

A taxonomic revision of the Australian *Ficus* species in the section *Malvanthera* (*Ficus* subg. *Urostigma*: Moraceae)

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Abstract

Dixon, D.J. (Tropical Plant Sciences, School of Tropical Biology, James Cook University, Townsville, Queensland 4811, Australia. Rainforest CRC, James Cook University, Cairns, Queensland 4870, Australia. Permanent address: Parks and Wildlife Commission of the Northern Territory, P.O. Box 496, Palmerston, NT 0831, Australia.) 2003. A taxonomic revision of the Australian *Ficus* species in the section *Malvanthera* (*Ficus* subg. *Urostigma*: Moraceae). *Telopea* 10(1): 125–153. A revision of the Australian *Urostigma* sect. *Malvanthera* Corner (*Ficus*: Moraceae) is presented. Seventeen taxa in fourteen species are recognised. These are: *Ficus atricha* D.J.Dixon, *F. brachypoda* (Miq.) Miq., *F. cerasicarpa* D.J.Dixon, *F. crassipes* F.M.Bailey, *F. destruens* F.Muell. ex C.T.White, *F. lilliputiana* D.J.Dixon f. *lilliputiana*, *F. lilliputiana* f. *pilosa* D.J.Dixon, *F. macrophylla* Desf. ex Pers. f. *macrophylla*, *F. macrophylla* f. *columnaris* (C. Moore) D.J.Dixon, *F. obliqua* G.Forst., *F. platypoda* (Miq.) A.Cunn. ex Miq., *F. pleurocarpa* F.Muell., *F. rubiginosa* Desf. ex Vent. f. *rubiginosa*, *F. rubiginosa* f. *glabrescens* (F.M.Bailey) D.J.Dixon, *F. subpuberula* Corner, *F. triradiata* Corner, and *F. watkinsiana* F.M.Bailey. *F. watkinsiana* F.M. Bailey is lectotypified. *Malvanthera* subser. *Hesperidiiformes* is raised to the rank of series. The taxonomy of *Urostigma* sect. *Malvanthera* is strongly supported by the pollinator wasp association. Pollinator wasp associations are given for each species. A formal rearrangement of the Australian and the New Guinea species in *Urostigma* sect. *Malvanthera* is presented. Keys to the series and species now recognised in *Urostigma* sect. *Malvanthera* are provided. Descriptions, notes, and distribution maps are provided for the Australian species.

Introduction

Ficus is a large pantropical genus divided by Corner (1959a, 1959b, 1959c, and 1959d) into four subgenera, two of which, *Ficus* subgen. *Ficus* and *Ficus* subgen. *Urostigma* are well represented in Australia. The two remaining subgenera, *Ficus* subgen. *Pharmacosycea* and *Ficus* subgen. *Sycomorus* are each represented by only one species, *F. albipida* (Miq.) King and *F. racemosa* L. respectively. The taxa associated with the *Ficus* subgen. *Ficus* are commonly referred to in Australia as sandpaper figs while the members of the *Ficus* subgen. *Urostigma* are called stranglers or banyans. Each subgenus is further divided into sections, series and subseries. In a modification of the classification by Corner (op. cit.), Ramirez (1977a) rearranged the infrageneric classification to better reflect the wasp specificity and morphology, and the pollination ecology, morphology and physiology of the figs. In this classification Ramirez (1977a) expanded *Ficus* subg. *Sycomorus* to include among others, the *Ficus* sections *Adenosperma* and *Neomorpha*, each with representatives in Australia. Similarly, Berg (1989) discussed the validity of Corner's classification and proposed two groups within *Ficus* based on morphological and functional traits connected with the pollination ecology of the figs. In the classification of Berg (1989), two main groups were recognised, a monoecious group consisting of the *Ficus* subgenera *Pharmacosycea* and *Urostigma*, and a mainly (gyno)dioecious group consisting of the subgenera *Ficus* and *Sycomorus*. Weiblen (2000) provided phylogenetic insights into *Ficus* classification based on ITS sequences and morphology agreeing in part with Ramirez (1977a) and

Berg (1989). Despite the fact that infrageneric rearrangements have been proposed subsequent to Corner (op. cit.), the monophyly of *Urostigma* sect. *Malvanthera* has been maintained by Weiblen (2000).

Ficus has previously been treated in the *Flora of Australia* (Chew 1989) and was considered to consist of 41 species. Since the *Flora of Australia* treatment various taxa in the *Urostigma* sect. *Malvanthera* as well as their associated pollinator wasps have been revised (Dixon 2001a; Dixon 2001b; Dixon 2001c; Dixon et al. 2001; Lopez-Vaamonde et al. 2002). In addition, the species *Ficus subnervosa* Corner, previously considered to be endemic to Papua New Guinea, has been found on Cape York Peninsula, such that the key to *Ficus* by Chew (1989) may prove unworkable. This work finalises the taxonomic account of the Australian taxa in the *Urostigma* sect. *Malvanthera* providing a better understanding of the relationships between the fig taxa and their pollinator wasp(s) species.

Methods

This revision of the Australian *Urostigma* sect. *Malvanthera* is based on the examination of 1638 herbarium collections from AD, BM, BRI, CANB, DNA, FI, G, JCT, K, L, LAE, MANCH, MEL, NSW, PERTH, QRS, SING, and U. I have seen and collected all Australian species including their pollinator wasps. These specimens are at JCT and DNA.

Taxonomic History

Fig species occurring in the *Ficus* subgen. *Urostigma* can be distinguished primarily by their habit. This subgenus is perhaps the easiest of the four subgenera to recognise for this is the banyan or strangling group of *Ficus* (Ramirez, 1977b). The epiphytic and lithophytic habit of the species in this subgenus, commonly produce aerial, adventitious, or creeping root systems. In addition, the wall of the syconium has an inner and outer layer of scleritic cells. Corner (1959a) established the *Urostigma* sect. *Malvanthera*, based on the following characters: an ostiole with two or three lobes with inflexed bracts; syconia with two or three basal bracts; reniform unilocular anthers with crescentic or transverse dehiscence; ovaries that are attached by their base to the wall of the syconium, or embedded in the wall of the syconium; a red spot at the apex or the base of the ovary; and a stigma that is either simple or bifid. The section was further subdivided into two series:

1. *Malvanthera* ser. *Malvanthereae*: with reniform anthers that dehisce crescentically, containing four subseries. Members of this series are wide-spread, being distributed throughout Australasia and eastern Malaysia (Corner 1965).

(i) *Malvanthereae* subser. *Malvanthereae*: with 2 (3?) large caducous basal bracts; pedunculate syconia; ovaries that are partially immersed in the wall of the syconium. The taxa included are: *F. macrophylla* Desf. ex Pers., *F. glandifera* Summerh., *F. watkinsiana* F.M. Bailey, *F. baileyana* Domin, and *F. rhizophoriphylla* King.

(ii) *Malvanthereae* subser. *Platypodeae*: with 2 or 3 large caducous basal bracts; pedunculate or sessile syconia; ovaries that are attached by their base to the wall of

the syconium. The taxa included are: *F. platypoda* (Miq.) A.Cunn. ex Miq., *F. leucotricha* (Miq.) Miq., *F. obliqua* G. Forst., *F. subpuberula* Corner, *F. destruens* F. Muell. ex C. T. White, and *F. rubiginosa* Desf. ex Vent.

(iii) *Malvanthereae* subser. *Hesperidiiformes*: with 3 small persistent basal bracts. The taxa included are *F. hesperidiiformis* King, *F. augusta* Corner, *F. xylosyca* Diels, *F. mafuluensis* Summerh., *F. heteromeka* Corner, *F. pleurocarpa* F. Muell., and *F. crassipes* F. M. Bailey.

(iv) *Malvanthereae* subser. *Eubracteatae*: with 3 large persistent basal bracts; pedunculate or sessile syconia; ovaries that are attached by their base to the wall of the syconium. Represented by one species, *Ficus triradiata* Corner.

2. *Malvanthera* ser. *Cyclanthereae*: with depressed globose anthers that dehisce transversely; ovaries that are partially immersed in the wall of the syconium. Represented by one species, *Ficus sterrocarpa* Diels which is restricted to eastern New Guinea (Corner 1965).

Difficulties with the infrasectional classification

There are approximately equal numbers of species in three of the four subseries, the exception being *Ficus triradiata* which is the sole member of *Malvanthereae* subser. *Eubracteatae*. It is the only species with large persistent basal bracts. The three remaining subseries, the subser. *Malvanthereae*, subser. *Hesperidiiformes*, and subser. *Platypodeae* were defined rather loosely by persistence and size of the basal bracts. Thus it was easy to distinguish *Malvanthereae* subser. *Hesperidiiformes*, with small inconspicuous persistent basal bracts, from *Malvanthereae* subser. *Malvanthereae* and *Malvanthereae* subser. *Platypodeae* which have relatively larger caducous basal bracts. However, distinguishing the latter two subseries from each another is much more difficult. The only difference was whether the ovaries were attached by their base to the wall of the syconium, or were partially imbedded in the syconium wall (Corner 1959a). Also Corner (1965) may have later doubted the validity of his classification as he included *F. crassipes* and *F. pleurocarpa* in the key to the subser. *Malvanthereae* as well as the subser. *Hesperidiiformes*. A new infrasectional classification is proposed.

There are 14 Australian species recognised in the *Urostigma* sect. *Malvanthera*. A comparison of the classification of Chew (1989) and this research is presented in Table 1. *Ficus lilliputiana* was treated by Dixon (2001a), *F. macrophylla* (Dixon 2001b), *F. obliqua* and *F. rubiginosa* (Dixon et al. 2001), and *F. atricha*, *F. cerasicarpa*, *F. platypoda* and *F. brachypoda* (Dixon 2001c). Species descriptions are presented for the following taxa: *F. crassipes*, *F. destruens*, *F. pleurocarpa*, *F. subpuberula*, *F. triradiata*, and *F. watkinsiana*. For each species there is a discussion on etymology, nomenclature where necessary, distribution and ecology, and conservation status. Distributional ranges are provided for each taxon. In species where infraspecific taxa are described, a key to their identification is given. Plates and illustrations found in other texts are listed so that these texts can be updated with the correct nomenclature where necessary. The pollinator wasp of each *Ficus* species is also given. The author abbreviations for the plant taxa follow Brummitt and Powell (1992).

Table 1. A comparison of the classification of Chew (1989) and this research.

<i>Ficus</i> taxa recognised by Chew (1989)	Accepted name this research
<i>F. platypoda</i> var. <i>minor</i>	<i>F. brachypoda</i>
<i>F. platypoda</i> var. <i>lacnocaulon</i>	
<i>F. obliqua</i> var. <i>puberula</i>	
<i>F. platypoda</i> var. <i>cordata</i>	<i>F. atricha</i>
<i>F. rubiginosa</i>	<i>F. rubiginosa</i> f. <i>rubiginosa</i>
<i>F. platypoda</i> var. <i>leichhardtii</i>	
<i>F. obliqua</i> var. <i>petiolaris</i>	
<i>F. baileyana</i>	
Not recognised	<i>F. rubiginosa</i> f. <i>glabrescens</i>
<i>F. obliqua</i> var. <i>obliqua</i>	<i>F. obliqua</i>
Not recognised	<i>F. cerasicarpa</i>
<i>F. platypoda</i> var. <i>platypoda</i>	<i>F. platypoda</i>
<i>F. leucotricha</i> var. <i>leucotricha</i>	
<i>F. leucotricha</i> var. <i>megacarpa</i>	
<i>F. leucotricha</i> var. <i>sessilis</i>	
Not recognised	<i>F. lilliputiana</i> f. <i>lilliputiana</i>
Not recognised	<i>F. lilliputiana</i> f. <i>pilosa</i>

Morphology

Basal bract form: The developing syconia are axillary and occur in pairs. At its junction with the peduncle, the syconium is subtended by either two or three basal bracts. These bracts are valvate or imbricate, either large and completely enclosing the developing syconium, or reduced and never enclosing the developing syconium. For the majority of the species these bracts are caducous; however, in two species they remain persistent for the life of the fig. In previous taxonomic treatments on this section, the basal bract number was considered to be fixed for each species and was used as an important character in delimiting some species, especially *F. obliqua* and *F. platypoda* with supposedly two and three basal bracts respectively (Corner 1965). I have found that the basal bract number is variable within some species in this section of *Ficus* and is therefore not a reliable character for species delimitation.

Basal veins of lamina: There may or may not be distinct lateral veins present at the base of the lamina. These veins diverge from the midvein at a different angle from the remainder of the lateral veins and were measured separately. The measurement taken was the displacement from the midrib. Basal veins are very distinct in the rainforest species, but indistinct in the deciduous vine thicket species.

