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**N.S.W.  
RAINFOREST TREES**

**PART X**

**FAMILIES:**

- Rhamnaceae**
- Elaeocarpaceae**
- Malvaceae**
- Sterculiaceae**
- Eucryphiaceae**
- Flacourtiaceae**
- Thymelaeaceae**

**AUTHOR**  
**A.G.Floyd**



RESEARCH NOTE No. 43

**N.S.W. RAINFOREST TREES**

**PART X**

**FAMILIES:**

**RHAMNACEAE**

**ELAEOCARPACEAE**

**MALVACEAE**

**STERCULIACEAE**

**EUCRYPHIACEAE**

**FLACOURTIACEAE**

**THYMELAEACEAE**

**AUTHOR**

**A.G. FLOYD**

**FORESTRY COMMISSION OF N.S.W.**

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## INTRODUCTION

This is the tenth in a series of research notes of the Forestry Commission of N.S.W. describing the rainforest trees of the state.

Current publications by the same author are:

Research Note No. 3  
(Second Edition 1979) — N.S.W. Rainforest Trees.  
Part I, Family *Lauraceae*.

Research Note No. 7 \*(1961) — N.S.W. Rainforest Trees.  
Part II, Families *Capparidaceae*,  
*Escalloniaceae*, *Pittosporaceae*,  
*Cunoniaceae*, *Davidsoniaceae*.

Research Note No. 28  
(Second Edition 1979) — N.S.W. Rainforest Trees.  
Part III, Family *Myrtaceae*

Research Note No. 30 — N.S.W. Rainforest Trees.  
(Second Edition 1979) Part IV, Family *Rutaceae*

Research Note No. 32 (1977) — N.S.W. Rainforest Trees.  
Part V, Families *Sapindaceae*,  
*Akaniaceae*.

Research Note No. 34 (1977) — N.S.W. Rainforest Trees.  
Part VI, Families *Podocarpaceae*,  
*Araucariaceae*, *Cupressaceae*,  
*Fagaceae*, *Ulmaceae*, *Moraceae*,  
*Urticaceae*.

Research Note No. 35 (1978) — N.S.W. Rainforest Trees.  
Part VII, Families *Proteaceae*,  
*Santalaceae*, *Nyctaginaceae*,  
*Gyrostemonaceae*, *Annonaceae*,  
*Eupomatiaceae*, *Monimiaceae*.

Research Note No. 38 (1979) — N.S.W. Rainforest Trees.  
Part VIII, Families *Mimosaceae*,  
*Caesalpiniaceae*, *Papilionaceae*,  
*Simaroubaceae*, *Burseraceae*,  
*Meliaceae*.

Research Note No. 41 (1980) — N.S.W. Rainforest Trees.  
Part IX, Families *Euphorbiaceae*,  
*Anacardiaceae*, *Corynocarpaceae*,  
*Celastraceae*, *Siphonodontaceae*,  
*Icacinaceae*.

Another work by this author, Research Note No. 27 "Key to Major Rainforest Trees in N.S.W.", identifies species by features in the leaves.

In this part, a further 26 species of rainforest trees in the families *Rhamnaceae*, *Elaeocarpaceae*, *Malvaceae*, *Sterculiaceae*, *Eucryphiaceae*, *Flacourtiaceae* and *Thymelaeaceae* have been described and illustrated with emphasis on field characteristics. This and future research notes in the series will deal with the families of rainforest trees in the order adopted by the National Herbarium of

N.S.W. Diagnostic features are shown in italics. Standard Trade Names used are those in Australian Standard AS02-1970 "*Nomenclature of Australian Timbers*".

The locations in N.S.W. for each species are shown in latitudinal order of the major river systems; and where on State Forests (S.F.), Flora Reserves (F.R.), National Parks (N.P.) and Nature Reserves (N.R.), their location from the nearest large town is listed in the appendix.

*\*In association with H.C. Hayes.*

# FAMILY RHAMNACEAE

## CHARACTERISTICS OF THE FAMILY IN N.S.W.

Widespread throughout the world, consisting of 45 genera. Only *Alphitonia* (two species) and *Emmenosperma* (one species) are trees in N.S.W. rainforests. *Emmenosperma alphitonioides* may occasionally reach the proportions of a large tree up to 30m tall and 125cm diameter. *Alphitonia excelsa* may more rarely reach this size, but is usually only a small tree as is *A. petriei* in N.S.W.

The trunk is not buttressed, but large trees of *Alphitonia excelsa* and *Emmenosperma* may be spurred at the base.

**Outer Bark** — Smooth on small trees; but large trees of *Alphitonia* spp are deeply fissured whilst *Emmenosperma* has fine longitudinal fissures. Grey in all three species; but almost black in the fissures of *Alphitonia* spp. Underbark creamy-brown in *Alphitonia*, but yellow-brown in *Emmenosperma*. Outer surface of the live bark deep purplish-red with lighter bands (*A. excelsa*), pink with lighter bands (*A. petriei*) or yellow-brown with green stripes (*Emmenosperma*).

**Inner Bark** — Blaze is pinkish-red with paler stripes in *A. excelsa*, paler pink in *A. petriei* and orange-yellow with cream flames in *Emmenosperma*. There is no change of colour from exposure. *Emmenosperma* has a very bitter taste, whilst *A. petriei* has a strong linament smell.

**Branchlets** — Moderately thick only in *Emmenosperma*, otherwise slender. New leaves, smooth in *Emmenosperma*; but with grey to golden-brown down in *A. excelsa* and with reddish-brown hairs in *A. petriei*. Both species of *Alphitonia* have a characteristic linament smell in the bruised branchlets. All have stipules which are quickly shed; but only in *A. excelsa* do they exceed 2mm long.

**Leaves** — Simple, alternate (*Alphitonia*) or opposite (*Emmenosperma*), not toothed. White beneath in *Alphitonia*. Arranged in horizontal layers in *A. petriei*.

**Flowers** — Cream to white, bisexual, regular, small in cymes or panicles. Sepals, petals and stamens five.

**Fruit** — Drupe-like, black (*Alphitonia*) or orange (*Emmenosperma*), globular (globular-flattened in *A. petriei*), with a ring-like calyx scar in *Alphitonia*. Two-celled (except *A. petriei* which is three-celled), with a single flattened red seed in each, exposed as attached to the fruit stalk after the outer covering falls away.

**Habitat** — *Emmenosperma* prefers mature subtropical and warm temperate rainforests, whereas *Alphitonia* is often on the edge of rainforest and as a pioneer in openings within all types of rainforest. *A. petriei* occurs near the coast but *A. excelsa* extends west to Boggabri.

**Distribution** — *Alphitonia* consists of five or six species extending from the Philippines to New Caledonia, with four of the species restricted to Australia. Both N.S.W. species extend from North Queensland southwards; but *A. petriei* only extends to Terania Creek in northern N.S.W., whereas *A. excelsa* reaches its southern limit at Mt. Dromedary near Narooma.

*Emmenosperma* comprises only two species which are confined to Australia and New Caledonia. *E. alphitonioides* extends from North Queensland to the Illawarra in N.S.W.

Hence the two genera present in N.S.W. have most of their species in Australia and with a high percentage of endemics, which may indicate an Australian origin.

**Timber and Uses** — Pink (*A. petriei*) orange-red (*A. excelsa*) or yellow (*Emmenosperma*). All are rather heavy and durable.

# KEY TO RAINFOREST TREE SPECIES OF RHAMNACEAE IN N.S.W.

## A. USING LEAVES AND BRANCHLETS ONLY

- 1. Leaves opposite ..... *Emmenosperma alphitonioides* F. Muell.
- 1. Leaves alternate ..... 2
  - 2. New shoots grey to golden-brown.  
Stipules 2-10mm long ..... *Alphitonia excelsa* (Fenzl.) Benth.
  - 2. New shoots reddish-brown.  
Stipules 1-2mm long ..... *Alphitonia petriei* Braid & White

## B. USING BARK ONLY

- 1. Blaze orange-yellow to yellow-brown ..... *Emmenosperma alphitonioides*  
F. Muell.
- 1. Blaze pinkish-red with lighter bands ..... 2
  - 2. Linament smell in cut bark ..... *Alphitonia petriei* Braid & White
  - 2. No linament smell in cut bark ..... *Alphitonia excelsa* (Fenzl.) Benth.

