Verkerke 1988), and the short-styled ones are intermixed with the long-styled ones (Fig. 2). In *F. ottoniifolia* Verkerke (1986) found that there is a whole range of style-lengths, and he considers style firmness rather than length the limiting factor for wasp oviposition.
The pollination system consists of several phases:

PHASE 1. The female flowers become receptive; the male flowers are still undeveloped and enclosed (protogyny). The ostiolar bracts open slightly.
PHASE 2. Female fig wasps are attracted by chemical odours (Barker 1985) to their 'own' species of Fig

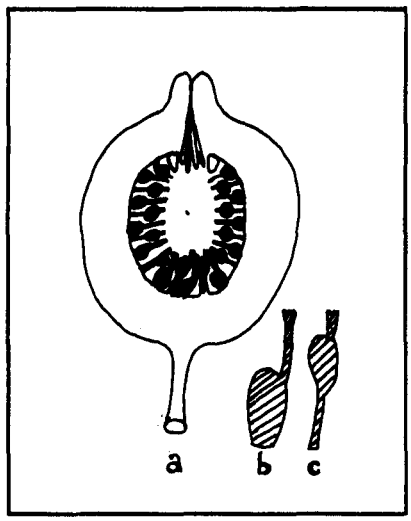


Figure 2.

a. longitudinal section of fig (schematic)
b. long-styled female flower
c. short-styled female flower

tree, i.e. that species from whose figs they emerged. They enter the fig through the ostiole, a long and difficult labour, even though their bodies are adapted to it. In the process, they lose their wings and the larger part of their antennae; some female wasps even get stuck and die (Galil 1977). In some species the number of female wasps to enter may be controlled by the rapid closing of the ostiolar bracts (Galil et al. 1973a).

PHASE 3. The female fig wasps try to deposit their eggs (oviposit) through the styles of female flowers. In the long- styled flowers the style is longer than the ovipositor of the wasp, and so the attempt fails. In the short-styled flowers it succeeds, as the ovipositor is long enough to deposit an egg between the inner tegument and the nucellus of the fig flower ovary.
As the wasps are very fertile, half of all female flowers (the short-styled half) may receive wasp eggs, while the other (long-styled) half is pollinated when the wasps try to oviposit through the long style. So half the flowers may produce seeds, and half the flowers may produce wasps.

PHASE 4. End of the receptive (female) phase. The fig cavity is sealed by the closing of the ostiolar bracts; the female wasps die inside the fig.

PHASE 5. The interfloral period, seems to be constant for each species of *Ficus* (Ramirez 1974). In the sealed fig the CO_2 level rises, which inhibits the fig from ripening (Galil et al. 1973b). The wasp larvae develop; the ovaries in which the eggs are present develop into galls, grow in size, and produce nutritive tissue for the larvae.

PHASE 6. After a period of between 20 and 100 day the male fig wasps emerge from their galls; they are wingless and look quite different from the female wasps. They seek out the galls with the female wasps, copulate with the females while these are still in the galls, then move to the apical side of the fig and bore and bite their way out of the fig, making one or more holes near the ostiole. The male wasps die soon afterwards.

PHASE 7. Once the fig is holed, the CO_2 level drops, which gives an impulse to the female wasps to emerge from their galls. They move towards the hole made by the male wasps, and on their way encounter the male flowers, which are by now fully ripe. They take pollen from the anthers and deposit it in special pollen pockets or groups of hairs on their thorax. These pollen pockets are closed with a movable lid (Galil & Eisikowitch 1974) so the pollen is not lost when the females crawl through the hole made by the male wasps.
The female wasps then fly away to search for a *Ficus* with figs in phase 1 or 2, to deposit their eggs.

PHASE 8. As the CO_2 level now has dropped, the fig ripens, becoming soft and juicy; mammals and birds eat the fruit and later excrete the seeds, thereby dispersing them.

In dioecious figs (In Kenya *Ficus asperifolia, F. capreifolia* and *F. exasperata*) there are two types of figs. "Female" figs contain short-styled as well as long-styled female flowers; "male" figs contain short-styled female flowers as well as male (staminate) flowers. Female wasps emerging from their figs will enter either "female" figs, where they wil deposit their eggs in the short-styled flowers or they will enter "male" flowers, where they will do the same. Only young female wasps emerging from "male" figs will carry pollen to the fig they enter, and only if these pollen-carrying wasps enter "female" figs pollination can be achieved. It will be seen that the system with monoecious figs offers four times as many chances of pollination as the system with dioecious figs!

To insure cross-pollination, the pollen-carrying female wasp emerging from a fig must be able to find a fig in phase 1 or 2, and so Fig trees must have staggered flowering seasons. In Nairobi, on 19 February 1986, six trees of *Ficus thonningii* were observed; three of these did not carry figs, one carried young figs, one carried figs from which female wasps were just emerging, and one carried over-mature figs. These trees were within an area of one square kilometre.

Newton & Lomo (1979) observed neatly staggered flowering periods of *Ficus lutea* in Ghana; individual trees showed one or three flowering periods per year.

In most individual Fig trees, all figs seem to be at roughly the same phase at the same time; however, I have observed trees of *Ficus natalensis* and *F. sycomorous* with only a few (not overmature) figs.

The relationship between Fig tree and fig wasp is highly specific; no hybridization between figs is known. Wiebes (1979) thinks that there are 900 species of *Ficus*, each with its own species of fig wasp.

Associated biotic communities

Mammals eating ripe figs include several species of fruitbat (e.g. *Epomops, Micropterus, Eidolon, Rousettus*), monkeys (e.g. Vervet), Baboon, Tree Hyrax, several species of squirrel, Potto, Bushbaby, Nandi Cat, and possibly genet, civet and mongoose. Fallen fruits are eaten by Bushbuck, duiker, Suni, Bush Pig, porcupine, and small rodents.

Birds eating ripe figs include hornbills (Silvery-cheeked, Black and White Casqued, Trumpeter, Crowned, and smaller species), most species of Turaco, pigeons (especially Green, also Speckled), parrots, lovebirds, barbets (many species), mousebirds, orioles, starlings (particularly the Violet-backed, which moves around following the fruiting of *Ficus thonningii* and *F. natalensis*), Yellow-vented Bulbul, several species of greenbul and thrush.

Fallen fruits are eaten by francolins and several species of ground dove (Emerald-spotted, Tambourine).

Woodpeckers and barbets excavate nest holes in the soft wood of Fig trees, and these holes are also used by wood hoopoes; many parasitic honeyguides lay their eggs among eggs of these species.

As regards insects, several wood-boring beetles, particularly the long-horned *Cerambicidae* attack the wood of Fig trees. Caterpillars of moths (*Arctiidae, Eupterotidae, Lymantridae*) feed on the foliage, and are eaten by orioles, cuckoo and cuckoo- shrikes. Caterpillars of the Fig Blues, the butterflies *Myrina silenus* and *M. dermaptera* (Lycenidae) feed on the leaves. Foliage of Fig trees is often infested by scale insects (Coccidae) which are eaten by the smaller honeyguides and by many species of small warblers and sunbirds.

Lichens which grow on the bark of *Ficus thonningii* and *F. natalensis* harbour great numbers of insects, caterpillars and especially spiders, which provide food for tits and the Brown-capped Weaver. Fallen and fermenting figs may attract numbers of butterflies (*Charaxes* spp., *Euphedera* spp., and *Melinis* spp.) as well as many species of flies.

Fig trees often provide support for many kinds of epiphytic plants, such as ferns and orchids.

Mr.Cunningham-van Someren observed a Fig tree in Kakamega with no less than 15 species of orchids. As mentioned on page 54, parasites do not seem to grow on Fig trees.

Uses and cultural significance

Under the descriptions of the species, the specific local uses are given, as recorded on herbarium labels. Some general uses, valid for several or many species, follow.

Because of their soft wood, Fig tree logs are easily hollowed out and can then be used as bee hives, to be hung in trees.

The Fig tree is often used as a shade tree, and for this reason is often left standing when land is cleared for agriculture.

In many cultures, within as well as outside Kenya, Fig trees are considered as being special or even sacred. The Sycomore *(Ficus sycomorus)* is mentioned several times in the Bible (e.g. 1 Ki. x: 27). This species was sacred to several ancient Egyptian gods, especially to Hathor, the goddess of love, and figs of this species have been found in a number of tombs dating back to the first Dynasty (Galil, 1967). *Ficus religiosa* is held sacred by Hindus and Buddhists: The Buddha received his enlightenment under this tree. In Kenya the Mugumo *(Ficus thonningii* and *F. natalensis)* is venerated by the Boran, Maasai, Kiembu, Kikuyu, Kimeru and Kitaita. Meetings of the elders are often held under this tree, and cutting or damaging of such trees is strongly discouraged. The mukuyu *(F. sur, F. sycomorus)* is venerated by the Kimeru and Kikuyu as the protector of springs, and several legends are associated with it (Salvadori, pers. comm.). Wood of *Ficus sur* is used for ritual fires during youngsters' circumcision by the Kimeru; Maasai use the latex of this species to protect their cattle from epidemics (Salvadori, pers. comm.)