Number of lateral veins: Both the major and minor lateral veins diverging from the midvein were counted. I could never consistently agree with the number of lateral veins recorded by Corner in his descriptions. Thus for consistency I counted both the major and minor lateral veins diverging off the midrib. The major lateral veins curve inside the margin and join with the next major vein. The minor lateral veins are those between two major veins.

Habit: The *Urostigma* sect. *Malvanthera* contains species that are hemi-epiphytic trees, erect free-standing trees or shrubs, lithophytic trees or shrubs, or lithophytic prostrate shrubs.

Intercostal region of lamina: The intercostal region between the tertiary veins on the abaxial surface of the lamina can either be sunken to form areolae as is found in *F. cerasicarpa* and *F. platypoda*, or flat as is found in the remainder of the species in the *Urostigma* sect. *Malvanthera*.

Key to the series in *Urostigma* sect. *Malvanthera*

1. Basal bracts imbricate 1. ser. *Malvanthereae*
 Basal bracts valvate 2. ser. *Hesperidiiformes*

Series Descriptions

1. *Malvanthera* ser. *Malvanthereae* Corner, *Gard. Bull. Singapore*, 17: 375 (1959). Type: *Ficus macrophylla* Desf. ex Vent.

Malvanthereae subser. *Platypodeae* Corner, *Gard. Bull. Singapore*, 17: 375 (1959). Type: *Ficus platypoda* (Miq.) A.Cunn. ex Miq.

Basal bracts imbricate. Stigma simple.

For included species refer to Table 2.

Malvanthera* ser. *Malvanthereae

This series consists of taxa, with imbricate basal bracts. The Australian species in this series are *F. platypoda*, *F. cerasicarpa*, *F. atricha*, *F. subpuberula*, *F. lilliputiana*, *F. brachypoda*, *F. destruens*, *F. macrophylla*, *F. rubiginosa*, *F. obliqua*, and *F. watkinsiana*. With the exception of *F. obliqua* and *F. brachypoda* all species are endemic to Australia.

Table 2. The infrasectional arrangement of the taxa belonging to the *Urostigma* sect. *Malvanthera*.

<i>Malvanthera</i> ser. <i>Malvanthereae</i>	<i>Malvanthera</i> ser. <i>Hesperidiiformes</i>
Species with imbricate basal bracts	Species with valvate basal bracts
<i>F. macrophylla</i>	<i>F. hesperidiiformis</i>
<i>F. platypoda</i>	<i>F. triradiata</i>
<i>F. cerasicarpa</i>	<i>F. sterrocarpa</i>
<i>F. atricha</i>	<i>F. mafuluensis</i>
<i>F. subpuberula</i>	<i>F. heteromeka</i>
<i>F. lilliputiana</i>	<i>F. crassipes</i>
<i>F. brachypoda</i>	<i>F. xylosycia</i>
<i>F. destruens</i>	<i>F. augusta</i>
<i>F. rubiginosa</i>	<i>F. glandifera</i>
<i>F. obliqua</i>	<i>F. pleurocarpa</i>
<i>F. rhizophoriphylla</i>	
<i>F. watkinsiana</i>	

Biogeography: There appear to be two diverging groups in this series, a hemi-epiphytic rainforest group represented by *F. destruens*, *F. watkinsiana*, and *F. macrophylla*, and a lithophytic deciduous vine thicket group represented by *F. platypoda*, *F. brachypoda*, *F. cerasicarpa*, *F. atricha*, and *F. lilliputiana*. The later group also shows strong biogeographical support with all the taxa found in deciduous vine thickets on the sandstone escarpments of central and north-western Australia. *Ficus rubiginosa* and *F. obliqua* are not obligate hemi-epiphytes, neither are they restricted to rainforest. They can also occur as lithophytes and hemi-epiphytes in deciduous vine thickets. *Ficus destruens* is also not restricted to the rainforest. It is often found as a hemi-epiphyte in ecotonal areas adjacent to rainforest. These taxa suggest the occurrence of transition species between the hemi-epiphytic taxa and the lithophytic taxa and thus preclude the recognition of two subspecies within the series.

2. Malvanthera ser. Hesperidiiformes (Corner) D.J.Dixon **stat. nov.**

Malvanthereae subser. *Hesperidiiformes* Corner, *Gard. Bull. Singapore*, 17: 375 (1959). Type: *Ficus hesperidiiformis* King.

Malvanthera ser. *Cyclanthereae* Corner, *Gard. Bull. Singapore*, 17: 375 (1959). Type: *Ficus sterrocarpa* Diels.

Malvanthereae subser. *Eubracteatae* Corner, *Gard. Bull. Singapore*, 17: 375 (1959). Type: *Ficus triradiata*.

Basal bracts valvate. Stigma bifid except *F. glandifera*.

For included species refer to Table 2.

Australia has high levels of endemism in the *Urostigma* sect. *Malvanthera* (Corner 1958). Berg (1989) considered northern Australia to be the centre of distribution for the section.

Malvanthera ser. Hesperidiiformes

This series consists of taxa with valvate basal bracts. All the species in this series are rainforest hemi-epiphytes from Australia, New Guinea, and the New Britain, Solomon, and New Hebrides island groups. Three species, *F. triradiata*, *F. crassipes*, and *F. pleurocarpa*, are endemic to the closed forests of the Australian wet tropics.

Pollinator Wasps

The group of wasps that pollinate the florets of the numerous *Ficus* species belong to the Hymenopteran subfamily *Agaoninae*. At the sectional level of *Ficus*, with all but a few exceptions, Wiebes (1994) was able to show that related *Ficus* species have related genera of pollinator wasps. The *Ficus* species in the *Urostigma* sect. *Malvanthera* are pollinated by wasps of the genus *Pleistodontes* Saunders (Wiebes 1994). The Indo-Australian fig wasps have recently been treated by Wiebes (1994) who provided keys and descriptions of the wasp species presently known. Within the *Urostigma* sect. *Malvanthera* Wiebes (1994) recorded the same species of pollinator wasp from different species of *Ficus* and as such provided evidence for exceptions to the 1: 1 rule for fig wasp/host specificity. With the revision of the Australian *Urostigma* sect. *Malvanthera* and the pollinator wasp genus *Pleistodontes* now complete, I consider that much of the confusion over the wasp/host specificity was generated by unsatisfactory and incomplete taxonomies. For example, Table 3 compares the discrepancies that existed between the classifications of Chew (1989) and Wiebes (1994) and how the taxa are treated by this research and Lopez-Vaamonde et al. (2002).

Table 3. The *Ficus* species of the *Urostigma* sect. *Malvanthera* and the taxa recognised by Chew (1989) with their wasp pollinators (*Pleistodontes* spp.) as recognised by Wiebes (1994) compared with this research and the classification of Lopez-Vaamonde et al. (2002).

<i>Ficus</i> taxa recognised by Chew (1989)	<i>Pleistodontes</i> spp. recorded by Wiebes (1994)	Accepted name this research	<i>Pleistodontes</i> spp. recorded by Lopez-Vaamonde et al. (2002)
<i>F. rubiginosa</i>	<i>P. imperialis</i>	<i>F. rubiginosa</i>	<i>P. imperialis</i>
<i>F. obliqua</i> var. <i>obliqua</i>	<i>P. greenwoodi</i>	<i>F. obliqua</i>	<i>P. greenwoodi</i> <i>P. xanthocephalus</i>
<i>F. obliqua</i> var. <i>petiolaris</i>	<i>P. imperialis</i>	<i>F. rubiginosa</i>	<i>P. imperialis</i>
<i>F. obliqua</i> var. <i>puberula</i>	not known	<i>F. brachypoda</i>	<i>P. macrocainus</i>
<i>F. platypoda</i> var. <i>platypoda</i>	not known	<i>F. platypoda</i>	<i>P. cuneatus</i>
<i>F. platypoda</i> var. <i>not determined</i>	<i>P. proximus</i>	<i>F. lillputiana</i>	<i>P. proximus</i>
<i>F. platypoda</i> var. <i>angustata</i>	<i>P. imperialis</i>	<i>F. rubiginosa</i>	<i>P. imperialis</i>
<i>F. platypoda</i> var. <i>minor</i>	<i>P. greenwoodi</i>	<i>F. brachypoda</i>	<i>P. macrocainus</i>
<i>F. platypoda</i> var. <i>lachnocaulos</i>	not known	<i>F. brachypoda</i>	<i>P. macrocainus</i>
<i>F. platypoda</i> var. <i>cordata</i>	not known	<i>F. atricha</i>	not known
<i>F. leucotricha</i> var. <i>leucotricha</i>	not known	<i>F. platypoda</i>	<i>P. cuneatus</i>
<i>F. leucotricha</i> var. <i>not determined</i>	<i>P. cuneatus</i>	<i>F. platypoda</i>	<i>P. cuneatus</i>
<i>F. leucotricha</i> var. <i>megacarpa</i>	not known	<i>F. platypoda</i>	<i>P. cuneatus</i>
<i>F. leucotricha</i> var. <i>sessilis</i>	not known	<i>F. platypoda</i>	<i>P. cuneatus</i>
<i>F. macrophylla</i> ssp. <i>macrophylla</i>	<i>P. froggatti</i>	<i>F. macrophylla</i> f. <i>macrophylla</i>	<i>P. froggatti</i>
<i>F. macrophylla</i> ssp. <i>columnaris</i>	<i>P. froggatti</i>	<i>F. macrophylla</i> f. <i>columnaris</i>	<i>P. froggatti</i>
<i>F. pleurocarpa</i>	<i>P. nitens</i>	<i>F. pleurocarpa</i>	<i>P. regalis</i> <i>P. deuterus</i>
<i>F. crassipes</i>	<i>P. addicotti</i>	<i>F. crassipes</i>	<i>P. addicotti</i> <i>P. nitens</i>
<i>F. watkinsiana</i>	<i>P. nigriventris</i>	<i>F. watkinsiana</i>	<i>P. nigriventris</i>
<i>F. destruens</i>	<i>P. rigisamos</i>	<i>F. destruens</i>	<i>P. rigisamos</i>
<i>F. baileyana</i>	not known	<i>F. rubiginosa</i>	<i>P. imperialis</i>
<i>F. subpuberula</i>	not known	<i>F. subpuberula</i>	<i>P. austrobocheilus</i>
<i>F. triradiata</i> var. <i>triradiata</i>	not known	<i>F. triradiata</i>	<i>P. schizodontes</i>
<i>F. triradiata</i> var. <i>sessilicarpa</i>	not known	<i>F. triradiata</i>	<i>P. schizodontes</i>
Not recognised		<i>F. cerasicarpa</i>	<i>P. macrocainus</i> <i>P. athysanus</i>

Key to the species of *Urostigma* sect. *Malvanthera* in Australia

This key has been developed to reflect the characters that will best delimit the taxa involved. It is recommended that fertile material be used when at all possible and that the combination of characters in each couplet be matched conclusively.