## ALPHITONIA EXCELSA (Frenzl.) Benth.

*Reference* — Endl. Gen. Pl. 1098, 1840.

*Derivation* — Alphonitonia from Greek "alphiton" baked barley meal referring to the mealy red covering around the hard cells in the fruit; excelsa from Latin "excelsa" high because of its tall habit.

*Common Name* — Red Ash, Red Almond, Sarsparilla, Leather Jacket, Red Tweedie, Humbug, Coopers Wood.

*Standard Trade Name* — Red Ash.

Usually a small to medium sized tree, but occasionally attaining a height of 35m and a diameter of 125cm. The crown of medium density is conspicuous due to the *silvery under-surface of the leaves*.

*Trunk* — Cylindrical, but on large trees the stem is somewhat spurred at the butt.

*Outer Bark* — *Steely-grey*, smooth on small trees but becoming *deeply fissured* longitudinally, very hard and rough to the touch on larger trees. The fissures have V-shaped walls and are up to 13mm deep. The ridges between the fissures are marked by numerous fine transverse cracks up to 25mm long. Underbark cream on the outer margin, then brown with cream dots. Outer surface of live bark deep purplish-red with lighter lines corresponding to the fissures.

*Inner Bark* — Blaze on a tree 60cm diameter *pinkish-red* with pale pink vertical bands, becoming paler towards the sapwood terminating in a pale pink layer next to the sapwood. Sapwood white. No change in colour on exposure. Astringent taste. *No smell*. 30 mm thick.

*Branchlets* — Moderately slender, with *grey to golden-brown down on the new shoots*. Dull smooth dark to light grey on the older branchlets with prominent leaf scars. *Stipules* slender pointed conspicuous grey to golden-brown, 2-10 mm long which are quickly shed as the leaves expand. *Bruised bark of new shoots has a liniment smell*.

*Leaves* — Alternate, simple, entire, broad elliptical to lanceolate, 8-15cm long, three to four times as long as broad, terminating in a rather sharp point. *Upper surface glossy dark green, silvery-white beneath* with minute densely interwoven hairs. Leaf stalks 10-20mm long, yellow-green.

*Venation* — Midrib and lateral veins visible above and sunken; more prominent below, yellow-brown, minutely hairy, standing out against the silvery background. Main lateral veins thirteen to eighteen.

*Flowers* — Cream, fragrant, in cymose panicles in the forks of the leaves or at the ends of branchlets, the inflorescence generally shorter than the leaves (*less conspicuous than in A. petriei*). *Flowers 2-3mm diameter*. Sepals five, triangular, 1mm long, hairy on the back. Petals five, small, narrow hood-shaped, 1mm long, each enclosing a small stamen as long as the petal. In the middle of the flower and surrounding the ovary is the flat disc, nearly 2mm diameter and obscurely five sided. Ovary minute, tapering into a style with three or two small lobes.. Flowering period November to March.

*Fruit* — Drupaceous, thinly succulent, black, *globular, 6-10mm diameter*, surrounded well below the middle by the ring-like scar of the calyx rim, containing *usually two hard cells* or cocci with a powdery red covering, each containing a glossy dark brown flattened oval seed about 4mm long, and covered by a thin dark orange-red shiny skin. The outer fruit is shed exposing the remaining seeds. Fruit ripe October to January.

*Habitat* — In both open eucalypt forest and in and adjoining dry, littoral, subtropical and warm temperate rainforests.

*Distribution* — From Mt. Dromedary, N.S.W. to coastal and inland North Queensland as far as Torres Strait. It extends to the north-western slopes occurring as far west as Mt. Kaputar N.P., Boggabri and Warialda.

Recorded in N.S.W. from Mt. Dromedary, Nowra, Cambewarra, Minnamurra Falls, Shell Harbour, Macquarie Pass, Camden, Royal N.P., Kurradjong, Gosford, Ourimbah, Tuggerah, Strickland S.F., Gap Creek F.R., Cedar Brush N.R., Raymond Terrace, Myall River, Upper Williams River, Dungog, Gloucester, Woko, Snapper Island, Myall Lakes N.P., Seal Rocks, Cape Hawke, Wallis Lake, Black Head, Salt water, Manning Point, Taree, Wingham, Harrington, South Brother Mountain, Port Macquarie, Point Plomer, Doyles River S.F., Mt. Boss S.F., Kunderang Brook, Shark Island,

Smoky Cape, Way Way S.F., Warrell Creek, Oakes S.F., Wollomombi Gorge, Bellingen, Dorrigo N.P., Coffs Harbour, Coramba, Hortons Creek, Blandford Creek, Chandlers Creek, Yamba, Ramornie, Copmanhurst, Willowee Scrub, Girard S.F., Mt. Pikapene S.F., Cherry Tree S.F., Richmond Range S.F., Unungar, Yabbra S.F., Beaury S.F., Acacia Creek, Mt. Clunie F.P., Moore Park, Levers Plateau, Roseberry S.F., Wiangaree S.F., Kyogle, Mt. Nardi, Terania Creek, Wilson Park, Boat Harbour, Booyong, Davis Scrub N.R., Eureka, Victoria Park N.R., Hayters Hill, Broken Head N.R., Brunswick Heads N.R., Mooball S.F., Cudgen Lake, Mt. Warning N.P., Couchy Creek, Murwillumbah, Stotts Island N.R. and Terranora.

**Timber and Uses** — Pale pink when freshly cut but darkens to a bright orange-red with age. The sapwood is pale and the depth of colour in the heartwood frequently varies showing dull pinks, reds and yellows. Strong and fairly durable in the ground. The attractive colouring makes it suitable for ornamental panelling and cabinet work; it can be used for general building and flooring, tool handles and cases. The commercial availability is limited. Moderately heavy, 550-850kg per cubic metre. The leaves and young shoots are eaten by stock and are considered to be good forage.

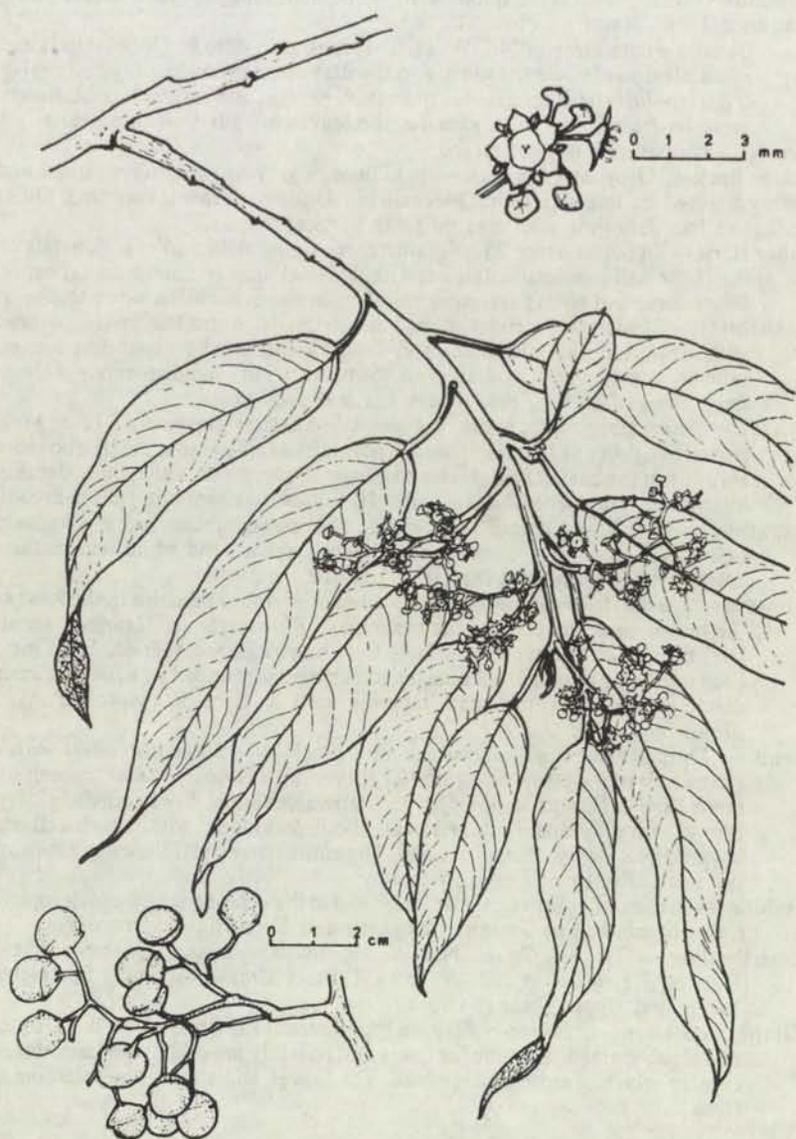


Plate 1  
*Alphitonia excelsa* (Fenzl.) Benth.