Cultivated species

In Kenya the following species are cultivated:

F. benjamina L., a tree from India and Malaya.

F. carica L., the edible Fig, originally from the Mediterranean area but now cultivated all over the world. Cultivation in Kenya has not been very successful, but in very hot areas (e.g. Garissa) this species might be a good producer of marketable figs.

F. deltoidea Jack, here a shrub, but normally an epiphyte. Only recorded from City Park, Nairobi; originally from Malaya and Indonesia.

F. elastica Roxb., a tree from South and Southeast Asia, formally widely cultivated for its rubber.

F. macrophylla Desf., a tree from Australia recorded from the Nairobi Arboretum.

F. pumila L., a climber from China and Japan (syn. *F. repens* Rottl.) Leaves on sterile branches are quite different from those on flowering and fruiting branches.

F. religiosa L., the Bo-tree or Peepal. A large tree from India.

F. vogeliana (Miq.) Miq., a tree from West Africa recorded from the Nairobi Arboretum.

These cultivated species may be distinguished as follows:

1.	Climber with dimorphic leaves	*F. pumila.*
	Trees or shrubs	2
2.	Leaves deeply lobed	*F. carica*
	Leaves entire	3
3.	Leaves rounded at apex, small; midrib forked	*F. deltoidea*
	Leaves acute or acuminate; midrib straight	4
4.	Leaf apex acute or subacute	*F. vogeliana*
	Leaf apex acuminate or caudate	5
5.	Leaf apex long-caudate; base rounded or subcordate	*F. religiosa.*
	Leaf apex acuminate	6
6.	Petiole ca. 1 cm long; leaves less than 9 cm long	*F. benjamina*
	Petiole more than 2 cm long; leaves more than 10 cm long	7
7.	Leaves white or brown beneath	*F. macrophylla*
	Leaves greenish beneath	*F. elastica*

Cultivation of fig trees

Most *Ficus* species will grow from large cuttings planted as the beginning of the rains. Indigenous species such as *F. thonningii*, *F. natalensis* and *F. sycomorus* are widely planted.

One should never plant Fig trees close to houses, as their root systems will crack walls and raise flagstones.

Key to the indigenous species

1.	Leaves sandpapery	2
	Leaves glabrous or hairy, but not sandpapery	7
2.	Leaf apex rounded or obtuse	*F. sycomorus*
	Leaf apex acute or acuminate	3
3.	Leaf base cuneate or narrow and obtuse	4
	Leaf base rounded or (sub)cordate	6
4.	Leaf apex long-acuminate	*F. asperifolia*
	Leaf apex acute or shortly and bluntly acuminate	5
5.	Shrub or small tree or 4.5 m, riverine; leaves mainly (sub) opposite	*F. capreifolia*
	Shrub or tree 4-27 m, forest (edge); leaves always alternate	*F. exasperata*

6.	Petiole 3-12 mm, leaves 2-5 cm wide; shrub or tree to 4.5 m	*F. capreifolia*
	Petiole 12-18 mm, leaves 3-13 cm wide; tree 4.5-25 m	*F. sur*
7.	Leaf base cuneate or narrow and obtuse	8
	Leaf base rounded or (sub) cordate	16
8.	Leaves hairy	9
	Leaves glabrous	10
9.	Leaves 13-50 by 3-17 cm; Kakamega	*F. saussureana*
	Leaves 3-12.5 by 1.5-6 cm; widely spread	*F. thonningii*
10.	Stipulates persistent, partly connate, 1-2 cm long.	*F. cyathistipula*
	Stipules caducous, or if subpersistent, free and less than 1 cm long	11
11.	Coastal species, found at altitudes below 50 m; leaves less than 2 cm wide	*F. lingua*
	Inland species, found above 900 m altitude, or leaves more than 3 cm wide	12
12.	Ostiole at apex of fig with 3 visible bracts; swamp species (Kitale)	*F. verruculosa*
	Ostiole without visible bracts; only a slit visible	13
13.	Figs on spurs on old wood, coastal	*F. sansibarica*
	Figs in leaf axils	14
14.	Basal bracts of figs caducous	*F. natalensis*
	Basal bracts of fig persistent	15
15.	Ripe figs yellow or green, 7-14 mm across; petiole 1-2 mm thick	*F. thonningii*
	Ripe figs pale green, 12-30 mm across; petiole 2-3 mm thick	*F. scasselattii*
16.	Leaf margin repand-dentate or crenulate	17
	Leaf margin entire	19
17.	Leaf margin crenulate; petiole 0.3-2 cm; figs sessile	*F. nigropunctata*
	Leaf margin repand-dentate; petiole 1.2-11 cm; figs pedunculate	18

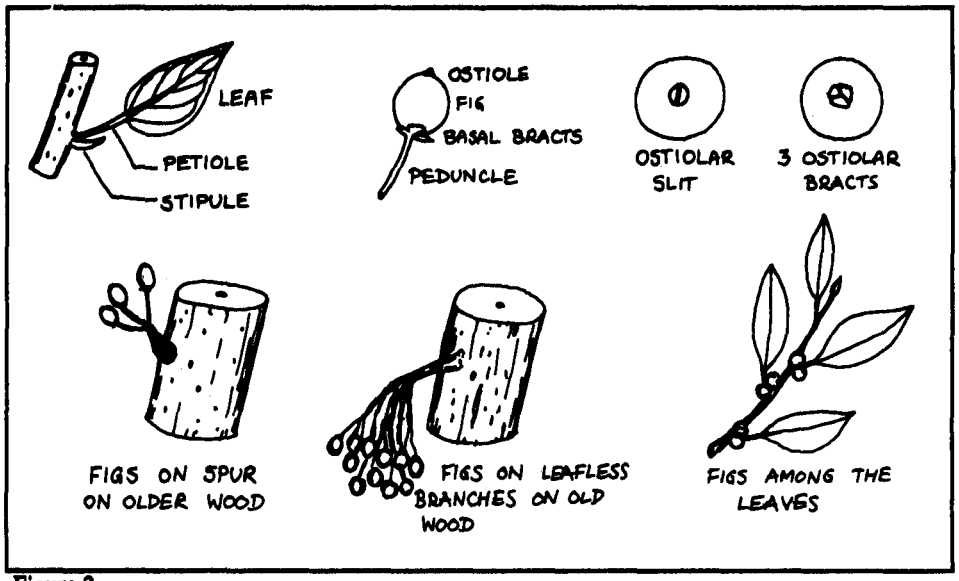


Figure 3.

18.	Figs on leafless branches on old wood; leaves ca. 2 x as long as wide	*F. sur*
	Figs among the leaves; leaves less than 1.5 x as long as wide	*F. vallis-choudae*
19.	Stipules persistent, 1-2 cm long; leaves obovate	*F. cyathistipula*
	Stipules caducous, or shorter, or leaves ovate to elliptic	20
20.	Leaves less than 1.5 x as long as wide	21
	Leaves more than 1.5 x as long as wide	27
21.	Petiole 0.5-1.5 cm; tertiary venation parallel to secondary; Shimba Hills	*F. faulkneriana*
	Petiole longer (except in *F. glumosa*); tertiary venation partly at right angles to secondary	22
22.	Figs on spurs on old wood	23
	Figs in leaf axils or just below the leaves	24
23.	Leaves 12-30 cm long, leafy twigs 6-12 mm thick	*F. bubu*
	Leaves 5-10 cm long, leafy twigs 2-5 mm thick	*F. polita*
24.	Figs (mature and dried) 20-45 mm across; riverine tree; leaf base often rounded	*F. vallis-choudae*
	Figs when mature 5-16 mm across; tree of rocky habitats, occasionally also riverine; leaf base cordate	25

25.	Figs on 8-20 mm long peduncles; leaf apex acuminate	*F. populifolia*
	Figs subsessile or on an up to 5 mm long puduncle; leaf apex rounded, obtuse, or shortly acuminate	26
26.	Leafy twig 2-6 mm thick; petiole 0.3-3.5 cm, not flaking	*F. glumosa*
	Leafy twigs 5-12 mm thick; petiole 2-9 cm, when dry with flaking epiderm	*F. vasta*
27.	Figs on older wood	28
	Figs in leaf axils or just below the leaves	33
28.	Figs on branched leafless "branches"	*F. sur*
	Figs on short unbranched spurs or in clusters on thicker wood	29
29.	Petiole thin (less than 1 mm thick)	*F. tremula*
	Petiole more than 1 mm thick	30
30.	Figs with persistent, 2-5 mm long basal bracts; figs glabrous	31
	Figs with caducous basal bracts, figs (minutely) puberulous	32
31.	Figs 12-18 across, without stipe, on spurs to 15 mm long	*F. ottoniifolia*
	Figs 15-22 mm across, with a stipe, on spurs to 30 mm long	*F. polita*
32.	Leaf base cordate; basal veins branched (Thika)	*F. chirindensis*
	Leaf base rounded; basal veins unbranched (coast)	*F. sansibarica*
33.	Figs on peduncles more than 10 mm long; coastal species, at altitudes below 450 m	34
	Figs on peduncles less than 10 mm long, or, if 10 mm long, only found at altitudes above 900 m	35
34.	Leafy twigs more than 4 mm thick; leaves 9-22 by 4-11 cm	*F. bussei*
	Leafy twigs less than 3 mm thick; leaves 4-7.5 by 2-4.5 cm	*F. faulkneriana*
35.	Tertiary venation of leaves partly at right angles to secondary veins	36
	Tertiary venation reticulate	39
36.	Ostiole of fig with 3 visible bracts	*F. ingens*
	Ostiole of fig without visible bracts; only a slit visible	37
37.	Leaf base cordate; figs 5-12 mm across; leaves 2-14 cm long	*F. glumosa*
	Leaf base rounded or subcordate; figs 12-25 mm across; leaves 9- 30 cm long	38