1. Plants hemi-epiphytic (stranglers), lithophytic, or free-standing large trees to 50 m; leaves with basal veins more or less conspicuous; distribution eastern Queensland (eastern edge of the Mitchell Grass Plains) and New South Wales; habitat rainforest, vine thicket, rarely woodland..... 2
 Plants lithophytic, small trees to 13 m, or prostrate shrubs; leaves with basal veins more or less inconspicuous; distribution western Queensland (western edge of the Mitchell Grass Plains), Northern Territory, South Australia, and Western Australia; habitat vine thickets 9
2. Stipules, petiole (may only be scattered at base), and twigs with ascending hyaline hairs, adaxial lamina surface glabrous 3
 Stipules, petiole, and twigs with ascending hyaline hairs interspersed with weak ferruginous hairs, adaxial lamina surface with weak ferruginous hairs at least when young..... 5
3. Abaxial lamina surface glabrous, syconia small (4–12 mm long, 4–11 mm in diameter), ellipsoid, obloid, spheroid; widespread along eastern seaboard of Australia, from Cape York Peninsula to south-eastern New South Wales **1. F. obliqua**
 Abaxial lamina surface with ascending hyaline hairs, syconia large (39–68 mm long, 15–32 mm in diameter), 3 to 10-angled 4
4. Abaxial lamina surface with weak ferruginous hairs restricted to the intercostals (tomentose to felted), ascending hyaline hairs along mid and basal pair of veins, syconia 5 to 10-angled, red to orange, ostiole gibbose forming a crown with up to four unequal lobes; found from Cape Tribulation south to the Atherton Tablelands of Queensland **2. F. pleurocarpa**
 Abaxial lamina surface glabrous or with ascending hyaline hairs scattered at base of lamina, syconia 3-angled, brownish yellow, ostiole probosciform with three unequal lobes; restricted to the Atherton Tablelands of Queensland **3. F. crassipes**
5. Abaxial lamina surface with a dense covering of weak ferruginous hairs only, tomentose (may appear white in very young growth) 6
 Abaxial lamina surface glabrous or with weak ferruginous hairs that are either interspersed with ascending hyaline hairs, scattered over lamina surface (not tomentose), or very sparsely scattered at base of lamina 7
6. Abaxial lamina surface appearing glabrous but with felted to tomentose ferruginous hairs restricted to intercostals, petiole glabrous, syconia 18–25 mm long, 15–24 mm in diameter, ostiole with three lobes (triradiate), distribution south-eastern Queensland, eastern New South Wales, and Lord Howe Island **4. F. macrophylla**
 Abaxial lamina surface with weak ferruginous hairs (may appear white in very young growth), petiole with weak ferruginous hairs with or without ascending hyaline hairs, syconia 13–20 mm long, 11–16 mm in diameter, ostiole umbonate with two lobes (bilabiate), distribution closed forest from Cape Tribulation to Eungella Range, may also be found in ecotonal areas adjacent to rainforest **5. F. destruens**
7. Abaxial and adaxial lamina surface, petiole, stipule, twigs, basal bracts, syconia, and peduncle with ascending hyaline hairs, or with weak ferruginous hairs (may have combination of both) (if abaxial and adaxial lamina surface, petiole, twigs, and basal bracts, are glabrous then stipule and syconia with weak ferruginous hairs); syconia 7–18 mm long, 7–18 mm in diameter; widespread along eastern Australia from Cape York Peninsula to south-eastern New South Wales **6. F. rubiginosa**
 Abaxial and adaxial lamina surface and petiole glabrous, stipule with hyaline ascending hairs or glabrous, syconia 21–37 mm long, 15–29 mm in diameter 8
8. Stipules glabrous, or with ascending hyaline hairs, or with weak ferruginous hairs, basal bracts persistent, glabrous, syconia, yellow or pink-orange; restricted to the Mt. Windsor Tableland, Mt. Lewis, and lowland rainforest of Cape Tribulation **7. F. triradiata**

- Stipules with ascending hyaline hairs interspersed with weak ferruginous hairs, never glabrous, basal bracts caducous with weak ferruginous hairs, syconia deep purple to black; two disjunct populations, Atherton Tablelands to Paluma Range and south-eastern Queensland/north-eastern New South Wales **8. *F. watkinsiana***
9. Intercostals of abaxial lamina surface strongly sunken, abaxial leaf lamina densely covered with ascending hyaline hairs (pilose, villous), 10
Intercostals of abaxial lamina surface not strongly sunken, abaxial leaf lamina glabrous or (minutely) puberulous, pilose, 11
10. Basal bracts 2–8 mm long, peduncles slender (1–2 mm in diameter), western Queensland, northern Northern Territory, occasionally Western Australia **9. *F. cerasicarpa***
Basal bracts 6–29 mm long, peduncles thick (2–5 mm in diameter), northern Northern Territory, northern Western Australia **10. *F. platypoda***
11. Mature plants prostrate shrubs; restricted to the escarpments around Kununurra, Western Australia, and the adjacent Keep River National Park, Northern Territory **11. *F. lilliputiana***
Mature plants erect trees 12
12. Lamina mealy, grey-green in colour, syconia yellow, distributed from Lawnhill National Park in Queensland across the Top End of the Northern Territory, to the Kimberley region of Western Australia **12. *F. subpuberula***
Lamina glabrous or with weak ferruginous hairs, ascending hyaline hairs may be present, syconia red or reddish brown 13
13. Plants glabrous in all parts; distributed across Kakadu plateau, Northern Territory, to the Kimberleys of Western Australia **13. *F. atricha***
Plants with parts variously pubescent; widely distributed from western Queensland, across the Northern Territory and Western Australia, extending south into northern South Australia ***F. brachypoda***

Species descriptions

1. *Ficus obliqua* G.Forst. *Fl. Ins. Austral.* 77 (1786). A full description for this species is presented in Dixon et al. (2001).

Pollinator wasp(s): Two pollinator wasps have been recorded by Lopez-Vaamonde et al. (2002) for *F. obliqua*. They are *Pleistodontes greenwoodi* Grandi and *Pleistodontes xanthocephalus* Vaamonde, Dixon, Cook & Rasplus.

2. *Ficus pleurocarpa* F.Muell., *Fragm.* 8: 246 (1874). Type: Johnson River, QLD, W. Hill s.n. (holo n.v.).

According to Stafleu and Cowan (1976) the type of *F. pleurocarpa*, being a Mueller name, should be at MEL; however, efforts to locate it at MEL have failed. Attempts to locate the type at K or the British Museum (BM) were unsuccessful. There is a specimen of *F. pleurocarpa* with a Mueller label at K, it has the correct locality details, but it lacks the collector's name of 'W. Hill' as cited by Mueller (1874) in the protologue, which would authenticate this specimen as the type.

Ficus cylindrica Warb., *Repert. Spec. Nov. Regni Veg.* 1: 72 (1905). Type: Barron River, QLD, 22 May 1902, L. Diels 8382 (holo B).

Hemi-epiphyte to 25 m. *Twigs* glabrous, or pilose to villous with ascending hyaline hairs, glabrescent. *Leaves* alternate, narrowly oblong to ovate; apex acute; base cuneate to rounded. *Lamina* 150–257 mm long, 49–100 mm wide; abaxial surface with ascending hyaline hairs restricted to the mid vein and basal pair of veins, puberulous to pilose, lamina surface tomentose with ferruginous hairs restricted to the intercostals; adaxial lamina surface glabrous. *Lateral veins* 75–121 pairs, 64°–84°, basal veins distinct, 30°–56°. *Petiole* 44–102 mm long, 1–5 mm wide; pilose with ascending hyaline hairs,

glabrescent. *Stipules* 120–245 mm long; glabrous, or pilose to villous, with ascending hyaline hairs, glabrescent. *Syconia* 39–61 mm long, 19–27 mm in diameter; obovate to ovoid, 5–10-angled; orange or red; glabrous, or with weak ferruginous hairs, glabrescent; punctate; ostiole lobes 4, of unequal size. *Basal bracts* 3, valvate, much reduced; caducous; puberulous, with ascending hyaline hairs. *Peduncle* 10–30 mm long, puberulous to pilose with ascending hyaline hairs. *Female florets* sessile, tepals 3 or 4; stigma bifid; male florets pedicellate, tepals 3–5, anthers 1 with crescentic dehiscence, interspersed with the female and gall florets; gall florets pedicellate, tepals 3 or 4. *Interfloral bracts* present.

Selected specimens examined: Queensland: Cook: Hewet's Property, Cooper Creek, *D. Dixon PHD93*, 26 Apr 1996 (JCT); Eastern Slope of Mount Sorrow, Cape Tribulation, 16°05S 145°27E, *G.D. Weiblen 209*, 25 Feb 1993 (BRI); Vacant Crown Land, near Noah Creek, 16°10S 145°10E, *B.P.M. Hyland 5978*, 11 Apr 1972 (QRS); Mt. Pieter Botte, 16°41S 145°25E, *R. Russell 20*, 30 Mar 1992 (BRI); Copper Lode Falls dam area, Cairns, 17°00S 145°40E, *W.R. Birch 18*, 07 Dec 1972 (BRI); State Forest Reserve 185, Buchan Logging Area, 17°08S 145°37E, *B. Gray 2574*, 13 May 1982 (QRS); State Forest Reserve 310, Gadgarra, Tardent Logging Area, Compartment 4a, 17°18S 145°43E, *G.L. Unwin 256*, 24 Mar 1977 (QRS); Road to Bartle Frere walking track, off Lake Eacham Road, Atherton Tablelands, 17°22S 145°42E, *D. Dixon PHD338*, 21 Nov 1996 (JCT); Timber Reserve 1230, Boonjie Logging Area, 17°23S 145°45E, *B.P.M. Hyland 13326*, 12 Nov 1987 (QRS); Wallace Road near commencement of State Forest Reserve 755, 17°25S 145°40E, *A.K. Irvine 1303*, 26 Mar 1975 (QRS); Elinjaa Road, Millaa Millaa District, 17°28S 145°40E, *A.K. Irvine 2218*, 09 Jul 1982 (QRS); 1.8 km along Theresa Creek Road from Millaa Millaa side, Atherton Tablelands, 17°29S 145°36E, *D. Dixon PHD343*, 21 Nov 1996 (JCT); Timber Reserve 1231, Djallan Logging Area, 17°34S 145°43E, *B. Gray 2928*, 13 Jan 1983 (QRS); Palmerston Highway, *H. Cooke s.n.*, 18 Dec 1976 (JCT); Palmerston National Park, N Johnstone River 17°36S 145°46E, *L.W. Jessup 743*, 10 Dec 1984 (BRI); State Forest Reserve 756, Maple Logging Area (between Tully River and S Johnston River), 17°40S 145°40E, *A.W. Dockrill 29*, 29 Apr 1971 (QRS).

Etymology: The epithet *pleurocarpa* is derived from the Greek prefix *pleuro-* meaning ribbed, and the Greek adjectival suffix *-carpus*, and refers to the syconia that have 5–10 ribs running from the base to the tip of the syconium.

Distribution and Ecology: *Ficus pleurocarpa* is a hemi-epiphytic species restricted to the lowland and upland wet tropical rainforests of north-east Queensland (Fig. 1) with an altitudinal range from near sea level to 1000m (Hyland & Whiffin 1993). *Ficus pleurocarpa* is endemic to Australia.

Notes: Commonly referred to as Banana Fig, it is easily identified by its large orange to red cylindrical syconia that bear up to 10 ribs running from base to tip. The ostiole bears four, sometimes indistinct, lobes often forming a crown at the apex of the syconium.

Conservation Status: *Ficus pleurocarpa* is well conserved in national parks and state forests throughout its distributional range, therefore no conservation code is recommended.

Illustrations: *Williams, K.A.W., 1979, Native Plants Queensland, Volume 1, p. 124; Chew, W., 1989, Moraceae, Flora of Australia 3: 48 fig. 31C; Christophel, D.C. & Hyland, B.P.M., 1993, Leaf Atlas of Australian Tropical Rain Forest Trees, p. 166, plate 103a; Cooper, W., and Cooper, W.T., 1994, Fruits of the Rainforest, p. 134, Fig. 268.*

Pollinator Wasp(s): Two pollinator wasps have been recorded by Lopez-Vaamonde et al. (2002) for *F. pleurocarpa*. They are *Pleistodontes regalis* Grandi and *Pleistodontes deuterus* Vaamonde, Dixon, Cook & Rasplus. This association constitutes one of the few examples where two pollinator species have been reared from the same syconium of a *Ficus* species.

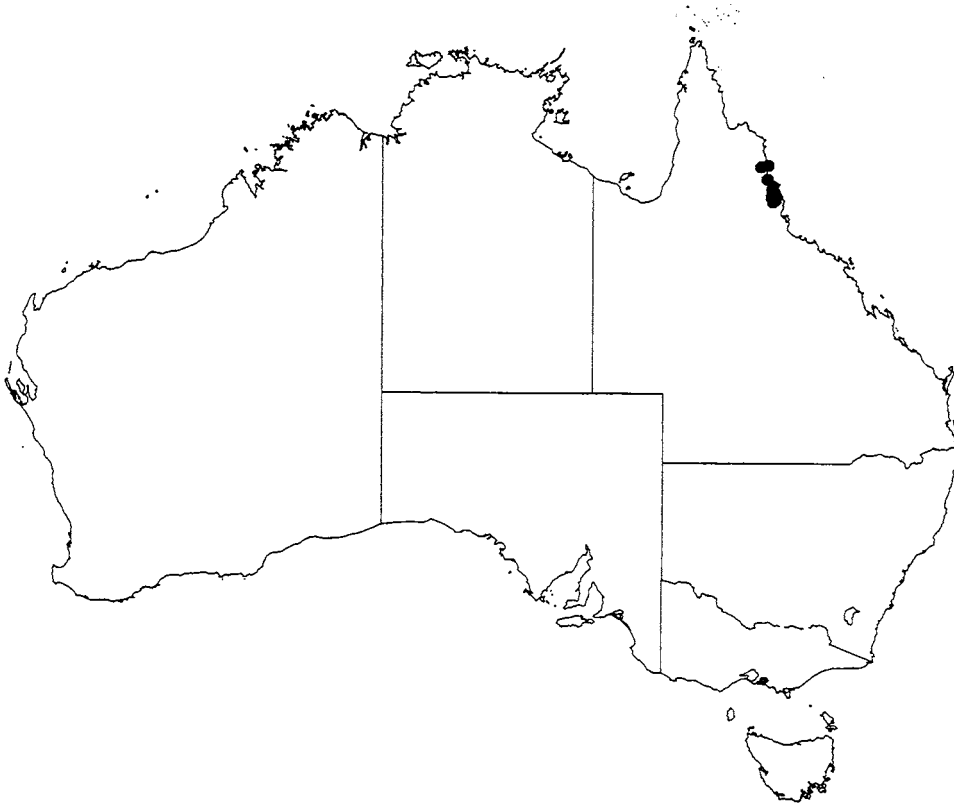


Fig. 1. The distribution of *Ficus pleurocarpa* based on available collection data.

