

CORNER(1996) KINABALU AQS

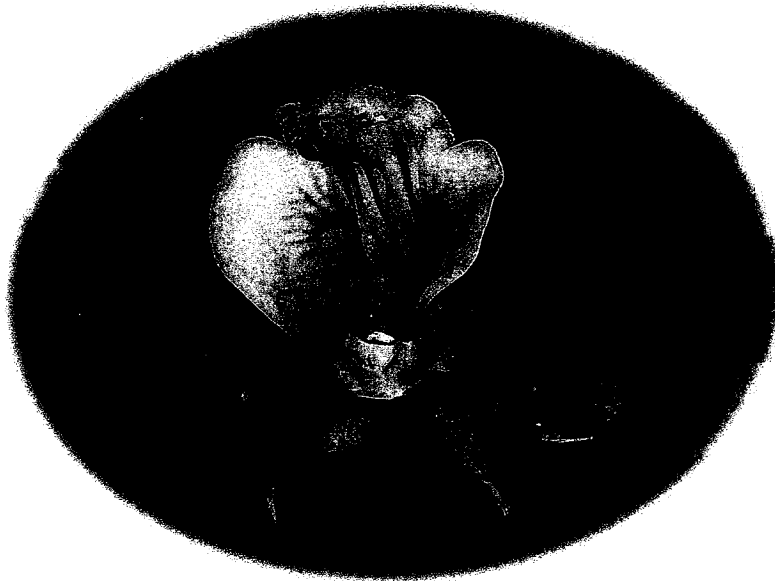
KINABALU

SUMMIT OF BORNEO

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Fig species (*Ficus*, Moraceae). Borneo has 135 species of wild figs and more than half (78 species) can be found on Kinabalu (Corner, 1962). The mountain has 13 endemic species and five endemic varieties of other species; yet neighbouring mountains have not been sufficiently explored to ascertain how local this endemism may be. The fact is that Kinabalu has the richest fig-flora of any comparable area in the world. As soon as one enters the forest and begins to study trees, epiphytes, shrubs, and climbers, the figs appear. Most, it is true, do not ascend above 1400–1500 m (4500–5000 ft), but some reach 1800 m (6000 ft), and one, *F. deltoidea* var. *kinabaluensis*, can be found on rock-slabs at 3250 m (10,600 ft) near the “Matterhorn” on the East Ridge. This is the highest altitudinal record for the genus, though it seems to be too high for reproduction; neither fig-insects nor seeds appear to develop at this elevation. Perhaps no more species remain to be discovered on the mountain, but there is much need of enquiry into their natural history.

The lowland epiphyte, *F. deltoidea*, extends into the lower mountain region and is easily recognised from its small blunt leaves with brown or olive undersides, the midrib which forks about the middle of the blade and has a conspicuous brownish gland at the fork, and the small orange figs with slender stalks. It is a very variable species and Kinabalu may yet have some undetected varieties; I have written a botanical account of it (Corner, 1969). Seedlings and young plants growing on rocks have ordinary pointed leaves which pass through many transitions to the adult form. The pointed leaf persists, apparently without the blunt form and dichotomous midrib, in var. *kinabaluensis* which has a short thick stalk to the fig. In habit this variety seems to be variable; it may be epiphytic about 1500 m (5000 ft) but, more often, it is a bush or a creeping shrub on exposed ridges. It is known also from Sarawak. Accompanying var. *kinabaluensis* up to 1800 m (6000 ft), there are two varieties of the closely allied *F. oleaefolia*, namely var. *memecylifolia* with small pointed leaves (1–2.5 cm wide) and var. *myrsinoides* with equally small blunt leaves. They are elegant shrubs or small trees, often epiphytic, in the ridge-vegetation. Their little

stalked figs, just over 0.5 cm wide, ripen red to purple-black and the seed-figs have merely one to three rather large seeds, just as in *F. deltoidea*. *F. oleaefolia* is as variable as *F. deltoidea* and some of its narrower leaved forms may occur on Kinabalu.