38. Petiole, when dry, with flaking epiderm	*F. lutea*
Petiole, when dry, not flaking	*F. ovata*
39. Ostiole of fig with 3 visible bracts	*F. cordata*
Ostiole of fig with only a slit visible	39
40. Leaf with the basal veins faintly branched	*F. stuhlmannii*
Leaf with unbranched basal veins	40
41. Basal bracts of fig 15-20 mm long	*F. amadiensis*
Basal bracts of fig 2-4 mm long	*F. thonningii*

Descriptions of the species

After the current scientific name the synonyms are given which were used in Dale & Greenway (1961) or Gillett & McDonald (1970). In the descriptions, it should be noted that the measurements of figs refer to their dried state. Fresh figs may be up to 20% larger.

After the description, the habitat(s) in which the species is commonly found is given, as well as the altitude range (in meters) as far as known. The roman numerals after the altitude ranger refer to the months in which the species has been found to carry figs in Kenya. A star behind these numerals indicates that there are less than 12 observations of the species with figs.

After this, the known local names are given. These have been taken from herbarium labels and have not been checked. After the name the language of that name is indicated by three or four letters. Finally, the local uses are given.

The illustrations have been prepared by the author from dried material; the leaves are reduced to 30-50% of life size ;the figs are life or slighly less. The maps show where the species has been found to occur; each black square covers an area of ca. 38 by 38 km (23 by 23 miles) and may represent either a single collection or several collections.

Ficus amadiensis De Wild. (Syn. *F. kitubalu* Hutch.)

Spreading tree 4-15 m high. Leafy twigs 5-10 mm thick. Stipules subpersistent, 5-15 mm long. Leaves glossy, elliptic or ovate, base rounded or subcordate, apex rounded or obtuse, 7-14 by 3-7 cm, glabrous; petiole 1.5-7.5 cm. Figs sessile in leaf axils; basal bracts persistent, 15-20 mm long; figs red, globose, 12-22 mm across and wrinkled when dry.

Wooded grassland, clump bush grassland; 1500-1950 m; III, VIII-IX, XII*. Occurs in Central & East Africa.

Bonyo (Luo). Ripe fruits are edible.

Ficus asperifolia Miq. (Syn. *F. stortophylla* Warb., *F. urceolaris* Hiern)

Shrub 1.5-6 m, often with subscandent branches. Leaves elliptic or slightly (ob)ovate, base cuneate, apex long-acuminate, margin lobed or dentate, 4-20 by 2-9 cm, sandpapery; petiole 0.5-2 cm. Figs sessile or on peduncles to 2 mm long, in the leaf axils; figs yellow or red, globose, 5-14 mm across, sandpapery.

Forest edges and thickets; 1500-1850 m; I, IV, VII, IX-XII*. Also in West and Central Africa.

Luseno (Kav.). The latex is used by the Luhya against skin swellings in humans and livestock.

Ficus bubu Warb.

Tree to 20m, often epiphytic; bark pale green or white; leafy twigs 6-12 mm thick. Leaves elliptic to subcircular, base rounded or cordate, apex shortly acuminate to almost rounded, 12- 30 by 6-23 cm,

glabrous; petiole 4-11 cm long. Figs on short spurs on older wood, with 7-10 mm long peduncles and persistent 4-5 mm long basal bracts; figs brownish, globose, ca. 25 mm across, glabrous or nearly so and wrinkled when dry.

Forest or riverine forest; 1-1200 m; I, IX*. Occurs in East and Central Africa.

Ficus bussei Mildbr. & Burret

Tree 4.5-25 m; trunk fluted at base; bark grey; aerial roots often present. Leafy twigs 4-12 mm thick. Leaves ovate or elliptic, base cordate, apex obtuse, 9-22 by 4-11 cm, glabrous or nearly so; petiole 2-8 cm. Figs in the leaf axils on 10-25 mm long curved peduncles; basal bracts persistent, ca. 3 mm long; figs green with whitish warts, globose, 10-18 mm across, puberulous.

Riverine or in coastal bushland; 1-450 m; II-III, X, XII*. Occurs in large parts of Africa.

Mugandi (Digo, Gir.). String is made from the bark by the Giriama.

Ficus capreifolia Del. (formerly *F. capreaefolia*)

Shrub or small tree, 3-4.5 m. Leaves alternate or subopposite, elliptic, base rounded or cuneate, apex acute, margin sometimes slightly crenate, 6-15 by 2-5 cm, sandpapery; petiole 3-1 mm. Figs in the leaf axils on 5-20 mm lonmg peduncles (including stipe); figs green or pale yellow, globose, 10-25 mm across, scrabid.

Riverine; 200-1200 m; I, VII, IX-XII*. Occurs in most of Africa.

Get (Luo), Arabi sofarra (Som.), Edung/Epwatakelae (Turk). The ripe fruit is edible, the leaves are used as sandpaper.

Ficus chirindensis CC Berg

Tree to 35 m. Leaves elliptic, base cordate, apex shortly acuminate, 6-12 by 3-7.5 cm, glabrous or nearly so; petiole 2-4 cm. Figs on up to 3 cm long spurs on older wood; peduncle 15-20 mm; figs green to pale yellow, globose, 15-30 mm across, minutely puberulous.

Riverine forest; ca. 1500 m; V*. Also in Central Africa.

Found only once (Faden 67/149) near Thika. I have not seen the figs.

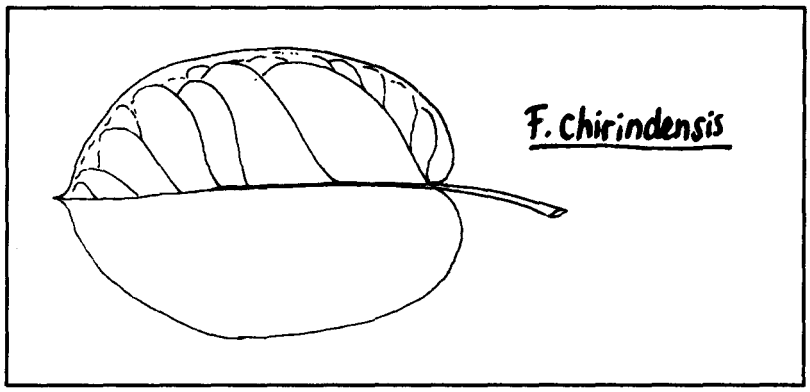


Figure 4.

Ficus cordata Thunb. ssp. *salicifolia* (Vahl) CC Berg (Synonym *F. salicifolia* Vahl)

Tree to 15 m; bark grey, smooth or wrinkled. Leaves narrowly ovate or elliptic, base rounded or subcordate, apex obtuse, acute or shortly acuminate, 7.5-16 by 3-7 cm, glabrous; petiole 1.2-3.6 cm. Figs in the leaf axils, sessile or on up to 3 mm long peduncles; figs green to red, globose, 6-9 mm across, glabrous.

On rocks and cliffs, often near water; 950-1900 m; I-II, IV, IX- XII. Occurs in Eastern & Southern Africa.

Siricho (Boran), Osogunuo (Maa), Simotuet (Kips.), Tipoiwa (Pokot); ripe fruits are edible; Pokot use the latex to fasten feathers to arrows.

Ficus cyathistipula Warb. (Synonym *F. rhynchocarpa* Mildbr. & Burret)

Tree 12-15 m, occassionally epiphytic; aerial roots sometimes present. Leaves shiny, obovate, base cuneate (occ. rounded), apex acuminate, 6-22 by 3-7 cm, glabrous; petiole 1.5-4 cm; stipules persistent, partly connate, 1-2 cm long. Figs in the leaf axils, on 5-25 mm long peduncles; basal bracts persistent, 4 mm long; figs pale green or pale yellow, globose or (ob)ovoid, 2- 3 cm across, glabrous, sandpapery or warted.

Forest (edges), occasionally riparian, 1450-1650 m; I, III, X*. Occurs in West and Central Africa.