## ALPHITONIA PETRIEI Braid and White

**Reference** — Kew Bull. 4, 178, 1925.

**Derivation** — Petriei after W.R. Petrie who first drew the junior author's attention to its distinctive characters in Queensland.

**Common Name** — Red Ash, White Ash, White-leaf, Pink Almond, Sarsaparilla.

**Standard Trade Name** — Pink Ash.

Usually a small tree in N.S.W. up to 15m (but to 40m in Queensland) and 35cm diameter (60cm in Queensland) with a *more spreading layered crown of horizontally arranged leaves than in A. excelsa* and resembling *Commer-sonia bartramia*. As in *A. excelsa*, the leaves are silvery-white below.

**Trunk** — Cylindrical, not buttressed.

**Outer Bark** — Grey, smooth with vertical lines of grey-brown grooves (dark and deeply fissured on larger trees in Queensland). Underbark fawn, very thin. Outer surface of live bark pink with creamy-green vertical streaks.

**Inner Bark** — Blaze on a tree 35cm diameter *rose-pink* with darker pink bands on the outer half, uniform rose-pink within. No change in colour on exposure. Bitter taste and *strong liniment smell* as in the branchlets. 8mm thick.

**Branchlets** — Moderately slender, ribbed due to the decurrent leaf bases, covered with *reddish-brown short hairs* at the tips and on the expanding leaves, otherwise grey-black and smooth. *Stipules* short, inconspicuous 1-2mm long. *Bruised bark of new shoots has a liniment smell*.

**Leaves** — Alternate, simple, entire, egg-shaped to narrow elliptical, 7-15cm long, two to five times as long as broad. Tapering to a fine point at the tip and more abruptly at the base. Dark green and glossy above, white with minute densely interwoven hairs beneath. Leaf stalks 10-20mm long, smooth, yellow-brown.

**Venation** — Midrib and lateral veins visible above and sunken; more prominent below, yellow-brown, smooth, conspicuous against the white leaf surface. Slightly more prominent than in *A. excelsa*.

**Flowers** — Cream, fragrant, in conspicuous heads (cymose panicles in the forks of the leaves or at the ends of the branchlets). *Flowers 5mm diameter*, sepals five, triangular 1-2mm long. Petals five, narrow, hood shaped, 1mm long, each enclosing a stamen of equal length. Ovary surrounded by a flat disk 2mm diameter. Ovary very small tapering into a three- or two-lobed style. *Flowering period October*.

**Fruit** — Drupaceous, thinly succulent, dull black, 10-15mm diameter, with a raised scar of the calyx rim, *globular flattened to almost tabular*, containing *three hard cells* with a powdery red-brown covering. Seeds single, glossy, brown with grey tips, flattened oval, about 3mm long, within each cell and covered by a glossy orange-red skin. The entire outer fruit falls away exposing the seeds. Fruit ripe February to July.

**Habitat** — In *coastal* subtropical rainforest and in the ecotone with wet sclerophyll forest dominated by *Tristania conferta* and *Eucalyptus microcorys*.

**Distribution** — Terania Creek, N.S.W. to Thursday Island, Queensland and Darwin. Recorded in N.S.W. from Terania Creek, Mooball, Burringbar Range and Upper Dungay Creek.

**Timber and Uses** — *Pinkish-red* with a broad cream sapwood layer, hard, tough and close-grained. Suitable for cases and possibly the other uses listed for *A. excelsa* which it closely resembles. The leaves and shoots are palatable to stock.

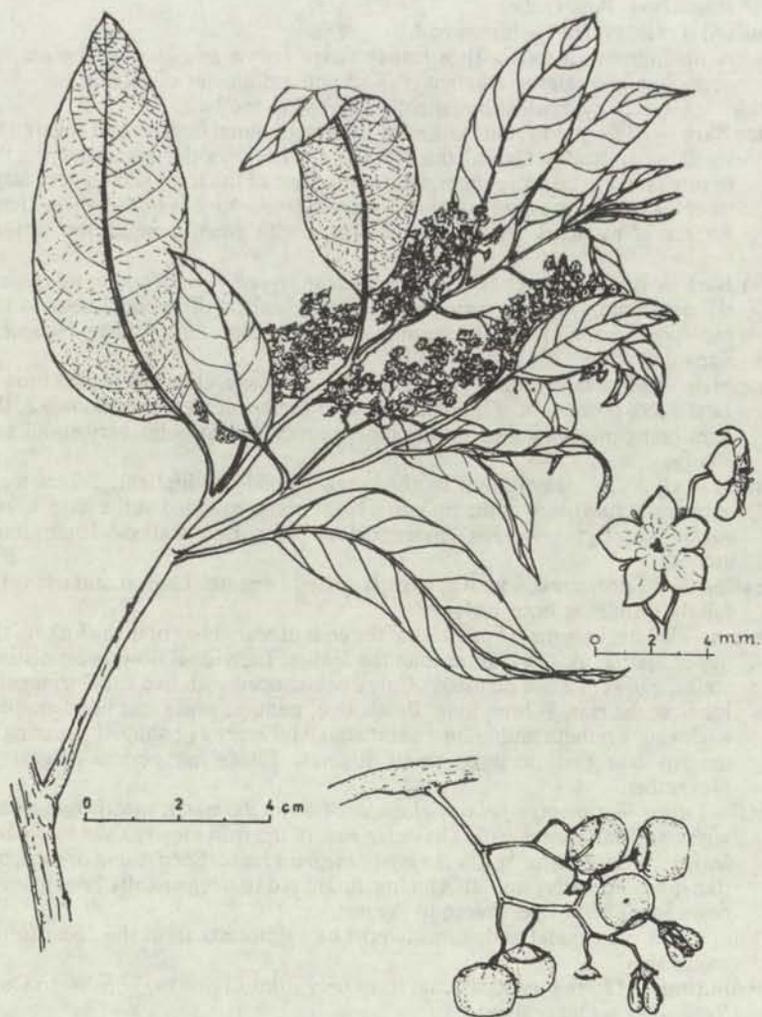


Plate 2  
*Alphitonia petriei* Braid & White

## EMMENOSPERMA ALPHITONIOIDES F. Muell.

**Reference** — Fragm. Phyt. Aust. III, 63, 1862-63.

**Derivation** — Emmenosperma from Greek "emmeno" I cleave to and "sperma" a seed, referring to the seeds remaining in position on the axis of the fruit after the valves have fallen away; alphitonioides from Alphitonia a related genus and Greek "eidos" resembling because of the similarity in flowers and fruit.

**Common Name** — Yellow Ash, Bonewood, Yellow Almond, Grey Ash, Yellow Rosewood, Pink Ooline.

**Standard Trade Name** — Bonewood.

A medium sized tree with a *rather dense crown of glossy green leaves*, occasionally attaining a height of 30m and a diameter of 125cm.

**Trunk** — Usually cylindrical but slightly spurred at the butt.

**Outer Bark** — *Silvery-grey*, but marked by fine longitudinal fissures and covered by small hard pustules. Overall the bark has a rather smooth appearance, but the fissures tend to be more prominent at the base of the tree; and on very large trees the bark may be prominently fissured. *Underbark yellow-brown*. Outer surface of live bark striped yellow-brown with green beneath the surface fissures.

**Inner Bark** — Blaze on a tree 80cm diameter *orange-yellow with cream wedges on the outer margin*, then pale yellow-brown and finally yellow next to the sapwood. Granular. No change in colour on exposure. *Bitter* taste. No smell. Sapwood white. 20mm thick.

**Branchlets** — Moderately thick, green, smooth and glossy, changing to dark brown. Leaf scars prominent. The *attachment of the branchlets is socket-like*, the joint being much swollen on the older branchlets. Stipules very small and chaffy.