3. *Ficus crassipes* F.M.Bailey, *Rep. Pl. Prelim. Gen. Rep. Bot. Meston's Exped. Bellenden Ker* 2 (1889); *Bot. Bellenden Ker Exped.* 60 (1889). Type: Harvey Creek, Russell River, QLD, F.M. Bailey & E. Meston s.n. (holo BRI; iso MEL) (Fig. 2).

Hemi-epiphyte to 20 m. *Twigs* pilose with ascending hyaline hairs interspersed with weak ferruginous hairs, or puberulous to pilose with ascending hyaline hairs only. *Leaves* alternate, ovate, oblong, elliptic, widely elliptic, obovate, widely obovate; apex obtuse, rounded; base obtuse, rounded. *Lamina* 76–218 mm long, 53–154 mm wide; abaxial and adaxial surface glabrous or with scattered ascending hyaline hairs at the junction of the petiole and lamina. *Lateral veins* 36–68 pairs, 38°–70°, basal veins distinct, 26°–57°. *Petiole* 38–138 mm long, 3–5 mm wide; glabrous, or puberulous to pilose with ascending hyaline hairs, glabrescent. *Stipules* 81–125 mm long; pilose to villous with ascending hyaline hairs interspersed with weak ferruginous hairs, or pilose, to villous with ascending hyaline hairs only. *Syconia* 43–68 mm long, 15–32 mm



Fig. 2. The holotype of *Ficus crassipes* F.M.Bailey. The specimen consists of two sheets of which only sheet one is shown. The original description, as it appeared in the original publication in 1889, is near the bottom margin.

in diameter; lanceoloid, ovoid, oblong, narrowly oblong, often 3-angled; yellow-brownish-orange, orange-brown, brown, dark purple, with dark brown spots; puberulous with ascending hyaline hairs interspersed with weak ferruginous hairs, or puberulous to pilose with ascending hyaline hairs only; punctate, ostiole probosciform, triradiate. *Basal bracts* 3, valvate, much reduced, persistent; pilose with ascending hyaline hairs interspersed with weak ferruginous hairs, or puberulous to pilose with ascending hyaline hairs only. *Peduncle* 7–17 mm long; pilose with ascending hyaline hairs interspersed with weak ferruginous hairs, or puberulous to pilose with ascending hyaline hairs only. *Female florets* imbedded in wall of receptacle, sessile, subsessile, tepals 3 or 4, stigma bifid; male florets pedicellate, tepals 3 or 4, anthers 1 with crescentic dehiscence, interspersed with the female and gall florets; gall florets imbedded, sessile, subsessile, pedicellate, tepals 3 or 4. *Interfloral bracts* present.

Selected specimens examined: Queensland: Cook: 14.9 km along Ravenshoe to Millaa Millaa, Scenic Route, Atherton Tablelands, 17°34S 145°36E, *D. Dixon PHD333*, 19 Nov 1996 (JCT); Timber Reserve 146, Fritz Logging Area, between gap and Three Jims Creek, 15°45S 145°20E, *B.P.M. Hyland 6779*, 25 Jul 1973 (QRS); Kennedy Highway, Evelyn Central, 17°29S 145°30E, *R. Elick 62*, 18 May 1988 (QRS); Wallace Road, 17°24S 145°40E, *R. Jensen 726*, 13 May 1996 (QRS); Millaa Millaa, 200m along Theresa Creek Road, Atherton Tablelands, 17°30S 145°36E, *D. Dixon PHD330*, 18 Nov 1996 (JCT); Topaz, near Malanda, 17°25S 145°43E, *S.T. Blake 15204*, 25 Aug 1943 (BRI); Road to Butcher Creek on the Topaz Road to Bartle Frere, Atherton Tablelands, 17°21S 145°41E, *D. Dixon PHD340*, 21 Nov 1996 (JCT); Glen Allyn, 17°27S 145°42E, *A.W. Dockrill 131*, 16 Jun 1971 (BRI; QRS); Timber Reserve 1230, Boonjie Logging Area, 17°25S 145°45E, *B.P.M. Hyland 6591*, 04 Dec 1972 (QRS); Hugh Nelson Range, 19 miles S of Atherton, 17°26S 145°29E, *J.W. Wrigley & I.R. Telford NQ554*, 02 Jun 1972 (CANB); Evelyn Tableland, 26 miles S of Atherton, 17°30S 145°30E, *J.W. Wrigley & I.R. Telford NQ572*, 02 Jun 1972 (CANB); Jaggan, S of Malanda, *L.S. Smith & J. Webb 3340*, 17 Aug 1947 (BRI); Mt. Lewis, approx 7 km from top, *A. Cairns s.n.*, 23 Jun 1996 (JCT).

Etymology: The epithet *crassipes* is derived from the Latin adjective *crassus* meaning thick, and refers to the thick peduncle on the syconia of this species (Meston 1889).

Distribution and Ecology: *Ficus crassipes* is a hemi-epiphytic species restricted to upland areas of the wet tropic rainforests of north-east Queensland (Fig. 3). It has an altitudinal range of 650–1000 m (Hyland & Whiffin 1993) and is endemic to Australia.

Notes: Commonly referred to as Round Leaf Banana Fig, *F. crassipes* is sometimes confused with *F. pleurocarpa*, it is easily identified by its large brownish cylindrical syconia, the very small persistent papery basal bracts, and the probosciform triradiate ostiole.

Conservation Status: Although much of the rainforest of the Atherton Tablelands has been cleared, *F. crassipes* is still commonly encountered and is well-conserved in state forests throughout its distributional range. Therefore no conservation code is recommended.

Illustrations: *Williams, K.A.W., 1979, Native Plants Queensland, Vol. 1, p. 122; Chew, W., 1989, Moraceae, Flora of Australia 3: 48, Fig. 31A–B; Christophel, D.C. & Hyland, B.P.M., 1993, Leaf Atlas of Australian Tropical Rain Forest Trees, p. 160, plate 98b; Cooper, W. and Cooper, W.T., 1994, Fruits of the Rainforest, p. 130, Fig. 259.*

Pollinator Wasp(s): Two pollinator wasps have been recorded by Lopez-Vaamonde et al. (2002) for *F. crassipes*. They are *Pleistodontes nitens* Grandi and *Pleistodontes addicotti* Wiebes. Together with the pollinators of *F. pleurocarpa* this is one of the few instances in which two pollinator species have been reared from the same syconium of a *Ficus* species. Wiebes (1994) cited *F. pleurocarpa* as the host of *P. nitens*; however Vaamonde et al. (2002) stated that previous treatments had misinterpreted *P. nitens*.

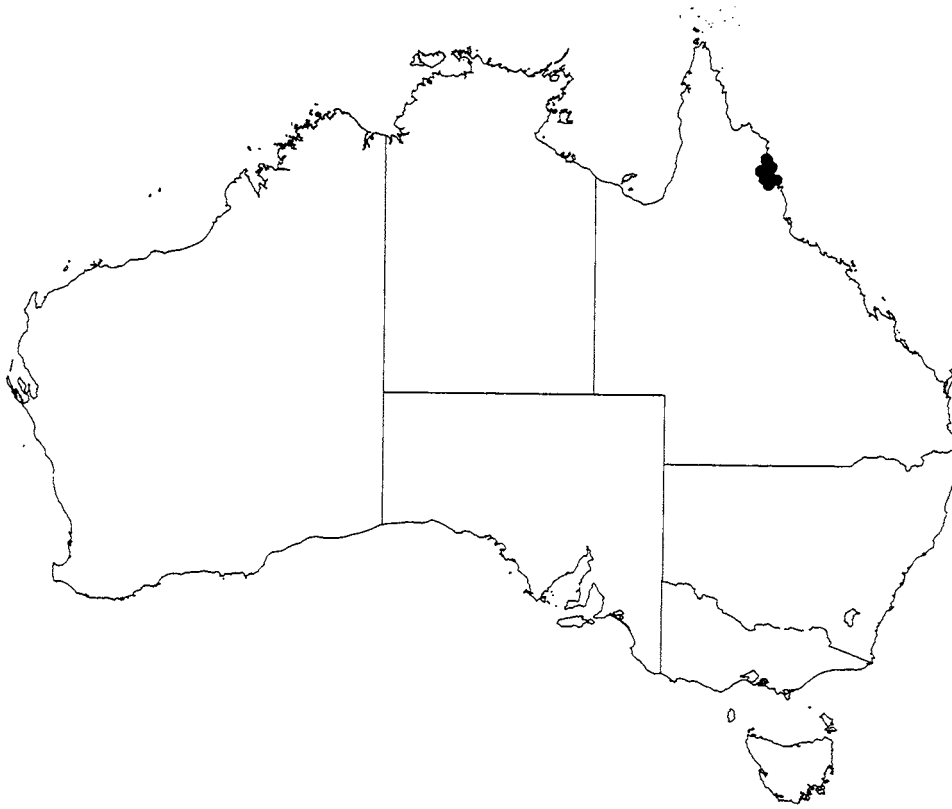


Fig. 3. The distribution of *Ficus crassipes* based on available collection data.

4. ***Ficus macrophylla*** Desf. ex Pers. *Syn. Pl.* 2: 609 (1807). A full description is presented in Dixon (2001b).

There are two forms which are distinguished as follows:

1. Free-standing tree, endemic to mainland Australia..... *f. macrophylla*
 Hemi-epiphyte with no obvious main trunk, endemic to Lord Howe Island
 *f. columnaris*

Pollinator Wasp: The pollinator wasp of *F. macrophylla sens. lat.* is *Pleistodontes froggatti* Mayr (Lopez-Vaamonde et al., 2002).

5. ***Ficus destruens*** F.Muell. ex C.T.White, *Contr. Arnold Arbor.* 4: 16 (1933). Type: Gadgarra, Atherton Tableland, QLD, 8 June 1929, S.F. Kajewski 1087 (holo BRI) (Fig. 4).

Hemi-epiphyte to 32 m. *Twigs* pilose to villous with ascending hyaline hairs interspersed with weak ferruginous hairs, glabrescent. *Leaves* alternate, narrowly oblong, narrowly elliptic, oblanceolate, lanceolate; apex acute; base cuneate, obtuse. *Lamina* 51–194 mm long, 16–63 mm wide; abaxial surface tomentose with ferruginous hairs restricted to the intercostals, glabrescent; adaxial surface glabrous in older leaves, or tomentose