Ficus exasperata Vahl

Tree 4-27 m; bark whitish. Leaves elliptic or slighly (ob)ovate, base cuneate or obtuse, apex shortly acuminate (rarely rounded), margin dentate or subentire, 2.5-12 by 1-6 cm, scabrid; coppice shoots may be 3-lobed near the apex and up to 21 by 12 cm; petiole 5-25 mm. Figs in leaf axils or on older wood, on peduncles 5-25 mm long; figs yellow or red, 8-17 mm across, scabrid.

Wet forest (edges) or on limestone outcrops; 1-1850 m; II-III, VI-VIII, XI*. Occurs from West Africa to South India and Southern Africa.

Jamisyat (Kips.), Museno (Luhya). Leaves are used as sandpaper.

Ficus faulkneriana CC Berg

Tree 9-30 m (occ. epiphytic?). Leaves elliptic or obovate, base rounded or subcordate, apex rounded, 4-7.5 by 2-4.5 cm, glabrous; petiole 0.5-1.5 cm. Figs in leaf axils on 10-12 mm long peduncles; basal bracts persistent, 1.5-2 mm long; figs yellow or red, 7-8 mm across, glabrous.

Found once (Magogo & Glover 51) in the Shimba Hills, at a forest edge; 420 m; II* Endemic to Kenya and Northeast Tanzania.

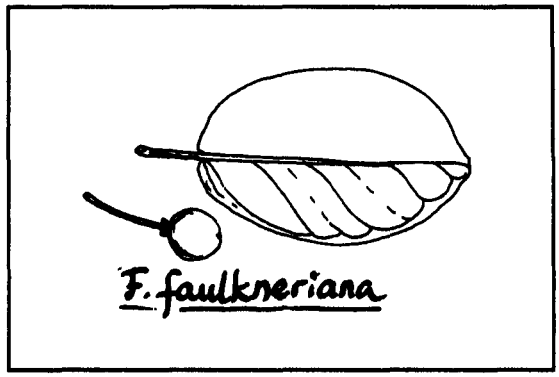


Figure 5.

Ficus glumosa Del. (Syn. *F. sonderi* Miq.)

Shrub or tree 2-15 m, spreading, with smooth grey bark; occassionally with aerial roots. Leaves ovate or elliptic, base cordate, apex rounded, obtuse, or shortly acuminate, 2.5-14 by 2- 9 cm, glabrous or (densely) pubescent; petiole 0.3-3.5 cm. Figs in the leaf axils or somewhat below the leaves, sessile or on peduncles to 3 mm; basal bracts persistent, 3 mm long; figs orange or red, globose, 5-12 mm across, glabrous to tomentose.

On rocky outcrops and hillsides, mainly in dry country; 450-2050 m; I-XI. Occurs over most of Africa, and in Yemen.

Kilta (Boran), Kionywe (Kamba), Chilgotwet (Kips.), Olngaboli (Maa), Berde (Som.), Kishoe (Taita). Ripe fruits are edible.

Ficus ingens (Miq.) Miq.

Shrub or tree, 1-17 m, spreading; sometimes epiphytic. Leaves ovate or elliptic, base cordate or rounded, apex obtuse, acute or shortly acuminate, 5-17 by 2-8 cm, glabrous; petiole 0.5-4 cm. Figs in the leaf axils or just below the leaves, subsessile or on peduncles to 5 mm long; figs pink, red or purple, globose, 6-12 mm across, glabrous or pubescent, wrinkled when dry.
On rocky sites, on lava (where it is often the only tree), in rocky gorges, always in dry country; 150-2600 m; I-II, IV-XII. Occurs in most of Africa and in Yemen.
Onogoret (Maa), Chemul-Mogoyuet (Kips.), Kionywe/Kiumo (Kamba); the wood is used for doors and stools (Kips.), and branches are used for firesticks (Maa.)

Ficus lingua De Wild. & Th. Dur. ssp. *depauperata* (Sim) CC Berg (Syn. *F. depauperata* Sim)

Tree to 25 m, often starting as an epiphyte, much branched and spreading; bark smooth and grey. Leaves obovate, base cuneate or obtuse, apex obtuse or rounded, 2-6 by 0.8-2 cm, glabrous; petiole 0.2-0.8 cm. Figs in the leaf axils or just below the leaves, on 1.5 mm long peduncles; figs yellow or red, globose, 4- 6 mm across, minutely puberulous.
In semi-decidous coastal forest; 1-25 m; VII-VIII, X*. The variety only occurs in East Africa.

Ficus lutea Vahl (Syn *.F. quibeba* Ficalho, *F. subcalcarata* Warb. & Schweinf., *F. vogelii* (Miq.) Miq.)

Tree to 16 (36?) m, occasionally epiphytic, spreading; occasionally with aerial roots; bark greybrown. Leafy twigs 5-12 mm thick. Leaves elliptic, base rounded or subcordate, apex rounded or shortly acuminate, 9-25 (40) by 4-15 cm, glabrous or pubescent; petiole 1.5-12 cm. Figs in the leaf axils or just below the leaves, sessile; basal bracts persistent, 3-6 mm long; figs yellow or orange, globose, 12-17 mm across, puberulous or pubescent.
Wetter forest (edges), riverine forest or woodland, occasionally on rocks; 350-2000 m; III, V, IX-XII*. Ocurs over most of Africa and in Madagascar.

Ficus natalensis Hochst.

Tree 5-30 m, occasionally epiphytic. Leaves elliptic or obovate, base cuneate or obtuse, apex obtuse, rounded or shortly acuminate, 3-8 by 1.5-4.5 cm, glabrous; petiole 0.5-2.5 cm. Figs in leaf axils or just below the leaves, on 2-10 mm long peduncles; basal bracts caducous; figs yellow or red, globose, 8- 18 mm across, glabrous, usually wrinkled when dry.
In riverine and groundwater forest, and presumably also in forest away from water; 900-1800 m; I-IV, VII-X, XII. Occurs over most of Africa.
Kiumo (Kamba), Mugumo (Kik.); often confused with *F. thonningii; F. natalensis* is much less common in Kenya.

Ficus nigropunctata Mildbr. & Burret

Shrub or tree 3-7 m, sometimes epiphytic. Leaves elliptic or (ob)ovate, base rounded or subcordate, apex acute or shortly acuminate, margin crenulate, 1-9.5 by 0.5-5.5 cm, puberulous, when dry sometimes black-punctate; petiole 0.3-2 cm. Figs in leaf axils or on older wood, sessile; basal bracts persistent, 2- 2.5 mm; figs green to reddish, globose, 5-10 mm across, puberulous.
Found once (Gatheri, Mungai & Kanuri 79/124) near Mutomo on rocky ground; ca. 900 m; XI*. Occurs in East and Central Africa.

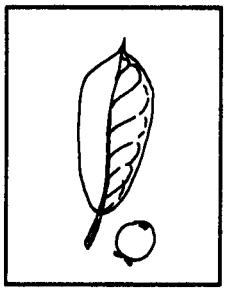


Figure 6.

Ficus ottoniifolia (Miq.) Miq. ssp. ***ulugurensis*** (Mildbr. & Burret) CC Berg

Shrub or tree to 15 m, occasionally epiphytic. Leaves elliptic or (ob) ovate, base rounded or subcordate, apex acuminate, 6-15 by 3-6 cm, glabrous; petiole 1.5-5 cm. Figs on spurs to 15 mm long on older wood, peduncle 8-18 mm; basal bracts persistent, 2- 3 mm; figs green to pale orange, ellipsoid, 12-18 mm across, glabrous.

In riverine forest, near the coast on coral or limestone outcrops; 1-1450 m; I, XI*. The variety is rare and only occurs in East Africa.

Ficus ovata Vahl (Syn. *F. brachypoda* Hutch.)

Tree, 3-15 m, occasionally epiphytic; bark pale grey or red- brown. Leaves ovate or elliptic, base rounded or subcordate, apex acuminate, 10-30 by 6-20 cm, glabrous (rarely puberulous) beneath; petiole 3-10 cm. Figs in the leaf axils or occasionally on older wood, on a 0-5 mm long peduncle; basal bracts persistent, 3-4 mm; figs green, ellipsoid or ovoid, 15-25 mm across, puberulous or pubescent.

Acacia-Terminalia wooded grassland, also riparian; 1100-1950 m; V-VI, XI*. Occurs over most of Africa.

Chemul-Mogoywet (Kips.), Kutoto, Omododo (Luhya), Siritiot (Nandi); used to make doors and stools (Kips.).

Ficus polita Vahl ssp. *polita*

Tree 4.5-15 m, occasionally epiphytic; bark grey. Leaves ovate, base rounded or (sub)cordate, apex acuminate, 5-16 by 4-10 cm, glabrous; petiole 2-12 cm. Figs on up to 3 cm long spurs on older wood, on 8-18 mm long peduncles; basal bracts persistent, 3-5 mm; figs green with yellow specks to purplish, 15-22 (40) mm across, wrinkled when dry.