**Leaves** — *Opposite*, simple, not toothed, egg-shaped or elliptical, 2-7cm long, sometimes narrowed at the tip into a blunt point, rounded at the base, *upper surface dark glossy green*, under surface paler. Leaf stalks 4-10mm long, smooth.

**Venation** — Midrib sunken above, slightly raised beneath. Lateral and net veins faintly visible on both surfaces.

**Flowers** — White, in cymes of panicles at the ends of branchlets or in the forks of the upper leaves; mostly shorter than the leaves. Individual flowers on distinct stalks. Flowers 5mm diameter. Calyx bell-shaped with five small triangular lobes at the rim, 1-2mm long. Petals five, minute, white and hood-shaped, enclosing a minute anther on a short stalklet. Ovary egg-shaped, tapering at the tip into two or three small stigmas. Flowering period August to November.

**Fruit** — Drupe-like, *orange-yellow, globular, 4-9mm diameter*, mostly two-celled with one seed in each cell. The *outer part of the fruit mostly falls away and leaves the seeds attached to the top of the fruit stalk*. Seed round or oval, but flattened vertically, smooth, shining, bright red or occasionally brown, up to 6mm long. Fruit ripe March to August.

**Habitat** — In subtropical and warm temperate rainforests from the coast to the mountains.

**Distribution** — Occurs as occasional trees only from Illawarra, N.S.W. to Cape York, North Queensland.

Recorded in N.S.W. from Meroo Meadows near Nowra, Minamurra Falls, Albion Park, Royal N.P., Colo River, Kurrajong Heights, Ourimbah, Wyong, Gap Creek F.R., Cedar Brush N.R., Allyn and Williams Rivers, Woko, Cape Hawke, Wingham, Sea Acres, Doyles River S.F., Mt. Boss S.F., Kunderang Brook, Carrai S.F., Oakes S.F., New England N.P., Bellinger River S.F., Deervale, Dorrigo N.P., Orara West S.F., Bruxner Park F.R., Wedding Bells S.F., Kangaroo River S.F., Wild Cattle Creek S.F., Moonpar S.F., Clouds Creek S.F., Hyland S.F., Marengo S.F., Gibraltar Range N.P., Little Spirabo S.F., Forestland S.F., Ewingar S.F., Girard S.F., Richmond Range S.F., Beaury S.F., Acacia Plateau, Mt. Clunie F.P., Roseberry S.F., Wiangaree S.F., Terania Creek, Whian Whian S.F., Boat Harbour, Mooball S.F., Mt. Warning N.P. and Couchy Creek.

**Timber and Uses** — Pale yellow to golden-brown, hard, straight grained, fairly heavy and rather difficult to work. It is durable and may be used for tool handles, boat building and general building purposes and is a good bending timber. 850-900kg per cubic metre.

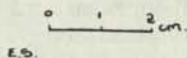
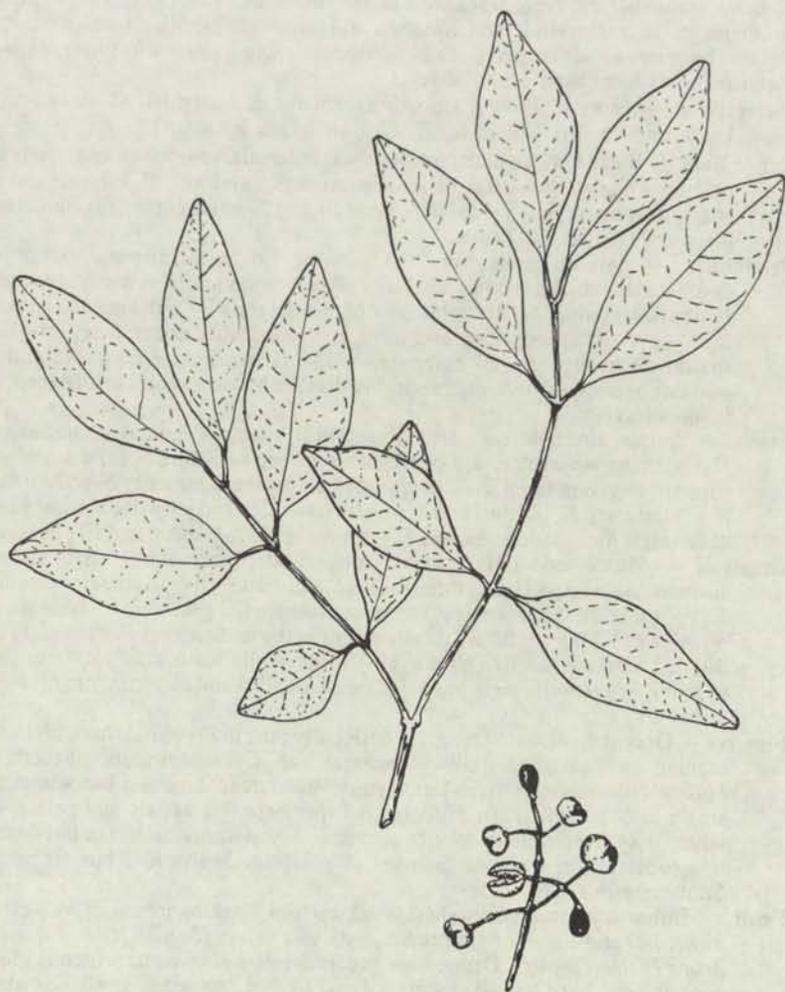


Plate 3  
*Emmenosperma alphitonioides* F. Muell.

# FAMILY ELAEOCARPACEAE

## CHARACTERISTICS OF THE FAMILY IN N.S.W.

The family occurs in the tropics and warm temperate regions of the world, consisting of twelve genera and 350 species. In Australia there are five genera and 33 species of which two tree genera (*Elaeocarpus* and *Sloanea*) are in N.S.W. as well as the shrubby *Aristotelia*. There are six species of *Elaeocarpus* and two species of *Sloanea* in N.S.W. *Elaeocarpus grandis*, *E. kirtonii*, *E. obovatus* and *Sloanea woollsii* form large trees with large buttresses, whereas *E. eumundi*, *E. holopetalus*, *E. reticulatus* and *Sloanea australis* are smaller trees with less obvious buttresses and flanges. Both *E. holopetalus* and *S. australis* often produce coppice shoots from their broad bases.

**Outer Bark** — Grey or brown, smooth except for *S. australis* which is scaly. Underbark brown, except for *E. kirtonii* which is cream.

**Inner Bark** — Blaze may be dark pink-red in *S. australis*; red-brown in *S. woollsii*, pale brown in *E. obovatus*, yellow-brown in *E. eumundi*, *E. kirtonii* and *E. reticulatus* or creamy-yellow in *E. grandis* and *E. holopetalus*. Granular and more or less fibrous texture.

**Branchlets** — Smooth apart from the growing tip in all species except *E. holopetalus* which is rough and hairy. Paler round lenticels conspicuous on *E. obovatus* only. Stipules at the base of the leaf stalk 3-7mm long and smooth in *E. kirtonii*; 3-5mm long and furry in *S. australis*, under 1mm long and smooth in *E. grandis*, *E. holopetalus*, *E. obovatus*, *E. reticulatus* and *S. woollsii* or obscure in *E. eumundi*. Shed as the leaves expand in all except *E. holopetalus*.

**Leaves** — Simple, alternate, regularly toothed in all species except *E. eumundi* and *E. obovatus* where they are confined to the top two thirds of the margin or sometimes even absent in *E. eumundi*. Leaf stalks commonly over 2cm long in *E. eumundi*, *E. kirtonii* and *S. woollsii*, swollen and joined to the leaf blade at an angle in all species except *E. grandis*, *E. holopetalus* and *E. obovatus*.

**Venation** — Midrib and lateral veins conspicuous, particularly on the lower surface. Main lateral veins three to six (*E. obovatus*), five to ten (*E. eumundi*, *E. holopetalus*, *Sloanea* spp.) or ten to twenty (*E. grandis*, *E. kirtonii*, *E. reticulatus*). Hairy tufts are often present in the leaf axils of *E. grandis* (15-30) and *Sloanea woollsii* (five to ten). Hollow pits occur in *E. obovatus* (one to four), *E. kirtonii* (eight to twelve occasionally) and *E. reticulatus* (twelve to twenty).