Two lowland species of strangling fig extend up to 1500 m (5000 ft). *F. sumatrana*, with small leaves and small red figs, seems to be even more devastating at this altitude where it may send roots around neighbouring trees and strangle them as well as its original host. *F. stupenda*, with larger leaves and massive woody orange-red figs (5 x 4 cm), is limited to one main descending root and is, therefore, less destructive. A third and endemic species in the *Trigonobalanus* forest is *F. palaquifolia*; it seems to fruit rarely and is by no means satisfactorily known. At these altitudes *F. disticha* is a conspicuous and lofty climber; its slender twigs with small leaves (2.5–7.5 x 1–4 cm) brighten the canopy with a multitude of small and shortly stalked figs (1 cm wide) which ripen reddish-brown to purple. This and *F. deltoidea* are illustrated by van Steenis (1972). About 1200 m (4000 ft) one may come across the very large fallen figs of two other climbers. *F. carrii* (endemic) has stiffly hairy, oblong, figs up to 11.5 cm long, and *F. dens-echini* (known also from Sarawak) has almost round, reddish brown, glabrous figs, up to 6.5 cm wide, with five tooth-like scales set round the orifice.



Fig.27. Luscious red figs produced along runners from the stem base of the earth-fig, *Ficus uncinata* var. *strigosa* (Moraceae). (Photo: C.L. Chan)

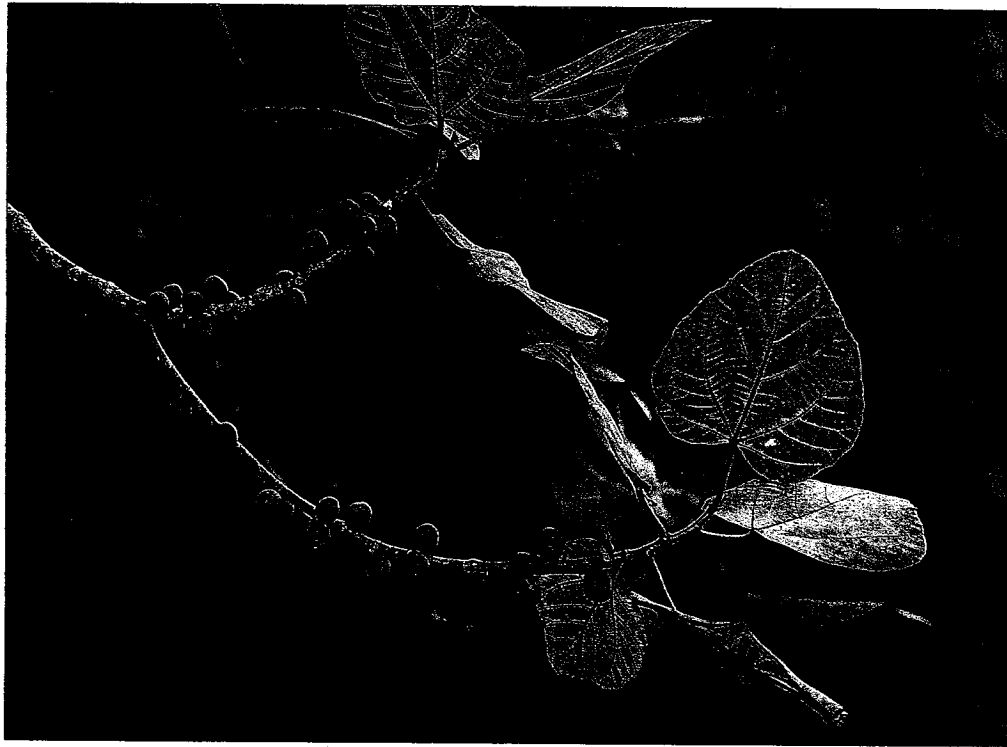


Fig.28. *Ficus cf. endospermifolia* (Moraceae), common at Park Headquarters and the first part of the summit trail, one of Kinabalu's many fig species. (Photo: C.L. Chan)