Found twice, near Kibwezi (Verdcourt & Polhill 2689) and Kilifi (Moggridge 392), probably in bushland; 50-1150 m; IV*. Occurs in most parts of Africa, also in Madagascar.

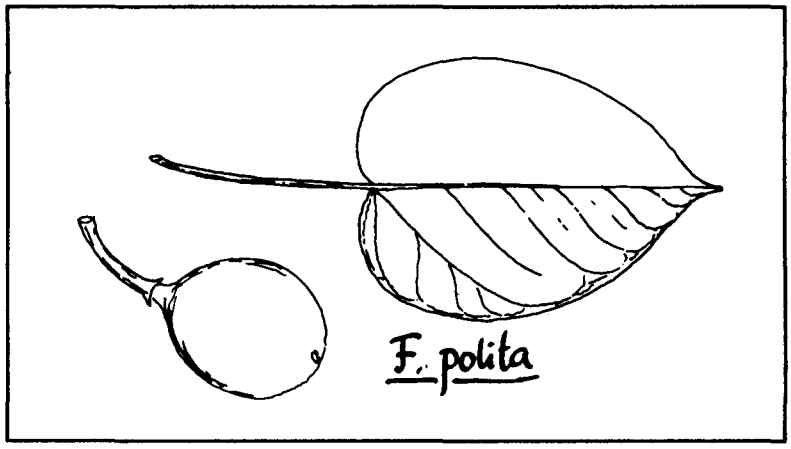


Figure 7.

Ficus populifolia Vahl (incl. *F. abutilifolia*)

Shrub or tree, 1-15 m; bark grey or off-white; leafy twigs 3-10 mm thick. Leaves broadly ovate, base deeply cordate, apex acuminate, 3-18 by 3-15 cm, glabrous or nearly so; petiole 2.5-10 cm. Figs in the leaf axils, on 8-20 mm long peduncles; figs green with red spots or yellowish, slightly obovoid, 6-12 mm across, glabrous or nearly so.

On rocks and lava; 450-1500 m; I, III, V-VII, IX-X, XII. Occurs in most parts of Africa and in Yemen.

Ololii (Maa), Sosotwo (Pokot), Nidir/Hamash (Som.), Ekuyen/Ekii (Turk.), Simatwa/Chirilotwa (Tugen). The ripe fruit is edible; Tugen use the latex as a remedy for sore eyes.

Ficus sansibarica Warb. ssp. *sansibarica* (Syn. *F. brachylepis* Hiern)

Tree 9-20 m, occasionally epiphytic. Leaves elliptic or ovate, base rounded, apex obtuse or obtusely acuminate, 5-13 by 2-6 cm, glabrous; petiole 1-5.5 cm. Figs on up to 3.5 cm long spurs on the main branches, on a peduncle 10-25 mm long; figs green or purplish, globose, 15-30 mm across, puberulous, wrinkled when dry.

Evergreen forest (edges); 1-150 m; X*. Occurs in East and Southern Africa.

Musangasanga (Gir.)

Ficus saussureana DC. (Syn. *F. eriobotryoides* Kunth & Bouche)

Tree to 20 m (or more?), occasionally epiphytic; crown spreading. Leafy twigs 5-15 mm thick. Leaves slightly obovate, base obtuse or cuneate, apex acuminate, 13-50 by 3-17 cm, puberulous beneath; petiole 1-8 cm. Figs in the leaf axils or just below the leaves, subsessile; basal bracts persistent, 7-15 mm; figs yellow or orange, globose or obovoid, 15-30 mm across, densely long-hairy.

Collected once (Gilbert 6363) in Kakamega Forest; ca. 1600 m; I*. Occurs in East, Central and West Africa.

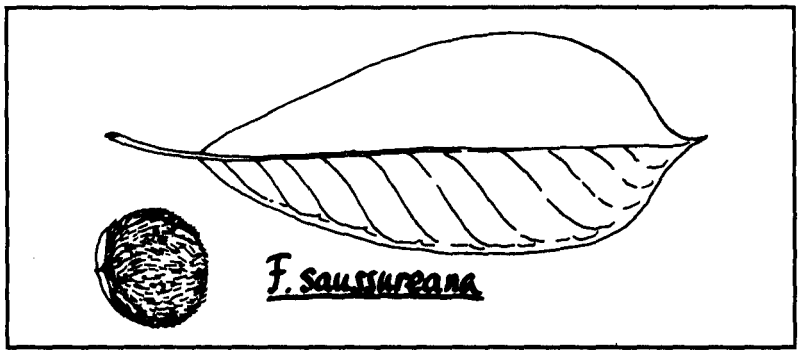


Figure 8.

Ficus scassellatii Pamp. (Syn. *F. kirkii* Hutch.)

Tree to 25 m (or more), occasionally epiphytic; aerial roots may be present; bark grey or whitish. Leaves elliptic or obovate, base cuneate, apex obtuse or shortly acuminate, 6-28 by 3-8 cm, glabrous; petiole 0.5-3 cm. Figs in the leaf axils, sessile (in ssp. *thikaensis*) or on a peduncle 5-15 mm long (ssp. *scassellatii*); basal bracts persistent, 3-5 mm; figs pale green, globose or ellipsoid, 12-20 (ssp. *scassellatii*) or 20-30 (ssp. *thikaensis*) mm across, almost glabrous.

In riverine or groundwater forest, on the coast also in evergreen forest; 1-1800 m; I-III, IX-XII*. Ssp. *scassellatii* occurs in East and Central Africa; ssp. *thikaensis* CC Berg is only recorded from the area around Thika.

Ficus stuhlmannii Warb.

Tree to 10 m, occasionally epiphytic. Leafy twigs 4-8 mm thick. Leaves elliptic or (ob)ovate, base rounded or subcordate, apex rounded or obtuse (rarely shortly and bluntly acuminate), 3-8 cm, densely puberulous; petiole 0.5-4 cm. Figs in the leaf axils, (sub)sessile; figs pink or purplish, globose or elipsoid, 7-18 mm across, puberulous or pubescent.

Open forest or bushland, but information from Kenya is scarce. In other countries often riverine or on rocks; 1-1500 m; I-II, V, X*. Occurs in Central, East and Southern Africa.

Ficus sur Forssk. (Syn. *F. capensis* Thunb.)

Tree 4.5-25 m, occasionally epiphytic; sometimes buttresses are present; bark grey or whitish. Leaves ovate or elliptic, base rounded or subcordate, apex acute or acuminate, margin repand-dentate or occasionally entire, 5-20 by 3-13 cm, glabrous, pubescent or sandpapery; petiole 1.2-8 cm. Figs on up to 50 cm long leafless branches on old wood, on 3-15 mm long peduncles; figs orange or red, globose or obovoid, 5-33 mm across, puberulous or densely tomentose.

Riverine, groundwater forest, or less often in forest away from water; 1-2100 m; I-XI. Occurs in most of Africa and also in Yemen.

Odaa (Boran), Mukuyu (Digo, Kik.), Mogoyuet (Kip.), Omoraa (Kisii), Musingu (Luhya), Ngowo matundo (Luo), Olngaboli (Maa), Ilngaboli (Sam.). The ripe fruit is edible; the Digo use a root decoction as a cough remedy; Maasai use a bark infusion against stomachache and baby's diarrhoea; Kipsigis use the wood to make stools and grain mortars.

Ficus sycomorus L. (Syn. *F. gnaphalocarpa* (Miq.) A. Rich., *F. mucoso* sensu KTS, non Ficalho)

Tree to 21 m, occasionally buttressed; bark yellowish. Leaves broadly (ob)ovate or elliptic, base (sub)cordate, apex rounded or obtuse, margin entire or slightly repand-dentate, 2.5-13 (21) by 2-10 (16) cm, sandpapery at least on the upper surface; petiole 0.9-50 cm. Figs in the leaf axils or on up to 10 cm long leafless branches on old wood; peduncle 3-25 mm; figs yellow or reddish, globose or (ob)ovoid, 14-37 mm across, pubescent or almost glabrous.

Riverine, or in places with a high groundwater table, possibly also in forest or bushland; 1-1850 m; I-XII. Occurs over most of Africa and in Arabia.

Mukuyu (Swa., Kamba, Kik., Meru, Taita), Od (Boran), Mogoiwet (Kips.), Orangaboli (Maa), Sebetwet (Nandi), Mokongwa (Pokot), Santau/Guuden (Rend.), Lngaboli (Sam.), Lokoiwo (Tugen), Echoke (Turk.). The ripe fruit is edible. The wood is used for small implements, e.g. mortar and pestle (Pokot, Turkana) or for doors and house building (Kipsigis); the Taita use the inner part of the root bark for fibre for weaving.

Ficus thonningii Bl. (Syn. *F. dekdekana* (Miq.) A. Rich., *F. eriocarpa* Warb., *F. mammigera* RE Fr.)