**Flowers** — Greenish-white to cream (occasionally pink in *E. reticulatus*), bisexual, regular, in one-sided axillary racemes (all *Elaeocarpus* spp. except *E. holopetalus* where in pairs) or regular racemes in *Sloanea* but sometimes singly in *S. australis*. In *Elaeocarpus* there are five sepals and petals, the latter being fringed in all species except *E. holopetalus*. *Sloanea* has four or five sepals, with a similar number of petals in *S. woollsii* but no petals. Stamens numerous.

**Fruit** — Either a capsule with short weak bristles opening into four valves (*S. australis*) and slender rigid prickles with two valves (*S. woollsii*); or a fleshy drupe (*Elaeocarpus*). Drupe blue except for *E. holopetalus* which is black, containing a hard wrinkled stone of one to five one-seeded cells. Seeds of *Sloanea* black, one in each cell, almost covered by a fleshy orange aril.

**Habitat** — Occupying a wide range of sites from riverine and lowland subtropical rainforest (*E. grandis*, *E. obovatus*, *S. australis*, *S. woollsii*), cool subtropical rainforest (*E. kirtonii*, *S. australis*, *S. woollsii*), warm temperate rainforest on poorer soils (*E. eumundi*, *E. kirtonii*, *E. reticulatus*, *S. australis*), cool temperate rainforest (*E. holopetalus*) and dry rainforest (*E. obovatus*).

**Distribution** — *Elaeocarpus* is the largest genus with 200 species in the world spread from Madagascar to South-East Asia, north to Japan and south to New Zealand and Tasmania. The twenty Australian species are all restricted to this country. Of the six species in N.S.W., *E. eumundi*, *E. grandis* and *E.*

*obovatus* range from North Queensland to just north of Sydney, whilst *E. kirtonii* and *E. reticulatus* occur from S.E. Queensland to south of Sydney, and to Tasmania respectively. *E. holopetalus* is virtually confined to N.S.W. from Dorrigo to the Victorian border. *Elaeocarpus* appears to be an ancient tropical genus absent from mainland Africa and America and with a few species extending to temperate areas. There are only two species in New Zealand.

*Sloanea* consists of 120 species from tropical Asia to America and Madagascar (but not Africa). The five species in Australia are restricted to this country. In N.S.W., *S. australis* extends south to Batemans Bay and *S. woollsii* to Barrington Tops.

The third genus in N.S.W., *Aristotelia* is only a shrub. It occurs from N.E. Queensland to Tasmania, New hebrides, New Zealand, Peru and Chile in cool mountain rainforest areas.

**Timber and Uses** — White to brown, rather soft, not durable, coarse-textured, light in weight but relatively strong. Hence it has been used for turning into furniture, oars, aircraft framing and general interior trimming.

# KEY TO RAINFOREST TREE SPECIES OF ELAEOCARPACEAE IN N.S.W.

## A. USING LEAVES AND BRANCHLETS ONLY

1. Young leaves woolly beneath ..... *Elaeocarpus holopetalus* F. Muell.
1. Young leaves smooth or almost so. .... 2
  2. Leaf blade narrowing towards the base then finally rounded or almost lobed. .... *Sloanea australis* (Benth.) F. Muell.
  2. Leaf blade narrowing uniformly to the base. .... 3
    3. Leaf stalk less than 9mm long. .... 4
      4. Terminal two thirds of leaf margin irregularly toothed. .... *Elaeocarpus obovatus* G. Don
      4. Complete leaf margin finely toothed .... *Elaeocarpus reticulatus* Sm.
    3. Leaf stalk more than 9mm long. .... 5
      5. Leaf stalk commonly over 2cm long. .... 6
        6. If toothed, then confined to terminal half of leaf margin ..... *Elaeocarpus eumundi* F.M. Bail
        6. Complete leaf margin toothed. .... 7
          7. Teeth 2-5mm apart, occasional pits in leaf axils ..... *Elaeocarpus kirtonii* F. Muell. ex F.M. Bail.
          7. Teeth 5-10mm apart, hairy tufts in leaf axils ..... *Sloanea woollsii* F. Muell.
5. Leaf stalk commonly .9-2cm long. .... 8
  8. Leaf stalk not swollen or jointed where attached to the blade ..... *Elaeocarpus gradis* F. Muell.
  8. Leaf stalk swollen and jointed where attached to the blade. .... 9
    9. Leaf teeth 5-10mm apart, hairy tufts in axils ..... *Sloanea woollsii* F. Muell.
    9. Leaf teeth 2-4mm apart, small black pits in axils ..... *Elaeocarpus reticulatus* Sm.

## B. USING BARK ONLY

1. Bark scaly..... *Sloanea australis* (Benth.) F. Muell.
1. Bark smooth to slightly fissured ..... 2
  2. Underbark cream ..... *Elaeocarpus kirtonii* F. Muell. ex F. Muell.
  2. Underbark brown ..... 3
    3. Blaze red-brown ..... *Sloanea woollsii* F. Muell.
    3. Blaze of brown shades ..... 4
    3. Blaze cream to yellow ..... 6
      4. Sapwood margin yellow ..... 5
        5. Blaze pale brown ..... *Elaeocarpus obovatus* G. Don
        5. Blaze yellow-brown with vertical yellow stripes ..... *Elaeocarpus reticulatus* Sm.
      4. Sapwood margin not yellow .... *Elaeocarpus eumundi* F.M. Bail.
      6. Underbark dark brown ..... *Elaeocarpus holopetalus* F. Muell.
      6. Underbark light brown ..... *Elaeocarpus grandis* F. Muell.

## ELAEOCARPUS EUMUNDI F.M. Bailey

**Reference** — Proc. Roy. Soc. Qld., April 1894.

**Derivation** — *Elaeocarpus* from Greek "elaia" the olive tree and "karpos" a fruit in reference to the similarity of the fruit to that of the olive; *eumundi* after the Eumundi area near Nambour in S.E. Queensland where this species was first collected.

**Common Name** — Smooth-leaved Quandong, Eumundi Quandong.

**Standard Trade Name** — Eumundi Quandong.

A tree attaining a height of 30m or over and a diameter of 50cm in Queensland but smaller in N.S.W. The leaves are *conspicuously crowded at the ends of the branchlets*, with the *old leaves turning yellow* rather than red.

**Trunk** — Buttressed, but otherwise not fluted.

**Outer Bark** — Grey, smooth, with numerous small pale corky or powdery pustules giving a pimply appearance. Underbark dark brown towards the outside, then cream. Outer surface of live bark yellow-brown.

**Inner Bark** — Blaze on a tree 40cm diameter *yellowish-brown* with numerous fine pale vertical lines. No change in colour on exposure. Bitter, but no smell. 6mm thick.

**Branchlets** — Thin, green, marked by the scars of the fallen leaves, clothed with grey hairs towards the tips.

**Leaves** — Alternate but crowded at the ends of the branchlets, simple, margins *distantly and bluntly toothed in the upper half only or sometimes entire*. Obovate-lanceolate, or lanceolate, 7-13cm long, drawn out to a long point at the tip but tapering quickly at the base. *Upper surface glossy*, underside paler. Leaf stalks 2-5cm long, slender, grey hairy when young, grooved on the upper side. Swollen at both ends. Where attached to the leaf blade it is *swollen on the underside and slightly bent*.

**Venation** — Midrib, lateral and net veins raised and conspicuous on both surfaces. *Main lateral veins six to eight pairs*.

**Flowers** — Deep cream, sweet scented, in racemes up to 5cm long on the leafless branches. Flower stalks 10-15mm long. Sepals five, narrow, pointed, about 10mm long. *Petals five, fringed*, slightly longer than the sepals. Stamens numerous, anthers narrow tubular with a long bristle. Style 5-8mm long with a narrow pointed stigma. Flowering period November to December.

**Fruit** — *Drupe, blue, egg-shaped, 14-18mm long*. Outer succulent part acid, enclosing a deeply pitted hard stone containing one or two seeds. Fruit ripe May to June.