The vegetation which covers the 'erratic blocks' that, as huge boulders, have fallen from the mountain and crashed through the trees to some resting place, has an unusual interest because it shows how, as soil develops on the rock from fallen leaves and other detritus, the forest gradually re-forms and even large trees may stand on the tops of the boulders. Here occurs characteristically a little fig-bush *F. setiflora* with thin, toothed, hairy leaves and scarlet figs 1 cm wide; it is endemic to the mountain but other varieties of it occur in Sarawak and Indonesian Borneo. It belongs in a group of the genus which is mainly Bornean and has five other species on Kinabalu, one of which, *F. endospermifolia*, is a tree of considerable size (Corner, 1970). On screes and landslips, however, at about 1500 m (5000 ft) the little *F. subsidens* creeps as a dwarf shrub through the incipient vegetation. It has surprisingly large leaves, up to 20 x 10 cm (8 x 4 in), for such a habit; the stalked figs ripen rose-red. It is endemic to Kinabalu and its origin is puzzling; it seems to be allied with the lowland *F. montana* of which there are few records from Borneo and none from Kinabalu.

The most interesting places to explore for figs are the streams in deep gullies at 900–1500 m (3000–5000 ft). Here one meets the coarse sapling-like *F. cereicarpa* with large leaves, up to 55 x 15 cm (10 x 6 in), and twice as big in its saplings, which seems always to be sterile until one looks at the base of the stem and discovers, partly hidden by fallen leaves, a mound of scaly brown figs, reach 5–7.5 cm (2–3 in) wide. It thrives in steep gorges or

chasms where it projects from ledges in the rock and extends horizontally until, with increasing weight, it hangs down and eventually falls off; the big leaves continually flutter in the breeze that blow along these clefts. Now this peculiar plant, of general occurrence in north and central Borneo, is accompanied along the streams by a close ally *F. francisci* which has smaller leaves and smooth figs borne on stout woody spikes from the lower part of the trunk. Then, on the valley-sides, there occurs, if rarely, another ally, namely the endemic *F. virescens*, which in turn leads to the geocarpic *F. treubii* (endemic to Borneo). Geocarpic trees are those which bear the fruit underground. Geocarpic fig-trees clearly belong to *Ficus*, because of their latex, stipules, and leaves, but they appear sterile until one notices rather slender runners issuing from the lower part of the trunk and sagging into the soil; on pulling on them, clusters of figs come to the surface from under the humus and, indeed, out of the firm soil. *F. treubii* is one of these, distinguished by the long tip to the medium-sized and symmetrical leaves. It is common on the valley-sides, especially on the Pinosuk Plateau where the soil is churned up beneath the trees by pigs in search of the fruits.

Here is an instance, of which there must be many on Kinabalu, of living steps in an evolutionary sequence from one growth-habit to another with corresponding change in twig, leaf, flower, fruit, and habitat. Kinabalu is not just a natural meeting place for plants of Asia and Australia, remarkable as this is, but a store-house of evolution which makes one wonder how many of these supposed immigrants may not, in fact, have originated on the earlier massifs of north Borneo. The sequence to geocarpy leads on to other geocarpic species with very asymmetric leaves, such as *F. megaleia*, with leaves up to 1 m (3 ft) long, and *F. uncinata*, both frequenting the streams of Kinabalu. I doubt if anyone knowing but *F. cereicarpa* and *F. treubii* or *F. uncinata* would connect them in the course of evolution; as a specialist in the genus, I did not until I discovered the intermediate steps in these exciting valleys where so few explorers have descended. No wonder Borneo is the focus of the geocarpic figs of Malesia! The botanical study of wild figs is now to be related with that of the insects which pollinate them. It seems that most species of *Ficus* have their particular species or genus of pollinating insect and, therefore, hybrids of *Ficus* are rare, if they occur at all. I have collected the insects from a dozen or so species on Kinabalu, but all the rest remain to be found, and one cannot have too many collections, even from the same species, for verification. I hope that an ardent entomologist will take up this fascinating study. Nearly ripe figs should be placed in a bottle or wide tube, lightly stoppered, until the insects emerge. Then the bottle or tube is turned with its base to the light, where the insects will gather, unstoppered, and the insects transferred by a small paint-brush dipped in 70% alcohol to a small preserving tube with the same liquid. I waited nearly a week for the insects of *F. stupenda* to emerge from figs that had been thrown down by gibbons, and I collected from the bottle not one species of fig-wasp but eight, as well as several other kinds of insect (Wiebes, 1966); the last to emerge was a fearsome fly that darted so quickly that it nearly escaped; I think that even gnats occur in some figs.