Tree 6-21 m, occasionally epiphytic; bark grey; aerial roots often present. Leaves elliptic or obovate, base cuneate or narrow and obtuse (rarely subcordate), apex rounded or obtuse (rarely shortly and bluntly acuminate), 3-12.5 by 1.5-6 cm, glabrous, puberulous or pubescent; petiole 0.8-3 (6) cm. Figs in the leaf axils or occasionally below the leaves, sessile or on peduncles to 10 mm long; basal bracts persistent, 2-4 mm; figs yellow or red, globose or ellipsoid, 7-14 mm across, smooth or warted, glabrous or pubescent.

In wet or dry upland forest, often left standing after clearing; also riverine, on rocky sites,in bushed or wooded grassland (as a forest relict?); 1050-2400 m; I-VI, VIII-XII. Occurs over most of Africa.

Mugumo (Embu, Kik., Meru), Dambi (Boran), Kiumo/Muumo (Kamba), Simotwet (Kips.), Pocho (Luo), Oreteti (Maa), Sapoitit (Okiek). The ripe fruit is edible. A ceremonial tree in several cultures. The bark fibre is used for string (Okiek); branches are used as firesticks by the Maasai.

Ficus tremula Warb.

Tree or liana, 2.4-10 m (or more), occasionally epiphytic. Leaves elliptic or obovate, base rounded or subcordate, apex subacute to shortly acuminate, 3-11 by 2-5 cm, glabrous or with the midrib puberulous; petiole 1-4.5 cm. Figs on up to 2 cm long curved spurs on old wood, on 5-22 mm long peduncles; figs green, globose or ellipsoid, 10-20 mm across, glabrous or puberulous. Two subspecies are found in Kenya:

- ssp. *tremula* - twigs drying yellowish or grey, leaves drying dark brown above.

Dry evergreen forest or coastal woodland; a common epiphyte in *Hyphaene*; also found very close to the beach; 1-50 m; I, VII, X, XII*. Occurs in East and Southern Africa.

Uzi (Swa.). The bark is used to make very strong string.

- ssp. *acuta* (De Wild.) CC Berg - twigs drying brown or blackisk, leaves drying brownish on both sides. Wet upland forest; 1650-2200 m; III, XII*. Occurs in Central Africa.
Motirtiruet (Kips.), Shikuyense (Luhya).

Ficus vallis-choudae Del.

Tree 6-20 m; bark greybrown; buttresses occasionally present. Leafy twigs 2-10 mm thick. Leaves broadly ovate, base rounded or cordate, apex obtuse, acute, or shortly acuminate, margin repand-dentate or subentire, 10-26 by 6-24 cm, glabrous or puberulous, rarely sandpapery; petiole 2-11 cm. Figs in the leaf axils or just below the leaves, on 3-7 mm long peduncles; figs yellow or reddish, globose or obovoid, 20-45 mm across, glabrous, puberulous or tomentose.
Riverine; 600-1800 m; I-IV, VI-VIII, X, XII. Occurs over most of Africa.
Olngaboli/El ponyi (Maa).

Ficus vasta Forssk. (Syn. F. *wakefieldii* Hutch., but Berg disagrees with this.)

Tree to 25 m, occasionally epiphytic. Leafy twigs 5-12 mm thick. Leaves broadly elliptic or broadly (ob)ovate, base cordate, apex rounded or obtuse, 6-25 cm, puberulous or hirtellous; leaves (faintly) aromatic, at least when dry; petiole 2-9 cm. Figs in the leaf axils, (sub)sessile; basal bracts persistent, 3-5 mm; figs green with white spots, globose, 10-16 mm across, densely pubescent, sometimes warted.
On rock, lava, and limestone; sometimes riverine; 200-2000 m; I- IV, VI, IX-XII. Occurs in East and Northeast Africa and in Arabia.
Kilta (Boran), Mukuyu (Kamba), Chiptokelat (Pokot), Reteti (Sam.), Berd (Som.), Echoge (Turk.). The ripe fruit is edible.

Ficus verruculosa Warb.

Shrub or small tree 1-7 m. Leaves elliptic, base obtuse or cuneate, apex obtuse or subacute, 3.5-10 by 1.5-3.5 cm, glabrous; petiole 0.3-1 cm. Figs in the leaf axils or just below the leaves, on 3-5 mm long peduncles; figs red or purple, (sub)globose, 5-10 mm across, glabrous or nearly so.
Found once (Bogdan 3733) in a swamp near Kitale; 1860 m; V*. Occurs over large parts of Africa, most often in water.

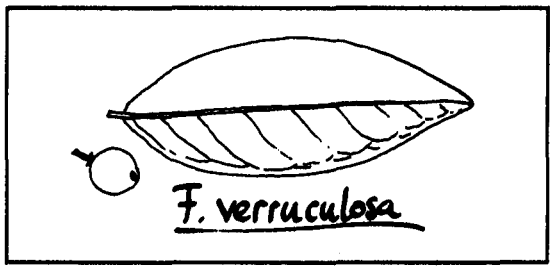


Figure 9.

ACKNOWLEDGEMENTS

I wish to thank Mr. G.R. Cunningham-van Someren for his interest and for the information he supplied on the associated biotic communities; he also read the manuscript critically. Miss C.H.S. Kabuye, Mr. J.B. Gillett, Dr. Z. Boucek, Prof. E.J.H. Corner and my wife read the manuscript critically, and to them I also express my thanks.

REFERENCES

BARKER NP. 1985. Evidence of a volatile attractant in *Ficus ingens* (Moraceae). Bothalia 15: 607-611.

BERG CC. (in press). Moraceae (Flora of Tropical East Africa, Kew)

DALE IR & GREENWAY PJ. 1961. Kenya trees and shrubs (Buchanans, Nairobi)

GALIL J. 1967. Sycomore wasps from ancient Egyptian tombs. Israel Journal of Entomology 2: 1-10.

—— RAMIREZ BW & EISIKOWITCH D. 1973a. Pollination of *Ficus costaricana* and *F. hemsleyana* by *Blastophaga estherae* and *B. tonduzi* in Costa Rica. Tijdschr. v. Entom. 116: 175-183.

—— ZERONI M & BAR-SHALOM D. 1973b. Carbon dioxide and ethylene effects in the coordination between the pollinator *Blastophaga quadraticeps* and the syconium in *Ficus religiosa*. New Phytologist 72: 1113-1127.

—— & EISIKOWITCH D. 1974. Further studies on pollination ecology in *Ficus sycomorus*. New Phytologist 73: 515-528.

——. 1977. Fig biology. Endeavour 1:69-81.

GILLETT JB. & MCDONALD PG. 1970. A numbered check-list of trees shrubs and noteworthy lianes indigenous to Kenya (Govt. Printer, Nairobi).

NEWTON L.E. & LOMO A. 1979. The pollination of *Ficus vogelii* in Ghana. Bot. J. Linn. Soc. 78: 21-30.

RAMIREZ BW. 1974. Coevolution of *Ficus* and Agaonidae. Ann. Miss. Bot. Gard. 61: 770-780.

VERKERKE W. 1986. Anatomy of *Ficus ottoniilia* (Moraceae) syconia and its role in the fig/fig wasp symbiousis. Proc. Kon.Ned.Akad. Wetensch. ser.C,vol.89, no.4,443-469.

VERKERKE W. 1987. Ovule dimphism in *Ficus asperifolia* Miquel. Acta Bot.Neerl. 36(2):121-124.

VERKERKE W. 1988. Flower development in *Ficus sur* Foskal (Moraceae). Proc. Kon.Ned. Akad.Wetensch. ser.C, vol. 91, no 2, 175-195.