**Habitat** — Riverine and warm temperate rainforests on alluvial acid soils.

**Distribution** — Rocky Creek, N.S.W. (Whian Whian S.F.) to McIlwraith Range near Coen, North Queensland.

Recorded in N.S.W. from Whian Whian S.F. in the Big Scrub F.R., north of Minyon Falls, Peach Mountain and Terania Creek. Also from Mullumbimby last century.

**Timber and Uses** — Brown, fine grained, suitable for cabinet work and interior joinery.



Plate 4  
*Elaeocarpus eumundi* F.M. Bail.

## ELAEOCARPUS GRANDIS F. Muell.

**Reference** — *Fragm. Phyt. Aust.* II, 81, 1860-61.

**Derivation** — *Grandis* from Latin "grandis" large, referring to its size.

**Common Name** — Blue Fig. Blue Quandong, Cooloon, Silver Quandong, Brush Quandong, White Quandong, Blueberry Ash.

**Standard Trade Name** — Silver Quandong.

A large tree attaining a height of 35m and a diameter of 200cm. The sparsely leaved crown is usually characterised by a few bright red old leaves.

**Trunk** — Cylindrical, *strongly buttressed* at the base and resembling *Ficus watkinsiana*.

**Outer Bark** — Light grey, parchment-like, finely fissured with longitudinal indentations. *Underbark light brown*. Outer surface of live bark green with white lines corresponding to the exterior longitudinal depressions.

**Inner Bark** — Blaze on a tree 60cm diameter *cream* with a watery layer next to the sapwood. *Surface of sapwood yellow*. No change in colour on exposure except for a tannin stain. Slightly astringent taste and a slight nutty smell. 25mm thick.

**Branchlets** — Moderately thick, green where leafy, but later grey-brown. Distinctly ridged below each leaf insertion and well marked by leaf scars. Stipules small, 1mm long, triangular, black and soon shed as the leaves expand. Branchlets and leaf stalks covered with very fine down.

**Leaves** — Alternate, simple, *finely and regularly toothed*, elliptical to narrowly elliptical, 7-18cm long. Tapering to a rounded point at the tip, tapering more quickly at the base. Glossy and dark green above, paler beneath. Leaf stalks 12-18mm long, flattened on the upper surface.

**Venation** — Midrib, lateral and net veins visible on both surfaces, the midrib and lateral veins being raised on the underside with *15-30 hairy tufts in their axils*. Main lateral veins ten to sixteen pairs.

**Flowers** — Greenish-white, not scented, in *racemes* arising from the branchlets at the scars of fallen leaves, 5-10cm long. Often turned to one side giving the raceme a *one-sided* appearance. Flower stalks about 12mm long. Sepals five, narrow, finely pointed, about 13mm long. *Petals five*, alternating with and slightly longer than the sepals, their tips cut into narrow segments to give a *fringed* appearance. Stamens bristle-like, about 70, each consisting mainly of the finely tubular anther, about 6mm long on a very short filament. Ovary downy with silky hairs, surmounted by a long style which often protrudes beyond the tips of the petals. Flowering period March to June and also December.

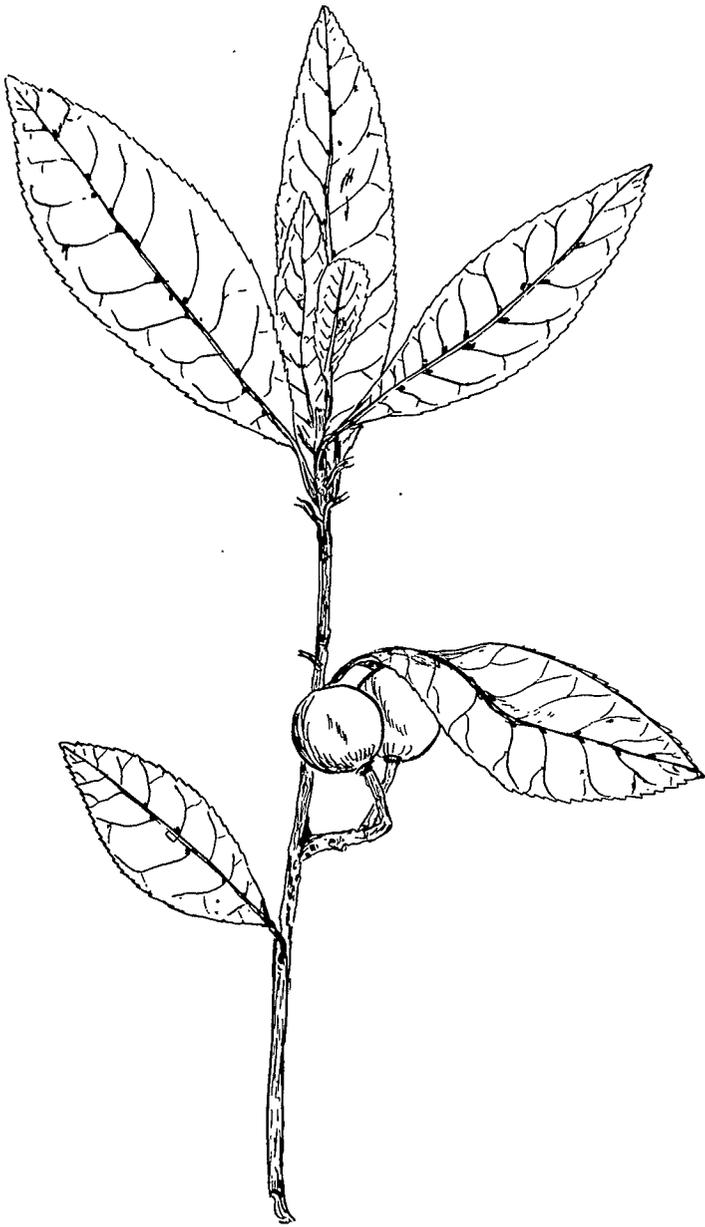
**Fruit** — *Drupe, blue, globular, 18-30mm diameter*, outer part fleshy, enclosing a very hard stone, containing five cells, some of which are small and rudimentary. Mature cells contain a single, dark-coated, narrowly oval seed about 10mm long. Fruit ripe August to October.

**Habitat** — A fairly common *riverine* tree occurring usually as dominant trees on the moist alluvial flats and gullies in lowland subtropical rainforest.

**Distribution** — From the Nambucca River, N.S.W. to McIlwraith Range near Coen, North Queensland.

Recorded in N.S.W. from Way Way S.F., Mistake S.F., Bellinger River S.F., Dorrigo N.P., Woolgoolga Creek F.R., Richmond Range S.F., Murray Scrub, Lynchs Creek, Terania Creek, Big Scrub F.R., Minyon Falls F.R., Boomerang Falls, Alstonville, Tintenbar, Broken Head N.R., Round Mountain, Mt. Warning N.P., Couchy Creek, Murwillumbah, Tumbulgum, Stotts Island N.R. and Bilambil.

**Timber and Uses** — Timber much sought after and now largely cut out. White to pale brown, light in weight, relatively strong and bends well. It is somewhat coarse textured, straight-grained, with the brown vessel lines prominent on the longitudinal surface. Used for all types of interior trim, flooring, lining, racing skiffs, oars, aircraft framing and also for light coloured furniture. 475-575kg per cubic metre. The deeply pitted "stone" is used for ornaments, such as necklaces; and possesses special religious significance to some Indian sects.



0 1 2 3 4 cm

Plate 5  
*Elaeocarpus grandis* F. Muell.

## ELAEOCARPUS HOLOPETALUS F. Muell.

**Reference** — Fragm. Phyt. Aust. II, 143, 1861.

**Derivation** — Holopetalus from Greek "holos" undivided and "petalon" a petal, referring to the petals not being fringed as in other N.S.W. species of the genus.

**Common Name** — Black Olive Berry, Mountain Blueberry, Mountain Quandong.

**Standard Trade Name** — Mountain Quandong.

A tree attaining a height of 25m and a stem diameter of 80cm.

**Trunk** — Straight, with a *dense dark green crown*. Often irregular and flanged towards the base with coppice shoots.

**Outer Bark** — *Dark greyish-brown*, smooth with horizontally elongated lenticels, or slightly vertically fissured or wrinkled, paler in the grooves. *Underbark dark brown*. Outer surface of live bark orange-brown with a green margin.