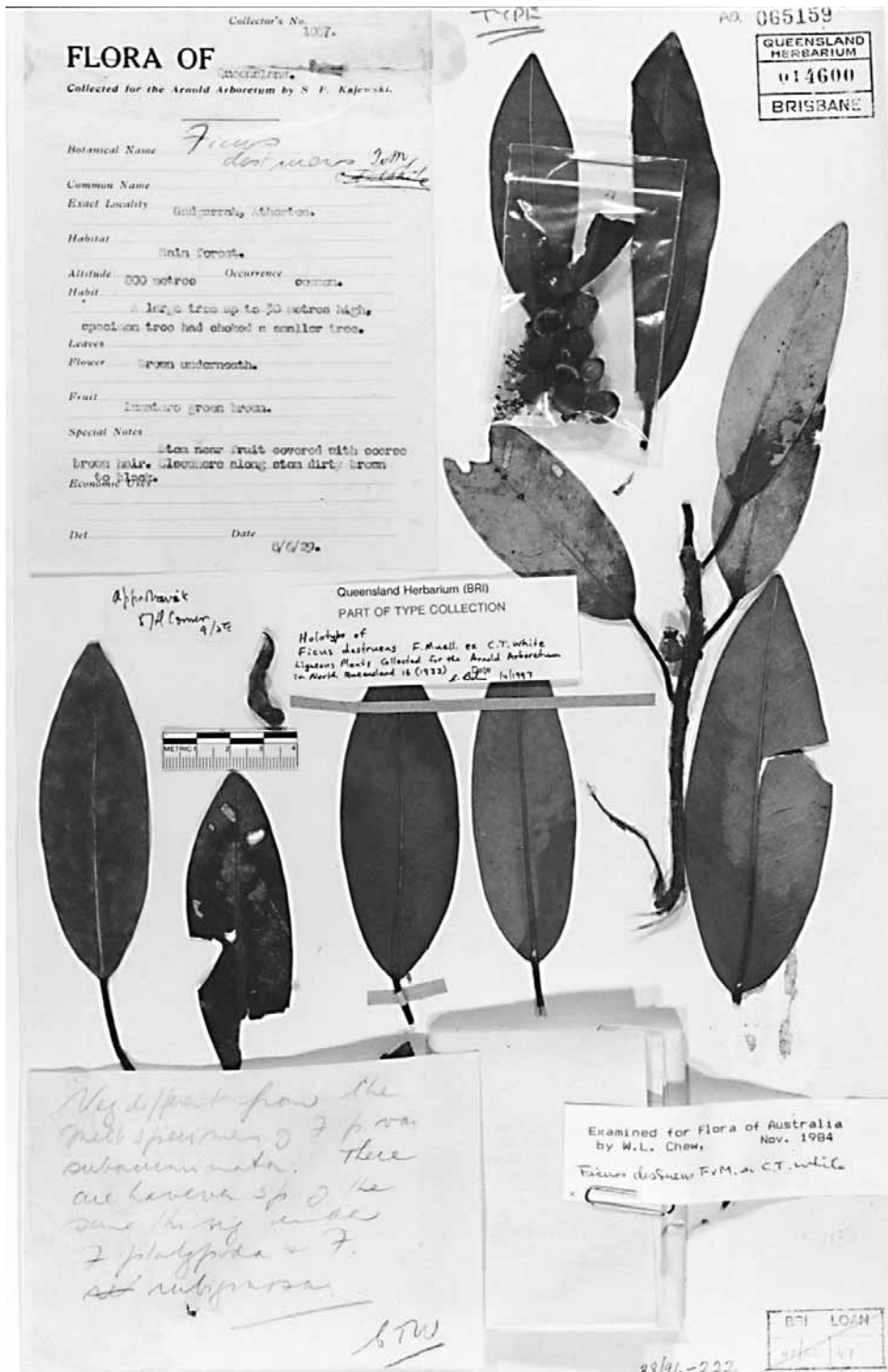


Fig. 4. The holotype of *Ficus destruens* F.Muell. ex C.T.White.

with ferruginous hairs, glabrescent in the younger leaves. *Lateral veins* 20–53 pairs, 49°–74°, basal veins distinct, 28°–52°. *Petiole* 12–64 mm long, 2–5 mm wide; puberulous with ascending hyaline hairs interspersed with weak ferruginous hairs, glabrescent, or tomentose with ferruginous hairs, glabrescent. *Stipules* 46–74 mm long; pilose to villous with ascending hyaline hairs interspersed with weak ferruginous hairs. *Syconia* 13–19 mm long, 11–16 mm in diameter, often compressed laterally; broadly oblong to broadly ellipsoid, ellipsoid, spheroid; orange, red; tomentose with ferruginous hairs, glabrescent; punctate, ostiole bilabiate. *Basal bracts* 2, imbricate, puberulous with ascending hyaline hairs interspersed with weak ferruginous hairs, glabrescent, or tomentose with ferruginous hairs. *Peduncle* 3–6 mm long; pilose with ascending hyaline hairs interspersed with weak ferruginous hairs, glabrescent. *Female florets* sessile, subsessile, tepals 4 or 5, stigma simple; male florets pedicellate, tepals 5–7, anthers 1 with crescentic dehiscence, interspersed with the female and gall florets; gall florets sessile, pedicellate, tepals 3–6. *Interfloral bracts* present.

Selected specimens examined: Queensland: Cook: 52.2 km along Palmerston Highway, heading towards Palmerston, on S side of road, Atherton Tablelands, *D. Dixon PHD94*, 27 Apr 1996 (JCT); Hope Vale Aboriginal Reserve, 15 km SW of Mclvor River mouth, Cooktown, 15°13S 145°07E, *D.G. Fell & J.P. Stanton DGF3838*, 17 Nov 1993 (BRI); 4 km W of Isabella falls on Battle Camp Road, 15°16S 144°59E, *L.W. Jessup, G.P. Guymmer & H.A. Dillewaard GJD3025*, 30 Nov 1989 (BRI); State Forest Reserve 78, Dagmar, 16°13S 145°17E, *B.P.M. Hyland 9224*, 01 Dec 1976 (QRS); State Forest Reserve 144, Cockatoo Logging Area, 0.5 km past W Spencer Creek Forestry Camp, 33 km NNW of Mount Carbine, 42 km NW of Mossman, Mount Windsor Tableland, 16°15S 145°02E, *L.W. Jessup, G.P. Guymmer & W.J. McDonald GJM1199*, 01 Nov 1988 (BRI); 3 miles from Kuranda towards Mareeba, 16°15S 145°36E, *J.W. Wrigley & I.R. Telford NQ1229*, 16 Jun 1972 (CANB); Whyanbeel on road to Devils Thumb, 16°23S 145°22E, *R. Russell 7*, 01 May 1993 (BRI); Mossman Gorge National Park, 16°27S 145°18E, *L.W. Jessup, G.P. Guymmer & H.A. Dillewaard GJD3331*, 04 Dec 1989 (BRI); Kuranda, 16°49S 145°38E, *B.P.M. Hyland 3063*, 06 Feb 1964 (BRI); Davies Creek, 16°54S 145°33E, *J.G. Tracey 15330*, 01 Dec 1963 (BRI); Copper-lode Falls Dam Site, Cairns, 16°56S 145°34E, *C.H. Gittens 2216*, 13 Sep 1970 (NSW); State Forest Reserve 185, Robson Logging Area, Experimental Plot 9, 17°10S 145°35E, *K. Sanderson 135*, 25 May 1972 (QRS); Lake Tinaroo, 41.6 km along Danbulla Forest Drive from dam end, Atherton Tablelands, 17°13S 145°39E, *D. Dixon PHD329*, 13 Nov 1996 (JCT); Russell Road, 17°19S 145°43E, *P.I. Forster & S.J. Figg 17127*, 04 Jul 1995 (BRI); State Forest Reserve 310, Windin Logging Area (Windin Creek, a tributary of W Mulgrave River), 17°20S 145°45E, *A.W. Dockrill 80*, 06 May 1971 (QRS); Boulders, Babinda, 17°21S 145°52E, *B. Jago 44*, 16 Nov 1988 (QRS); Topaz Road, 2.5 km NE of Bartle Frere Road junction, 17°22S 145°41E, *P.H. Weston, P. Hind, D. Healey & G. Sankowsky 883*, 21 Aug 1986 (NSW); 1.7 km along Theresa Creek Road from Millaa Millaa side, Atherton Tablelands, 17°29S 145°36E, *D. Dixon PHD342*, 21 Nov 1996 (JCT); Gotack Road, 17°31S 145°29E, *R. Elick 49*, 21 Jan 1988 (QRS); State Forest Reserve 756, Velvin Logging Area, 17°40S 145°55E, *B.P.M. Hyland 1646*, 01 Aug 1968 (BRI). North Kennedy: Paluma Range, Dotswood Holding, 19°15S 146°25E, *B.P.M. Hyland 7266*, 11 Jun 1974 (QRS). South Kennedy: Rick and Brenda Parker's property, Bee Creek, off Bee Creek road, Eungella Range, *D. Dixon PHD98 & I. Champion*, 03 Jun 1996 (JCT); Eungella-Dalrymple road, 0.5 km N of Black's road turnoff, *D. Dixon PHD97 & I. Champion*, 03 Jun 1996 (JCT); near Boundary State Forest Reserve 62, Gamma, on Eungella Road, 21°05S 148°35E, *B.P.M. Hyland 8211*, 09 May 1975 (QRS).

Etymology: The species epithet is Latin for destroy, and refers to the ability of this species to destroy its host. *Ficus destruens* is a strangler fig eventually killing its host thus securing its place in the canopy of the rainforest.

Distribution and Ecology: *Ficus destruens* is found mainly in upland areas of the wet tropic rainforests of north-east Queensland at altitudes between 350 and 1000 m (Hyland & Whiffin 1993). However, I have observed it growing in the tropical lowland rainforests at Broadwater State Forest, north of Ingham. It extends from the Atherton Tablelands, south to Eungella Range west of Mackay (Fig. 5). It is a hemi-epiphytic species that is occasionally found as a strangler on *Eucalyptus grandis* W.Hill ex Maiden in the wet sclerophyll forests of Eungella Range (Chew 1989), and on other eucalypt species around Cairns (White 1933). *Ficus destruens* is endemic to Australia.

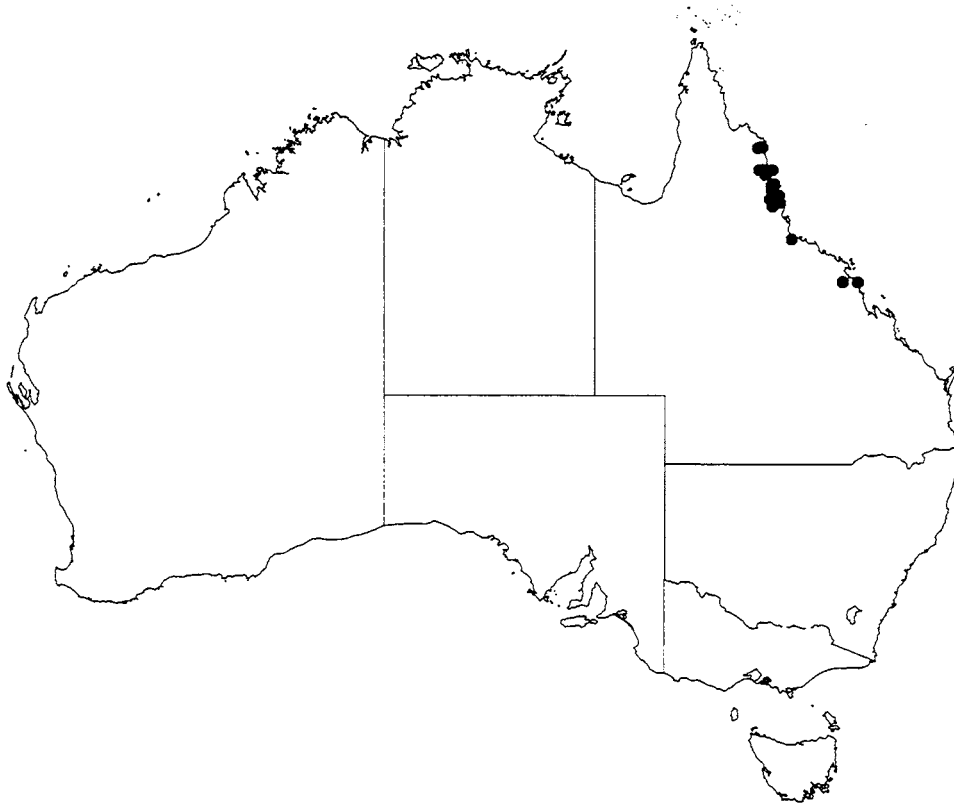


Fig. 5. The distribution of *Ficus destruens* based on available collection data.

Notes: *Ficus destruens* is easily identified in the rainforest by its bilabiate syconia and the somewhat dense covering of weak, often tomentose, ferruginous hairs on the abaxial surface of the leaf. The older leaves may appear glabrous at first glance but on closer inspection some ferruginous hairs can be found at the base of the lamina. Commonly referred to as Rusty Fig.

Illustrations: Williams, K.A.W., 1984, *Native Plants Queensland*, Vol. 2, p. 136; Pearson, S., & Pearson, A., 1992, *Rainforest Plants of Eastern Australia*, p. 108; Christophel, D.C. & Hyland, B.P.M., 1993, *Leaf Atlas of Australian Tropical Rain Forest Trees*, p. 160, plate 98b; Cooper, W., and Cooper, W.T., 1994, *Fruits of the Rainforest*, p. 130, Fig. 259.

Pollinator Wasp: The pollinator wasp of *F. destruens* is *Pleistodontes rigisamos* Wiebes (Lopez-Vaamonde et al., 2002).

6. *Ficus rubiginosa* Desf. ex Vent., *Jard. Malm.* 114 t. 114 (1805). A full description is presented in Dixon et al. (2001).

There are two forms which are distinguished as follows:

1. Leaves variously hairy..... f. *rubiginosa*
- Leaves glabrous..... f. *glabrescens*

Pollinator Wasp: The pollinator wasp of *F. rubiginosa* sens. lat., is *Pleistodontes imperialis* Saunders (Lopez-Vaamonde et al., 2002)

7. *Ficus triradiata* Corner, *Gard. Bull. Singapore* 17: 401 (1959). Type: Mount Spurgeon, QLD, C.T. White 10536 (holo BRI; iso MEL) (Fig. 6).