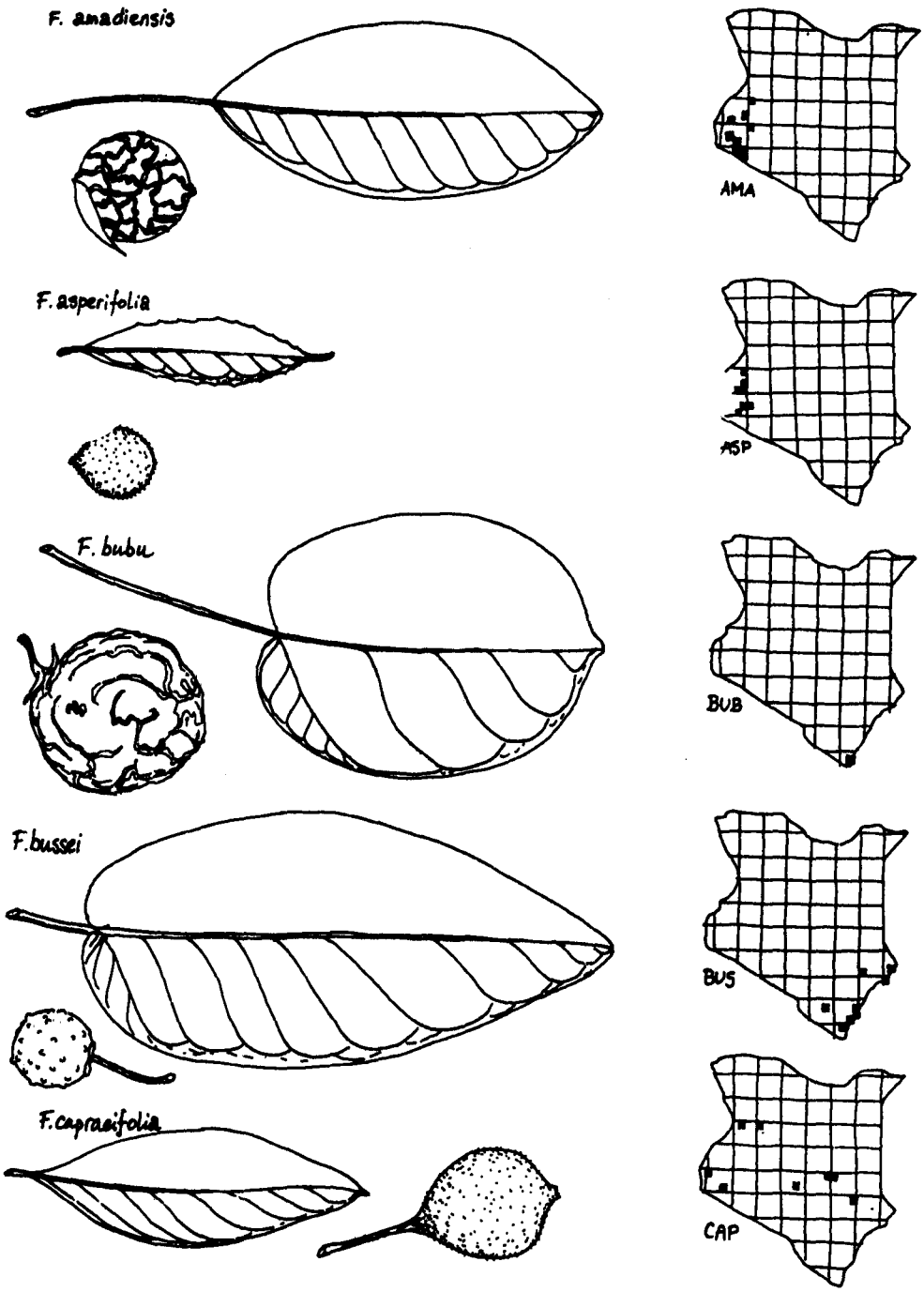
WIEBES J.T. 1979. Co-evolution of figs and their insect pollinators. Ann. Rev. Ecol. & Syst. 10: 1-12.

Received March 1986
Editor: H.J. Beentje

Published by the East Africa Natural History Society . Typesetting by The Print Shop. Printed by AMREF Printing Dept.

INDEX TO LOCAL NAMES

This index is uncorrected as far as spelling and homonyms are concerned.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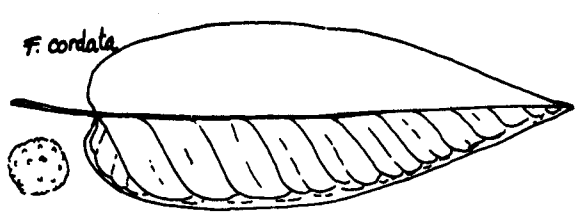
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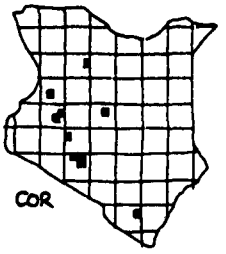
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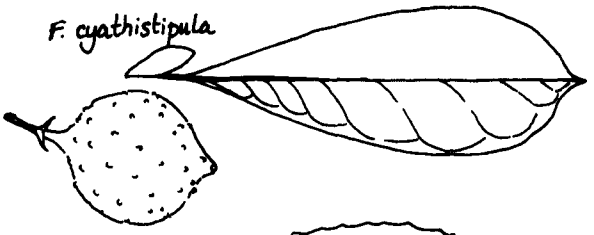
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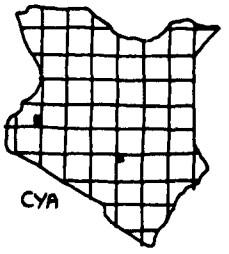
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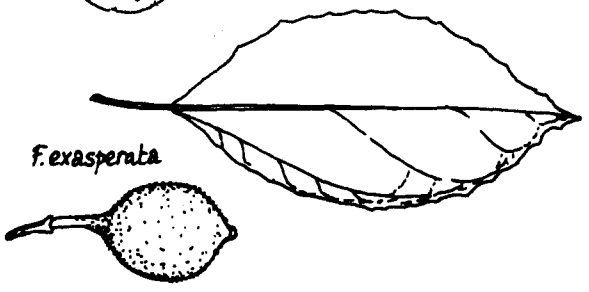
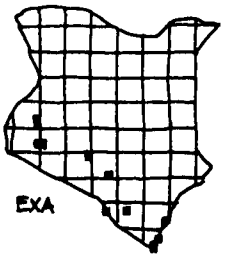
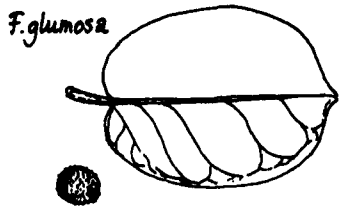
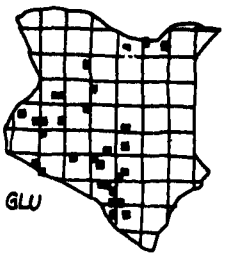