**Inner Bark** — Blaze on a tree 60cm diameter with white flares towards the outer edge, then creamy-yellow with darker vertical thin lines extending from the centre to the inner margin. Copious clear sap. The surface of the blaze sometimes darkens slowly on exposure. Slightly astringent taste but no smell. 10mm thick.

**Branchlets** — Medium thick, brown, rough, becoming more *hairy towards the ends*. Leaf scars visible. Stipules small, under 1mm long, triangular, black, one on either side at the base of the leaf stalk, persistent.

**Leaves** — Alternate, simple, margins *sharply toothed, lanceolate or oblong-lanceolate, 3-7cm long*. Tapering rapidly at both ends and ending in a short point at the tip. Smooth above, *densely hairy on the underside*. Leaf stalks 3-5mm long, covered in black hairs.

**Venation** — Midrib, lateral and net veins visible on both surfaces, more conspicuous and prominently raised on the underside. Main lateral veins, eight to ten pairs.

**Flowers** — *White, often in pairs* on very short inflorescences, 13-18mm long in the forks of the leaves. The stalks and calyx densely clothed in yellowish hairs. Calyx of five narrow lobes, 3-4mm long. *Petals five, not fringed*, 6mm long. Stamens fifteen to twenty. Flowering period December.

**Fruit** — Drupe, *black with a bluish bloom*, almost egg-shaped, 9mm long, two-celled but bearing only one seed. Fruit ripe March to August.

**Habitat** — In moist mountain gullies in cool and warm temperate rainforests. Commonly associated with *Atherosperma* in the south and *Nothofagus* in the north. Often on basaltic soils but also on those derived from metamorphic and granitic rocks.

**Distribution** — From Result Creek, East Gippsland, Victoria to Chaelundi Mountain, N.S.W.

Recorded in N.S.W. from Brown Mountain, Cathcart S.F., Glenbog S.F., Gourcock Range, Currockbilly Mountain, Monga, Tallaganda S.F., Robertson N.R., Minnamurra Falls, Katoomba, Leura, Blackheath, Mt. Tomah, Mt. Wilson, Clarence, Wolgan East, Barrington Tops N.P., Gloucester Tops, Head of Tia River, Point Lookout and Barren Mountain on New England N.P., Cathedral Rocks N.P., Mt. Hyland, Marengo S.F. and Chaelundi Mountain.

**Timber and Uses** — Pale yellow to white, medium soft, finely grained and free cutting, but has no particular uses.

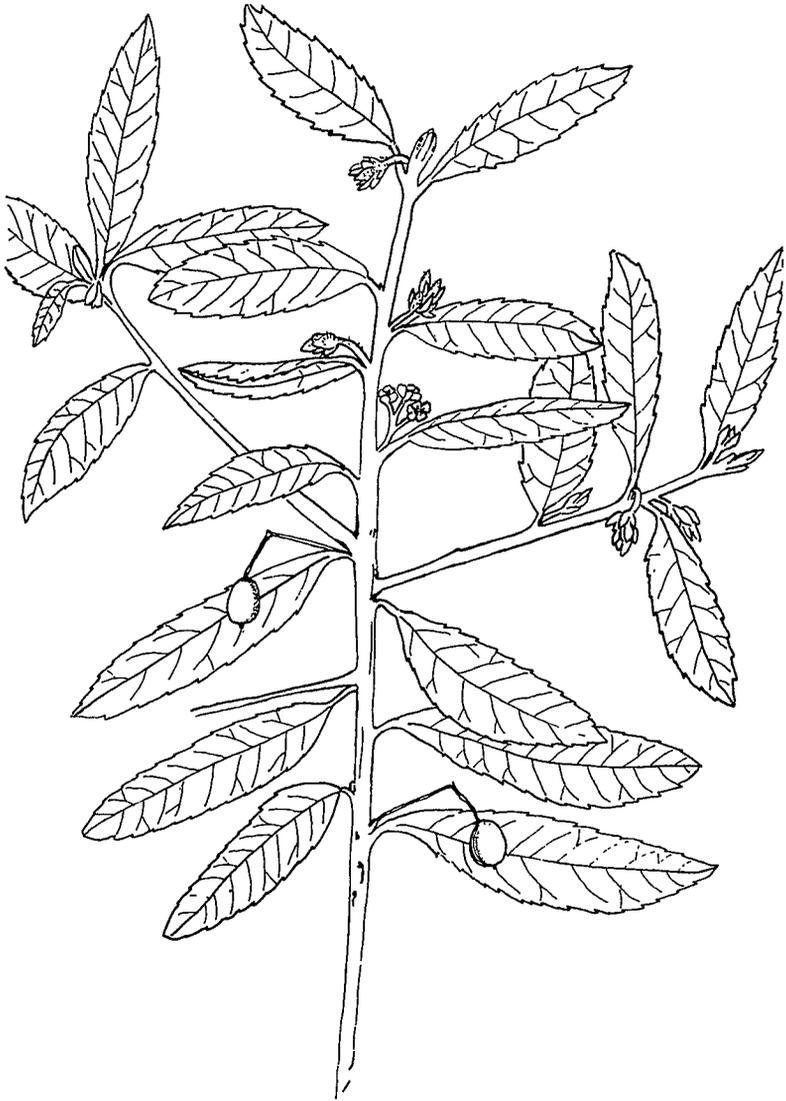


Plate 6  
*Alaeocarpus holopetalus* F. Muell.

## ELAEOCARPUS KIRTONII F. Muell. ex F.M. Bail.

**Synonym** — *E. baeuerlenii* Maid. and Baker, *E. longifolius* C. Moore

**Reference** — Bail. First Supplement to Synopsis of Queensland Flora, 8, 1886.

**Derivation** — Kirtonii after W. Kirton, who collected the type specimen for F. Mueller at Bulli in 1885.

**Common Name** — Silver Quandong, Brown-hearted Quandong, Whitewood, Pigeonberry Ash, Mowbullan Whitewood, White Quandong.

**Standard Trade Name** — Brown-hearted Quandong.

A large tree with a long straight bole and compact crown, attaining a height of 45m and a diameter of 90cm or more. The old leaves do not turn red as in *E. grandis* and *E. reticulatus*.

**Trunk** — Stem buttressed at the base.

**Outer Bark** — *Whitish-grey, smooth*, thin, papery or with slight vertical cracks at the base covered with numerous very small pustules. *Underbark cream*. Outer surface of live bark with cream and brown flecks.

**Inner Bark** — Blaze on a tree 90cm diameter *yellow-brown with lighter yellow vertical streaks* and a distinct yellow layer next to the cream sapwood. No change in colour on exposure. Astringent taste. Sugar cane smell. 13mm thick.

**Branchlets** — Rather thick, at first clothed in light fawn down, later smooth and green. Grey on leafless sections. *Narrow black stipules* 3-7mm long at the base of the young silky-hairy leaves.

**Leaves** — Alternate, simple, margins *regularly toothed*, teeth 2-5mm apart, lance-shaped or elliptical, 9-18cm long, drawn out into a long point at the tip, tapering quickly or rounded at the base. *Dull or satiny on both sides*. Leaf margin transparent. Leaf stalks 2-6cm long, swollen where the leaf blade is attached.

**Venation** — Midrib, lateral and net veins very conspicuous on both surfaces. *Main lateral veins ten to fifteen*. Eight to twelve inconspicuous pits sometimes present at the junction of the lateral veins and the midrib.

**Flowers** — White, sweet scented, in slender racemes, up to 15cm long, springing from the forks of the leaves or from the scars of fallen leaves. Stalks of individual flowers about 9mm long, sometimes with a bract 9mm long at the base of each. Flowers about 10mm long. Calyx of five lobes about 8mm long. *Petals* five, broader than the calyx lobes, about 10mm long, *fringed*. Stamens bristle-like, 25 or more. Ovary egg-shaped, hairless, tapering into a slender style. Flowering period January to March.