Ficus triradiata var. *sessilicarpa* Corner, *Gard. Bull. Singapore* 17: 401 (1959). Type: Mount Finnegan, QLD, L.J. Brass 20052 (holo BRI; iso L, SING).

Hemi-epiphyte to 25 m. *Twigs* glabrous, or puberulous with ascending hyaline hairs interspersed with weak ferruginous hairs, or with weak ferruginous hairs, glabrescent, or minutely puberulous with ascending hyaline hairs. *Leaves* alternate, oblanceolate, narrowly elliptic, obovate, elliptic or oblique; apex obtuse or acute; base cuneate. *Lamina* 33–163 mm long, 10–66 mm wide; abaxial and adaxial surface glabrous. *Lateral veins* 20–51 pairs, 51°–70°, basal veins distinct, 20°–37°. *Petiole* 5–50 mm long, 1–5 mm wide; glabrous, or puberulous with ascending hyaline hairs, glabrescent. *Stipules* 35–92 mm long; puberulous with ascending hyaline hairs interspersed with weak ferruginous hairs, glabrescent, or with weak ferruginous hairs, glabrescent, or with ascending hyaline hairs at base. *Syconia* 21–26 mm long, 15–26 mm in diameter, very broadly ovoid to ovoid, occasionally spheroid; cream, yellow, orange or pink, with orange spots; glabrous, or with weak ferruginous hairs, glabrescent; punctate; ostiole triradiate. *Basal bracts* 3, valvate, persistent; glabrous. *Peduncle* 1–8 mm long; glabrous, or with weak ferruginous hairs, glabrescent, or puberulous with ascending hyaline hairs. *Female florets* imbedded, sessile, pedicellate, tepals 3 or 4, stigma bifid; male florets pedicellate, tepals 3 or 4, anthers 1 with crescentic dehiscence, interspersed with the female and gall florets; gall florets sessile or pedicellate, tepals 3 or 4. *Interfloral bracts* present.

Selected specimens examined: Queensland: Cook: Timber Reserve 146, Tableland Logging Area, 15°45S 145°15E, B.P.M. Hyland 8336, 9 Jul 1975 (QRS); Mount Finnegan, W slopes, 15°49S 145°17E, L.J. Brass 20052, 6 Sep 1948 (BRI); Little Cooper Creek, end of Turpentine Road, Daintree, D. Dixon PHD87, 26 Apr 1996 (JCT); Eastern ridge of Mount Sorrow, Cape Tribulation, 16°05S 145°27E, G.D. Weiblen 212, 25 Feb 1993 (BRI); Creek beside forestry hut, Mt. Windsor, 20°21S 146°10E, D. Dixon PHD354, 9 Dec 1996 (JCT); Adeline Creek road, Mt. Windsor, 16°14S 145°04E, D. Dixon PHD367, 10 Dec 1996 (JCT); State Forest Reserve 144, Whypalla, Bower Bird Logging Area, 16°15S 145°01E, B.P.M. Hyland 13466, 22 Dec 1987 (QRS); Timber Reserve 142, Zarda Logging Area (Roots Creek), 16°25S 145°15E, B.P.M. Hyland 6881, 25 Sep 1973 (QRS); Mount Spurgeon, 16°26S 145°12E C.T. White 10536 1 Sep 1936 (BRI; MEL); Mt. Lewis State Forest, 16°32S 145°16E, D. Dixon PHD369, 11 Dec 1996 (JCT); Mount Lewis Road, South Mary Logging Area, 16 km NNW of Mount Molloy, 16°32S 145°17E, L.W. Jessup, G.P. Guymer & W.J. McDonald GJM1589, 1 Nov 1988 (BRI).

Etymology: Corner (1959a) did not give a derivation for the species epithet. However, it is most likely in reference to the three large persistent basal bracts found on the syconia of this species.

Nomenclatural Notes: In his comments concerning the infraspecific taxa of this species, Chew (1989) suggested that the two varieties, *F. triradiata* var. *triradiata* and *F. triradiata* var. *sessilicarpa*, may represent different developmental stages of the same taxon. It has become evident during the studies on the *Urostigma* sect. *Malvanthera* that the peduncle of many species is often quite variable in length and is not a good taxonomic character. The figs present on the type specimen of *F. triradiata* var. *sessilicarpa* do appear sessile; however, they are much smaller than the mature figs of this species. The size of the syconia on the type specimen of *F. triradiata* var. *sessilicarpa* (12–15 mm long, 11–13 mm in diameter), are outside the range of dimensions for the mature syconia of this species (21–26 mm long, 15–26 mm in diameter). Thus I have concluded that *F. triradiata* var. *sessilicarpa* was described from a specimen with immature syconia and have accordingly reduced it to synonymy under the type species.

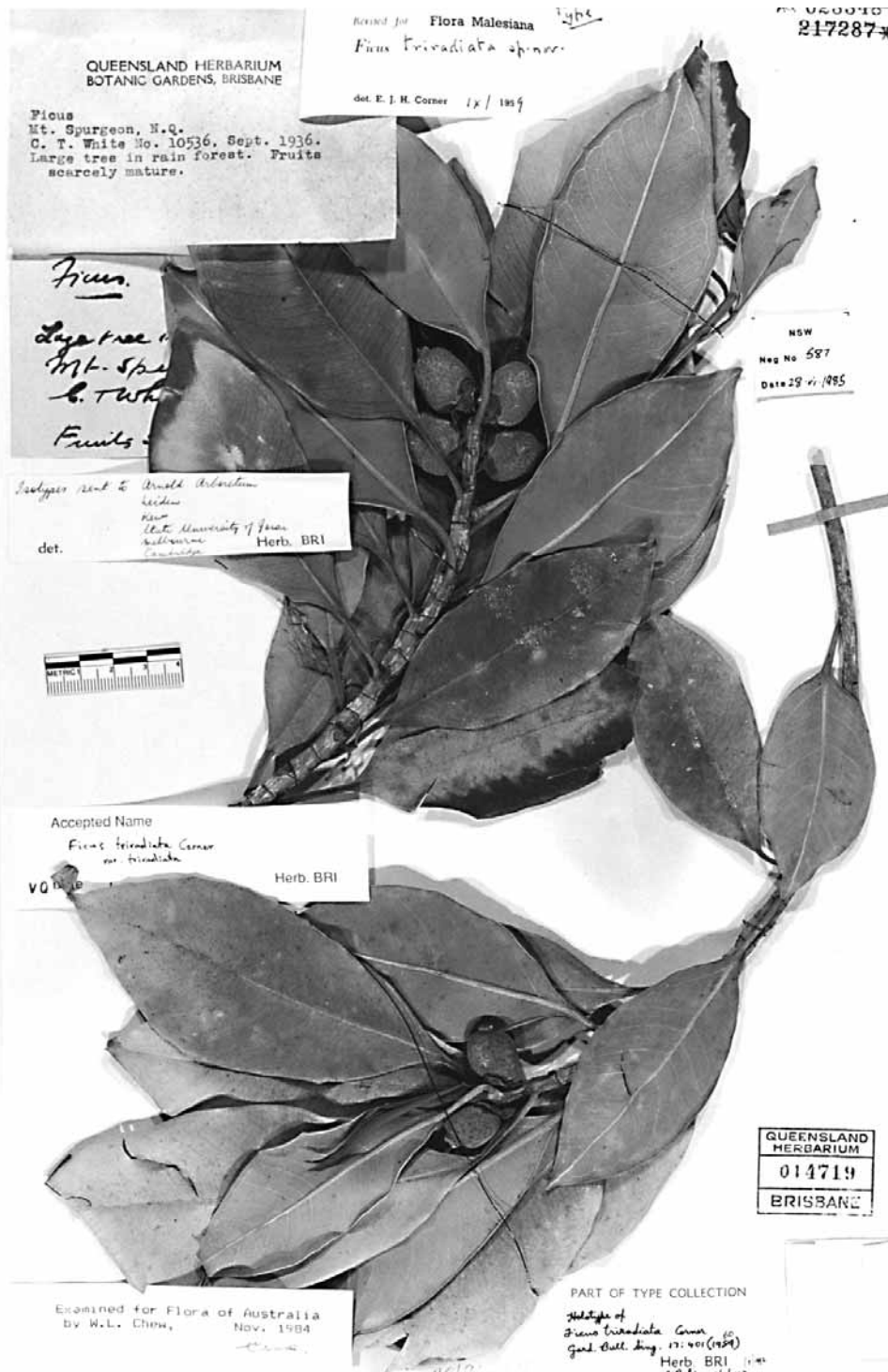


Fig. 6. The holotype of *Ficus triradiata* Corner.

Distribution and Ecology: *Ficus triradiata* is found in lowland and upland wet tropical rainforest of north-east Queensland (Fig. 7), at an altitudinal range from near sea level to 1300 m (Hyland and Whiffin, 1993). This species is hemi-epiphytic and is endemic to Australia.

Notes: It is an attractive species with peach to apricot coloured figs and is commonly referred to as Red Stipule Fig. The common name is a misnomer as the stipules are translucent white when mature. The stipules are only red in colour when the growing point is inactive. It is easily identified by the syconia always having three large persistent basal bracts.

Conservation Status: *Ficus triradiata* has been relatively poorly collected and was considered poorly known (Staff, Queensland Herbarium, 1994) and given a conservation coding of 2K by Briggs and Leigh (1996). However, it is commonly encountered throughout its limited distributional range between Mount Molloy and Cooktown. During a field trip to the Windsor Tablelands in December 1996, 103 individuals were encountered along a 24.6 km section of logging road. Twenty-one individuals were encountered along a three kilometre section of road on Mount Lewis. *Ficus triradiata* also occurs in the rainforests of Cape Tribulation and is adequately conserved in forestry reserves across its entire range. No conservation code is necessary at this present time.

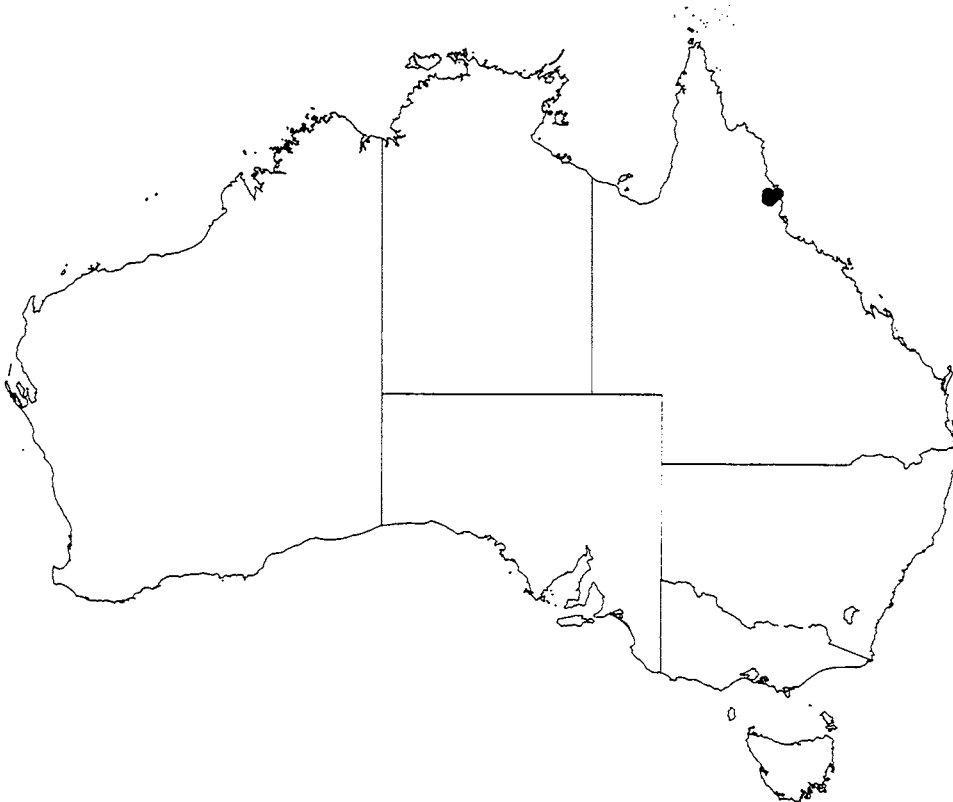


Fig. 7. The distribution of *Ficus triradiata* based on available collection data.

Illustrations: Christophel, D.C. and Hyland, B.P.M., 1993, *Leaf Atlas of Australian Tropical Rainforest Trees*, p. 166, plate 104e; Cooper, W., and Cooper, W.T., 1994, *Fruits of the Rainforest*, p. 135, Fig. 272.