F. exasperata


EXA


F. glumosa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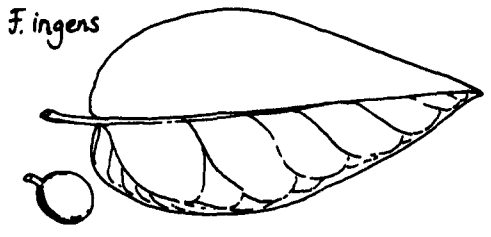
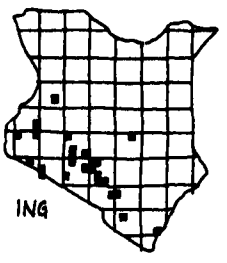
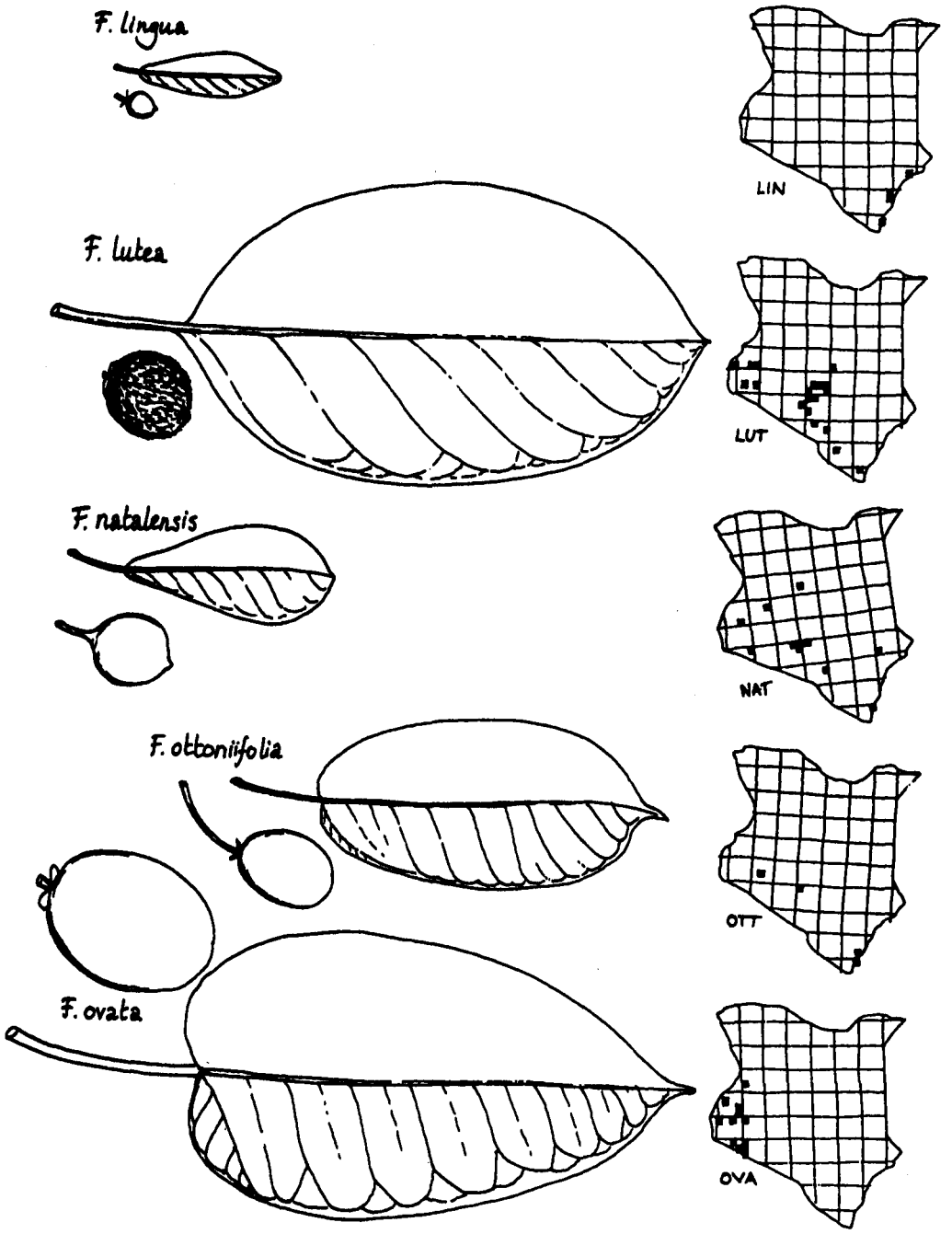
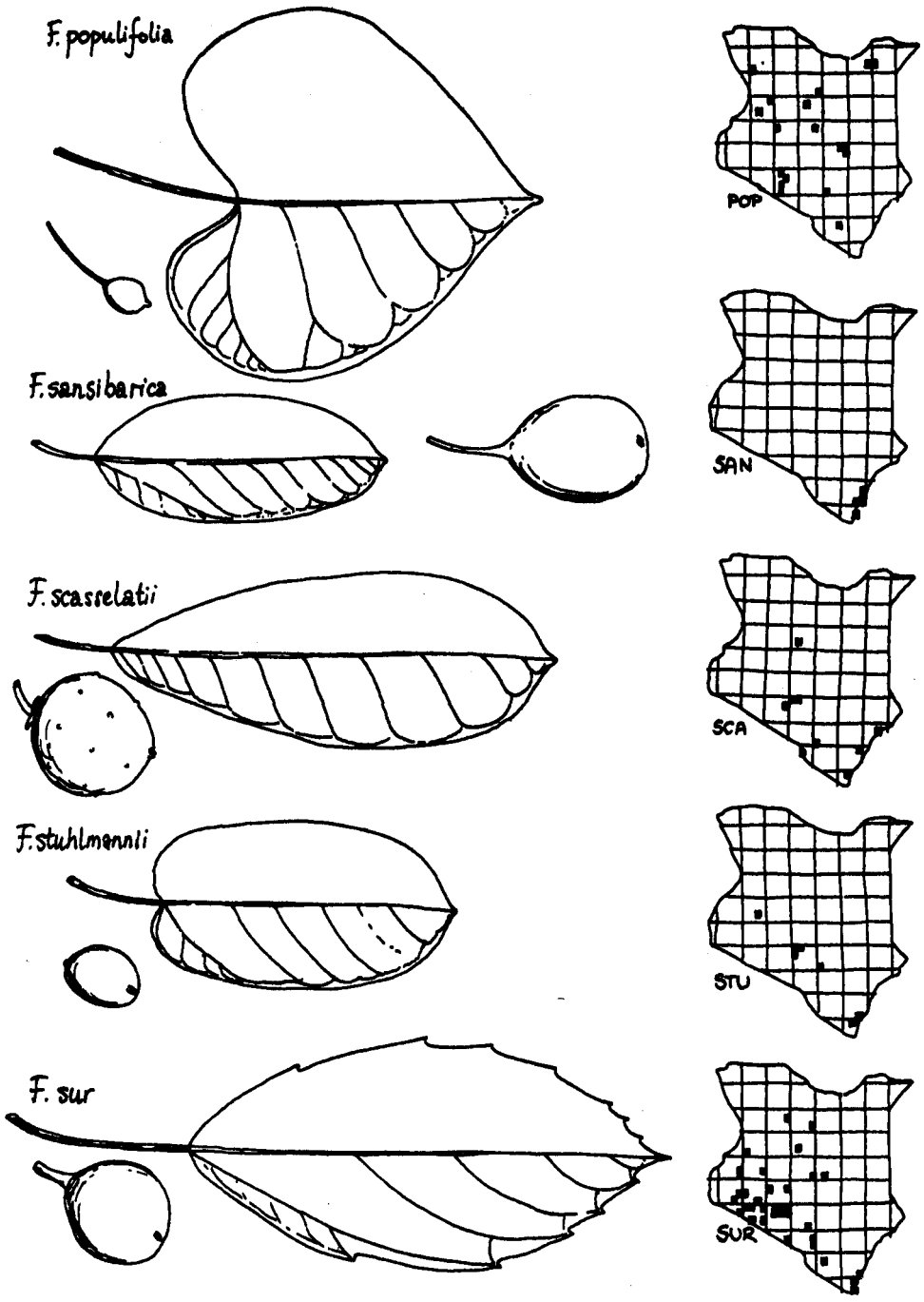
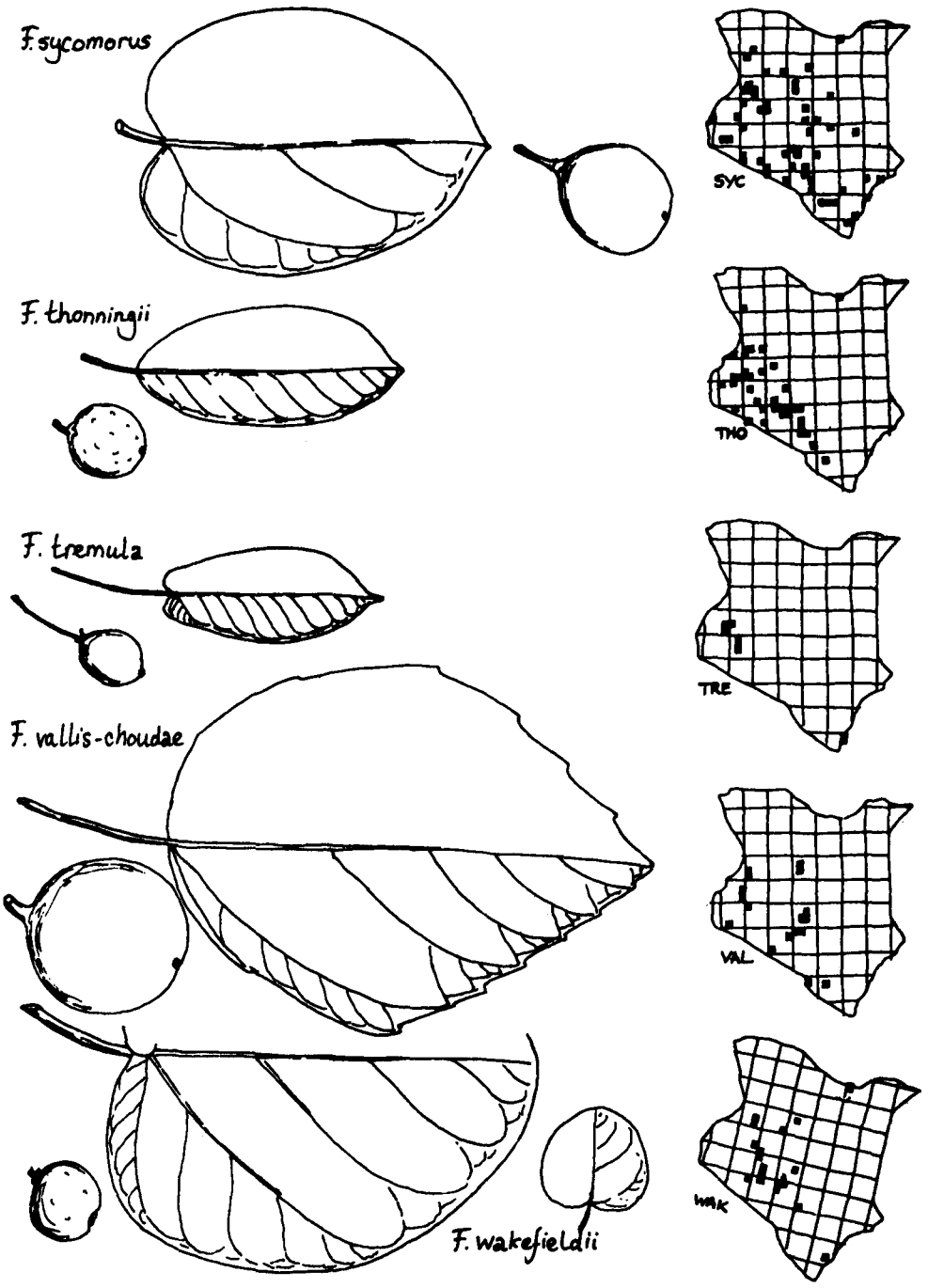

F. ingens


ING


F. lingua
LIN
F. lutea
LUT
F. natalensis
NAT
F. ottoniifolia
OTT
F. ovata
OVA


F. populifolia
F. sansibarica
F. scassellatii
F. stuhlmannii
F. sur
POP
SAN
SCA
STU
SUR


F. sycomorus
SYC
F. thonningii
THO
F. tremula
TRE
F. vallis-choudae
VAL
F. wakefieldii
WAK