Pollinator Wasp: The pollinator wasp of *F. triradiata* is *Pleistodontes schizodontes* Vaamonde, Dixon, Cook & Rasplus (Lopez-Vaamonde et al. 2002).

8. *Ficus watkinsiana* F.M.Bailey, *Queensland Bot. Bull.* 2: 18 (1891). Type: Mooloolah, QLD, Dec 1890, *Field Naturalists AQ66925* (lecto BRI, **here designated**) (Fig. 8); top of Bunya Mountains, QLD, H. Tryon (syn: *n.v.*); top of Blackall Range, QLD, A. Anderson (syn: *n.v.*).

Ficus bellingeri C. Moore in C. Moore & E. Betche, *Handb. Fl. New South Wales* 81 (1893). Type: Bellinger R., N.S.W., collector unknown (holo BM).

Ficus simmondsii F.M.Bailey, *Queensland Agric. J.* 25: 234 (1910). Type: Coolangatta, J.H. Simmonds s.n. (holo BRI).

Hemi-epiphyte to 35 m. *Twigs* minutely puberulous to puberulous, with ascending hyaline hairs interspersed with weak ferruginous hairs, glabrescent. *Leaves* alternate, narrowly oblong to elliptic; apex acute; base cuneate, rounded. *Lamina* 51–217 mm long, 26–97 mm wide; abaxial surface glabrous, or with ascending hyaline hairs interspersed with weak ferruginous hairs at junction of lamina and petiole, or with ascending hyaline hairs at junction of lamina and petiole; adaxial surface glabrous. *Lateral veins* 30–78 pairs, 52°–77°; basal veins distinct, 32°–49°. *Petiole* 20–87 mm long, 1–4 mm wide; glabrous, or with ascending hyaline hairs, glabrescent. *Stipules* 62–95 mm; minutely puberulous with ascending hyaline hairs interspersed with weak ferruginous hairs, or with weak ferruginous hairs only, glabrescent. *Syconia* 24–37 mm long, 18–29 mm in diameter; very broadly ovoid to ovoid, oblong, narrowly oblong, ellipsoid, narrowly ellipsoid; with ascending hyaline hairs interspersed with weak ferruginous hairs, or with weak ferruginous hairs, glabrescent; deep purple to black; punctate; ostiole triradiate. *Basal bracts* 2 or 3, imbricate, caducous, puberulous with ascending hyaline hairs interspersed with weak ferruginous hairs, or with weak ferruginous hairs, glabrescent. *Peduncle* 9–25 mm long; puberulous with ascending hyaline hairs interspersed with weak ferruginous hairs. *Female florets* imbedded in the wall of the receptacle, sessile, tepals 3 or 4, stigma simple; male florets pedicellate, tepals 3 or 4, anthers 1 with crescentic dehiscence, interspersed with the female and gall florets; gall florets pedicellate, tepals 3 or 4. *Interfloral bracts* present.

Selected specimens examined: Queensland: Cook: State Forest Reserve 144, Windsor Tableland, 16°15S 145°05E, B.P.M. Hyland 5534, 04 Oct 1971 (QRS); Hunter Creek, Julatten, 16°38S 145°19E, B. Gray 4514, 17 Jun 1987 (QRS); Lake Barrine, Atherton Tableland, 17°15S 145°38E, S.F. Kajewski 1122 (BRI); State Forest Reserve 191, Barron, 17°19S 145°30E, B.P.M. Hyland 13476, 21 Jan 1988 (QRS); Keough's Scrub, Evelyn Portion 52v, Parish of Herberton, 17°40S 145°30E, B.P.M. Hyland 5522, 22 Sep 1971 (QRS); State Forest Reserve 418, 19°10S 146°05E, B.P.M. Hyland 3991, 23 Feb 1968 (BRI). North Kennedy: Birthday Creek crossing, Paluma Dam road, on E side of road, on boundary of loggers hut, D. Dixon PHD61 & A. Cairns, 14 Feb 1996 (JCT); Mt. Spec, 19°00S 146°05E, B.P.M. Hyland 1572, 23 Jul 1968 (BRI); Mount Dryander, 20°15S 148°33E, Kilner & Fitzalan s.n. (MEL). Wide Bay: Cooloola State Forest R451, E of Gympie, approx 3 miles W of Rainbow Beach, E.J. Carrol & I.R. Telford EJC1083, 24 May 1967 (CANB); Elanda Point, Lake Cootharaba, 26°15S 153°01E, K.A.W. Williams 78034, 11 May 1978 (BRI); Base of Mount Kandanga, Imbil, 26°27S 152°35E, E. Rider 82, 09 Jan 1990 (BRI); Eumundi, N Coastline, 26°29S 152°57E, C.T. White s.n., 01 Jan 1911 (BRI); Blackall Range, 6 miles from Mapleton, towards Cooloolabin, 26°35S 152°50E, E.J. Carroll & I.R. Telford EJC1107, 25 May 1967 (CANB); Didillibah Road, Bli Bli, near Paynters Creek, 26°38S 153°01E, A.R. Bean 8655, 26 May 1995 (BRI). Moreton: Mistake Mountains, L.S. Smith & L.J. Webb 3649, 25 May 1948 (BRI); D'Aguiar Range, approx. 1 km NW of Mount Glorious, 27°20S 152°46E, I.R. Telford 9685, 17 Apr 1984 (CANB); Lamington National Park, 28°10S 152°59E, R.F. Thorne 25517, 17 Mar 1960 (BRI); Roberts Plateau, track to W Canungra Creek, 28°13S 153°07E, I.R. Telford 9787, 26 Apr 1984 (CANB). New South Wales; North Coast: Clarence River, 29°30S 153°06E, A. Camara s.n. (MEL). Central Coast: Sydney, 33°53S 151°13E, C. Moore s.n. (MEL).



Fig. 8. The lectotype of *Ficus watkinsiana* F.M. Bailey AQ66925 (BRI). The specimen consists of two sheets of which only sheet one is shown.

Etymology: Named in honour of George Watkins who was a collector of Queensland plants (Bailey, 1891).

Distribution and Ecology: *Ficus watkinsiana* is a hemi-epiphytic species found in upland rainforest. This species occurs in two disjunct populations, one in north-eastern Queensland between Cairns and Townsville, and the other in south-eastern Queensland and north-eastern New South Wales (Fig. 9). *Ficus watkinsiana* is endemic to Australia.

Notes: Commonly referred to as Watkin's Fig or Green-leaved Moreton Bay Fig, *F. watkinsiana* is easily recognised in the rainforest. At first glance the leaves resemble those of *F. pleurocarpa*, however, they lack the tomentose to felted covering of ferruginous hairs and the leaves are on average smaller in size being 51–217 mm long, 26–97 mm wide in *F. watkinsiana* compared to 150–256 mm long, 49–100 mm wide in *F. pleurocarpa*. The syconia of *F. watkinsiana* are dark purple to black when mature and lack ribs compared to those of *F. pleurocarpa* which have up to 10 longitudinal ribs and are orange-red when mature.

Conservation Status: *Ficus watkinsiana* is adequately conserved throughout its distributional range and therefore no conservation code is recommended.

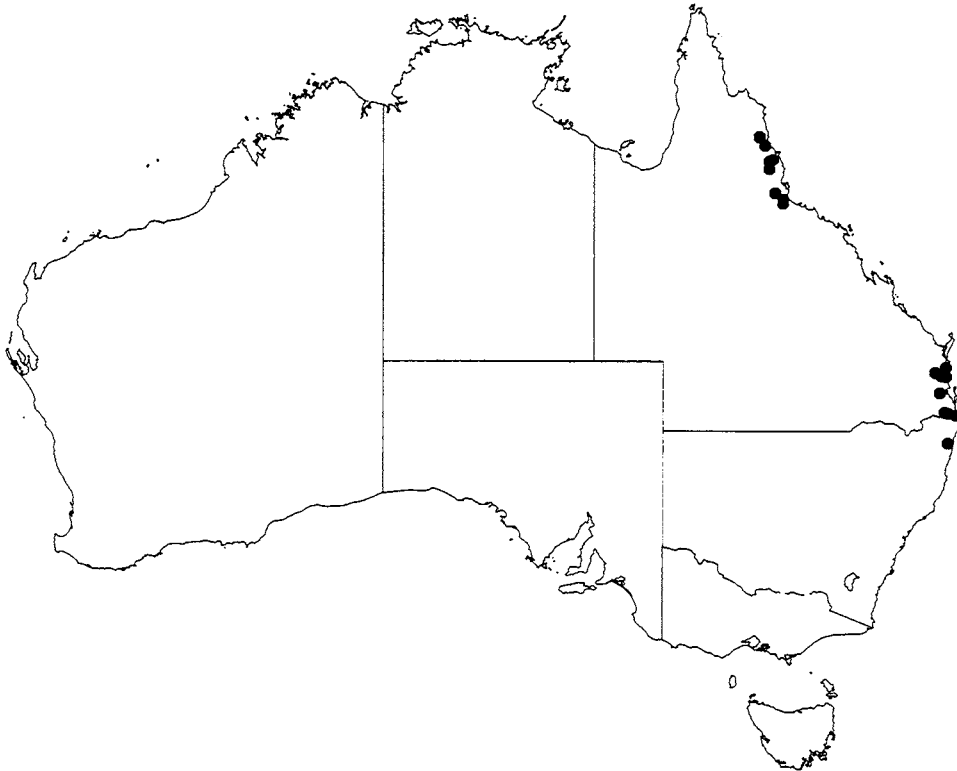


Fig. 9. The distribution of *Ficus watkinsiana* based on available collection data.

Illustrations: Chew, W.L., 1989, *Flora of Australia*, Vol. 3, p. 34; Williams, K.A.W., 1984, *Native Plants Queensland*, Vol. 2, p. 138; Christophel, D.C. and Hyland, B.P.M., 1993, *Leaf Atlas of Australian Tropical Rainforest Trees*, p. 168, plate 106b; Cooper, W., and Cooper, W.T., 1994, *Fruits of the Rainforest*, p. 139, Fig. 275.

Pollinator Wasp: The pollinator wasp of *F. watkinsiana* is *Pleistodontes nigriventris* (Girault) (Lopez-Vaamonde et al., 2002).

9. *Ficus cerasicarpa* D.J.Dixon. *Aust Syst. Bot.* 14: 535–563 (2001). A full description is presented in Dixon (2001c).

Pollinator Wasp: Lopez-Vaamonde et al. (2002) reported that *Ficus cerasicarpa* is associated with two species of pollinator wasp, *Pleistodontes macrocainus* Vaamonde, Dixon, Cook & Rasplus and *Pleistodontes athysanus* Vaamonde, Dixon, Cook & Rasplus. *Pleistodontes athysanus* is mainly recorded from *F. brachypoda*; however, two specimens were also identified from a collection of *Pleistodontes macrocainus* reared from *F. cerasicarpa* collected at Mount Isa (Dixon & Champion, PhD 405), see Dixon (2001c) for exact location details.

10. *Ficus platypoda* (Miq.) A.Cunn. ex Miq. *Ann. Mus. Bot. Lugduno-Batavum* 3: 287 (1867). A full description is presented in Dixon (2001c).

Pollinator Wasp: The pollinator wasp of *F. platypoda* is *Pleistodontes cuneatus* Wiebes (Lopez-Vaamonde et al., 2002)

11. *Ficus lilliputiana* D.J.Dixon. *Nuytsia* 13: 457–464 (2001). A full treatment of this species is presented in Dixon (2001a).

There are two forms which are distinguished as follows:

1. Leaves and other parts glabrous f. *lilliputiana*
 Leaves hairy, other parts variously hairy f. *pilosa*

Pollinator Wasp: The pollinator wasp of *F. lilliputiana* is *Pleistodontes proximus* Wiebes (Lopez-Vaamonde et al., 2002).

12. *Ficus subpuberula* Corner, *Gard. Bull. Singapore* 17: 403 (1959). *Urostigma puberulum* Miq. *London Journal of Botany* 6: 562 (1847); *Ficus puberula* (Miq.) Miq. *Annales Musei Botanici Lugduno-Batavi* 3: 287 (1867). Type: York Sound [WA], A. Cunningham s.n. (holo K; iso U) (Fig. 10).

Lithophytic tree to 13 m. *Twigs* glabrous or minutely puberulous to pilose with ascending hyaline hairs, glabrescent. *Leaves* alternate, widely ovate, ovate, narrowly elliptic to widely elliptic, lanceolate; apex acuminate, acute or obtuse; base cuneate, obtuse, rounded or cordate. *Lamina* 27–143 mm long, 11–68 mm wide; abaxial surface glabrous or mealy to minutely puberulous with ascending hyaline hairs; adaxial surface glabrous or mealy to minutely puberulous with ascending hyaline hairs. *Lateral veins* 16–49 pairs, 49°–80°; basal veins indistinct. *Petiole* 7–81 mm long, 1–3 mm wide, glabrous, minutely puberulous to pilose with ascending hyaline hairs. *Stipules* 20–65 mm long, caducous, glabrous, minutely puberulous to puberulous with ascending hyaline hairs. *Syconia* 10–24 mm long, 9–23 mm in diameter, widely oblong, broadly oblong, oblong to narrowly oblong, spheroid or broadly ellipsoid; yellow, orange or red; glabrous or minutely puberulous to puberulous with ascending hyaline hairs; ostiole triradiate. *Basal bracts* 3, imbricate, caducous, glabrous, minutely puberulous to pilose with ascending hyaline hairs. *Peduncle* 3–27 mm long, glabrous, minutely puberulous to pilose with ascending hyaline hairs. *Female florets* sessile or pedicellate, tepals 3 or 4, stigma simple; male florets pedicellate, tepals 2 or 3, anthers 1 with crescentic dehiscence, interspersed with female and gall florets; gall florets pedicellate, tepals 4 or 5. *Interfloral bracts* present.



Fig. 10. The holotype of *Ficus subpuberula* Corner.

Selected specimens examined: Queensland: Burke: Westmoreland Station, 17°20S 138°15E, C.H. Gittons 837, 1 Jun 1963 (BRI). Lawn Hill, 18°42S 138°29E, C. O'Keefe 11, 10 Nov 1987 (BRI). Northern Territory: Barkley Tableland: Barkley Tableland, Nicholson River Area, near Dry Creek Gorge in China Wall, 17°44S 137°47E, A. Kanis 1811, 11 Jun 1974 (CANB); Cox River Station, Tanumbirini Creek, 16°01S 134°47E, P.K. Latz 7296, 10 Jul 1977 (DNA); Echo Gorge, Wollogorang Station, 17°11S 137°43E, B.G. Thompson 796, 27 Nov 1984 (DNA). DARWIN AND GULF DISTRICT: 12°19S 133°14, E.M. Lazarides 7547, 06 Jul 1972 (CANB); 1.5 miles SW of Cannon Hill, 12°23S 132°57E, P. Martensz AE673, 02 Feb 1973 (DNA); 10 km NW of Bauhinia Downs Station, 16°07S 135°24E, J. Russell-Smith & Lucas 6276, 30 Oct 1988 (DNA); 1 km on Koongarra side of Jump Up, 12°51S 132°51E, M.O. Rankin 1411, 13 Sep 1978 (DNA); 2.5 km SW of Mount Gilruth, 13°03S 133°02E, M. Lazarides 7944, 28 Feb 1973 (CANB); 24 miles SE of Oenpelli, 12°32S 133°19E, L.G. Adams 2753, 07 Jul 1972 (CANB); 2 km N of Nabarlek Airstrip, 12°17S 133°19E, M.O. Rankin 2187, 26 Apr 1979 (DNA, MEL); 40 km NE of Beswick, 14°19S 133°24E, B.G. Thompson 2810, 16 Jan 1989 (DNA); 5 km N of Paradise Pool, Balbirini, 16°47S 135°22E, J. Russell-Smith 7058, 30 Jan 1989 (DNA); Approx. 40 km SSW of Nathan River Homestead, 15°56S 135°20E, P.K. Latz 10107, 27 Aug 1985 (DNA); Bessie Spring, Macarthur River Station, 16°45S 135°50S, G. Wightman 1646, 09 Jul 1984 (DNA); Cannon Hill, 12°22S 132°57E, M. Parker 650, 17 Jul 1975 (DNA); Canopy Rock, Mountain Valley Station, R. Swinbourne 687, 25 Feb 1963 (DNA, MEL); E Alligator River, 1 km N of Cahills Crossing, 12°25S 132°58E, J.C. Cardale s.n., 07 Jun 1973 (CANB); Redbank Creek, L. Brass 391, 01 Nov 1923 (BRI); Edith Falls, D.J. Dixon PHD419 & I. Champion, 16 Oct 1997 (JCT); Kakadu National Park, 1 km S of Obiri Rock, 12°24S 132°57E, I.R. Telford & J.W. Wrigley IRT8385, 15 Aug 1980 (CANB); Liverpool Meteorite Crater, 12°25S 134°03E, M.J. Clarke 1147, 28 Jul 1987 (DNA); Magela Creek, 12°40S 133°03E, C.R. Dunlop 3370, 25 Feb 1973 (DNA, MEL); Mount Borridale, Arnhem Land, 12°05S 132°50E, K. Metcalfe s.n., 19 Jul 1995 (DNA); Moyle River, 65 km E of Port Keats, 14°19S 130°06E, P. Latz & C.R. Dunlop 13764, 10 Jun 1994 (DNA); Nathan Spring, Nathan River, 15°35S 135°26E, J. Russell-Smith 6712, 19 Jan 1989 (DNA); Tabletop Range near Mount Tolmer, 13°13S 130°44E, C.R. Dunlop 6780, 19 May 1985 (DNA); Tanum Creek, Cox River Station, 16°01S 134°47E, P.K. Latz 7296, 10 Jul 1977 (DNA); Upper Mann River, 12°39S 134°08E, J. Russell-Smith & Lucas 4016, 07 Nov 1987 (DNA); Upper Wilton River, 13°17S 134°12E, J. Russell-Smith & Lucas 4058, 11 Nov 1987 (DNA). Victoria River District: Headwaters of Lalngang Creek, 15°05S 130°10E, I. Cowie & N.G. Walsh 5082, 16 May 1994 (MEL). Western Australia: Gardner: 0.5 miles E past Grey's Cave, Glenelg District, C.A. Gardner 9638, 14 Jul 1950 (PERTH); 13 km W of Kununurra off highway on track to Blackrock waterhole, 15°39S 128°39E, D.J. Dixon PHD442 & I. Champion, 20 Oct 1997 (JCT); 25.3 km W of old Mount Elizabeth Homestead on Panter Downs track, 16°11S 125°59E, K. Hill 966, 27 Jul 1984 (NSW); 4.2 km NW of Gibb River-Kalumburu Road intersection, travelling along old Mitchell River Station Road, 15°09S 126°10E, B.L. Koch 560, 08 Jun 1987 (PERTH); El Questro Station, 15°50S 128°20E, C. Done 742, 10 Jul 1986 (PERTH); Langi, 4 km S of Prior Point and 33 km SSW of Kuri Bay, Kimberley Coast, 15°45S 124°24E, K.F. Kenneally 11058, 14 Jul 1990 (PERTH); Lennard River Gorge, King Leopold Range, +/-130 km ENE of Derby, G.W. Carr & A.C. Beaughlehole 4021, 22 Jul 1974 (PERTH); Prince Regent River Reserve, 15°34S 125°36E, K.F. Kenneally 2025, 14 Aug 1974 (PERTH); Solea Falls, Drysdale River National Park, 14°40S 127°00E, A.S. George 13428, 05 Aug 1975 (PERTH); Summit of Mount Derberh, King Leopold Range, W. Fitzgerald s.n., 01 May 1905 (PERTH); Surveyor's Pool area, Mitchell Plateau, 14°41S 125°43E, J.S. Beard 8395, 24 Feb 1979 (PERTH); SW Osbourne Island, Bonaparte Archipelago, 14°26S 125°56E, P.G. Wilson 11161, 29 Jul 1973 (PERTH). Hall: Kimberlite Pipe area at source of Smoke Creek, SW of Lake Argyle, 16°45S 128°30E, A.S. Weston 12294, 05 May 1980 (PERTH); N Gorge, Bungle Bungle National Park, 17°25S 128°35E, I. Solomon 866, 20 Oct 1993 (PERTH).

Etymology: Corner (1959a) did not provide a derivation for the epithet. However, it most likely applies to the leaves of *F. subpuberula* being 'almost pubescent'.

Distribution and Ecology: *Ficus subpuberula* is a lithophytic species restricted to sandstone gorges and rock crevices. It occurs from Lawn Hill National Park, on the extreme western edge of Queensland west across the Top End of the Northern Territory to the Kimberley area of Western Australia (Fig. 11). It is endemic to Australia and has previously not been recorded from Queensland.

Notes: *Ficus subpuberula* is easily recognised. The foliage is often sparse, pendulous, and a dull grey green colour. The figs are a lemon-yellow colour when mature.

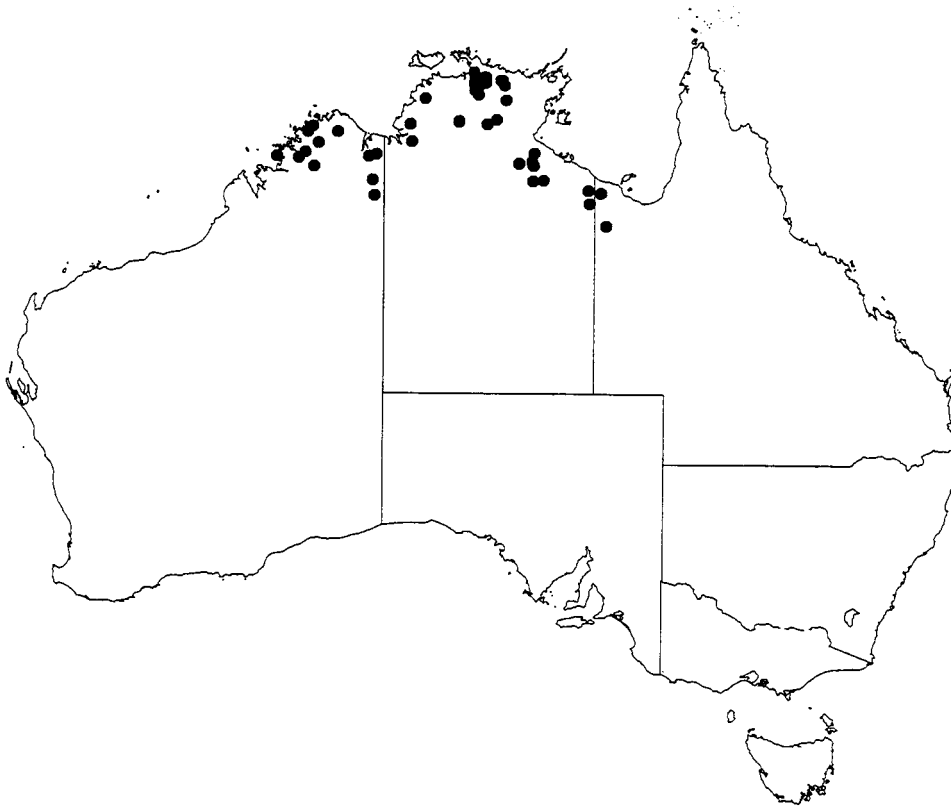


Fig. 11. The distribution of *Ficus subpuberula* based on available collection data.

Conservation Status: *Ficus subpuberula* is adequately conserved in national parks of Queensland, the Northern Territory, and Western Australia, therefore no conservation coding is recommended.

Illustrations: Wheeler, J.R. (ed.) 1992, *Flora of the Kimberley Region*, p 81, Fig. 18f.

Pollinator Wasp: The pollinator wasp of *F. subpuberula* is *Pleistodontes austrobocheilus* Vaamonde, Dixon, Cook & Rasplus (Lopez-Vaamonde et al., 2002).

13. *Ficus atricha* D.J.Dixon. *Aust. Syst. Bot.* 14: 535–563 (2001). A full description is presented in Dixon (2001c).

Type: Another isotype of *R.L. Specht 449* was recently found at NSW. The holotype is at BRI, other isotypes are held at L, PERTH, MEL).

Pollinator Wasp: The pollinator wasp of *F. atricha* has yet to be collected.

14. *Ficus brachypoda* (Miq.) Miq., *Ann. Mus. Bot. Lugduno-Batavum* 3: 268 (1867). A full description is presented in Dixon (2001c).

Distribution and Ecology: In Dixon (2001c) I stated that this species was endemic to Australia. I have since found that this is not the case. *Ficus brachypoda* also occurs in the Lesser Sunda Islands and Timor.

Additional specimens examined: Lesser Sunda Islands: Flores Island, J.A.J. Verheijen 2313 (L); Sumba Island, Waingapu, Kemiru R., Kostermans & Wirawan 256, 6 Apr 1965 (L); Roti Island, J.A.J. Verheijen 2443, 1969 (L).

Timor: Soenda Eil., E. Schmutz 2393, 20/08/1969 (L).

Pollinator Wasp: The pollinator of *F. brachypoda* is *Pleistodontes macrocainus* (Lopez-Vaamonde et al., 2002).

Acknowledgments

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