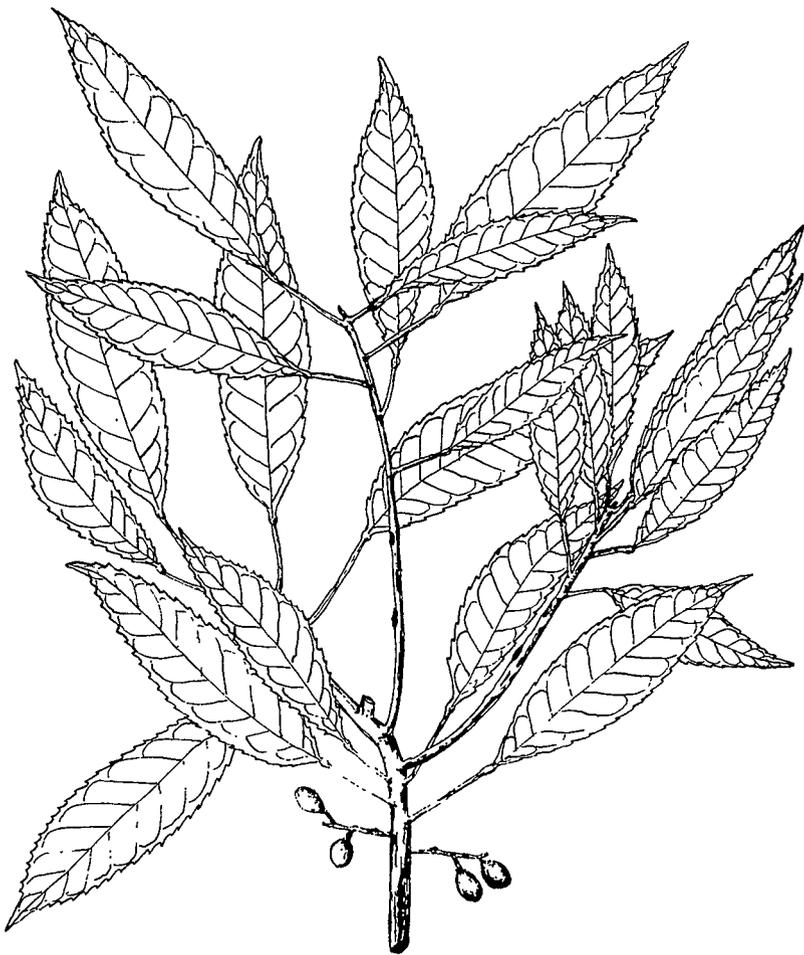
**Fruit** — *Drupe, pale blue, egg-shaped, 10-13mm long*, the outer part smooth and somewhat fleshy, enclosing a hard wrinkled "stone" containing one or two seeds. Fruit ripe November to January.

**Habitat** — Occurs as an occasional, usually dominant tree on moister sites in temperate and cool subtropical rainforests in the mountains.

**Distribution** — From Milton, N.S.W. to at least as far north as the Eungella Range near Mackay in Queensland. It extends to the higher altitude rainforests, being recorded from the Dorrigo Plateau, the McPherson Range and the Bunya Mountains.

Recorded in N.S.W. from Berry Mountain, Cambewarra, Bulli, Gosford, Chichester S.F., Boorganna N.R., Sea Acres, Bellinger River S.F., Dorrigo N.P., Never Never S.F., Pine Creek S.F., Wild Cattle Creek S.F., Marengo S.F., Gibraltar Range N.P., Billilimbra S.F., Willowie Scrub, Forestland S.F., Iluka N.R., Yabba S.F., Beaury S.F., Acacia Plateau, Mt. Wilson F.P., Nothofagus Mountain F.R., Wiangaree S.F., Terania Creek, Quandong Falls, Dorrroughby, Victoria Park N.R., Hayters Hill, The Pocket, Mt. Warning N.P., Pumpenbil Creek, Limpinwood N.R., Couchy Creek and Stotts Island N.R.

**Timber and Uses** — Pale brown, soft and uniform, though somewhat coarse in texture and easily worked, straight grained and is strong for its weight and is a first class bending timber. It is suitable for interior trim, flooring, lining, furniture. It has been used in aircraft manufacture and as a substitute for spruce in racing oars. The commercial availability is limited. 400-550kg per cubic metre.



ES 0 2 4 cm

Plate 7  
*Elaeocarpus kirtonii* F. Muell. ex F.M. Bail.

## ELAEOCARPUS OBOVATUS G. Don

**Reference** — Gen. Hist. Dichlam. Plants I, 55.

**Derivation** — Obovatus from Latin "ob" inverted and "ovatus" egg-shaped, referring to the leaves being egg-shaped but broadest towards the tip.

**Common Name** — Blueberry Ash, Hard Quandong, Whitewood, Grey Carabeen, Freckled Oliveberry.

**Standard Trade Name** — Hard Quandong.

A tall tree, often exceeding 30m in height and a diameter of 75-100cm.

**Trunk** — *Strongly buttressed* at the base, particularly in large trees. Upper section of the trunk cylindrical.

**Outer Bark** — Grey, smooth, thin papery with *numerous corky pustules*. Underbark fawn to grey. Outer surface of live bark with dark green, cream and pink vertical bands.

**Inner Bark** — Blaze on a tree 75cm diameter pale brown with a yellow layer next to the sapwood. No change in colour on exposure. Astringent taste and a nutty smell. 16mm thick.

**Branchlets** — *Slender, brownish-grey*, smooth with *scattered light grey lenticels* on the leafless portion. Green near the tip where the new leaves are covered with silky fawn hairs. Very small triangular black stipules are on either side of the base of the new leaf stalks, but are quickly shed.

**Leaves** — Alternate, simple, *irregularly* and often distantly *toothed in the upper two thirds of the leaf only*, obovate to narrowly elliptical, 5-9cm long. (Leaves are often much smaller in larger trees). Terminating in a blunt point at the tip; and tapering gradually at the base. Shining above and dull beneath, green and smooth on both surfaces. Leaf stalks 6-9mm long, smooth and green.

**Venation** — Midrib raised on both surfaces, lateral and net veins visible but not prominent. Main lateral veins three to six only. *One to four raised cavities commonly in the axils of the mid and lateral veins on the lower surface of some leaves*.

**Flowers** — White, in axillary racemes, rather narrow, springing from the forks of the leaves or from the scars of fallen leaves, the racemes about as long as the leaves. Stalks of individual flowers 2-4mm long. Individual flowers 4mm long. Calyx of five pointed lobes about the length of the flower. *Petals five, fringed* due to six or seven narrow teeth at the tip, as long as the calyx. Stamens bristle-like, over fifteen, surrounding the central small smooth egg-shaped ovary. Flowering period September to November.

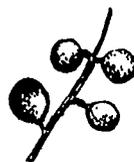
**Fruit** — *Drupe, blue, oval or globular, 6-12mm long*; the outer part almost succulent, surrounding a *rough warty "stone"* which mostly contains a single seed. Fruit ripe January to March.

**Habitat** — Most commonly occurs in lowland subtropical rainforest along stream banks as far downstream as the brackish water zone with *Casuarina glauca*. Also in the littoral and inland dry rainforests. Ash Island in the Hunter River at Newcastle is named after this tree.

**Distribution** — Wyong, N.S.W. to Proserpine, Queensland.

Recorded in N.S.W. from Wyong, Gap Creek F.R., Ash Island, Maitland, Paterson, Raymond Terrace, Chichester S.F., Dungog, Snapper Island, John Gould Island N.R., Myall Lakes N.P., Seal Rocks, Woko, Saltwater, Manning Point, Wingham, Boorganna N.R., Harrington, Sea Acres, Point plomer, Telegraph Point, Bellangry S.F., Kunderang Brook, Carrai S.F., Willi Willi Caves N.R., Smoky Cape, Shark Island, Way Way S.F., Warrell Creek, Taylors Arm, Bellinger River S.F., Pine Creek S.F., Bundagen F.R., Coramba Mountain, Woolgoolga Creek F.R., Wild Cattle Creek S.F., Chandlers Creek, Blandford Creek, Guy Fawkes River N.P., Maclean, Boonoo Boonoo Falls, Girard S.F., Coaldale, Copmanhurst, Cherry Tree S.F., Richmond Range S.F., Toonumbar S.F., Unumgar S.F., Beaury S.F., Acacia Plateau, Nothofagus Mountain F.R., Mt. Lindesay, Moore Park, Roseberry S.F., Terania Creek, Boatharbour, Booyong, Johnstons Scrub, Ballina, Tintenbar, Hayters Hill, Broken Head N.R., Brunswick Heads N.R., Cudgen Lake, Round Mountain, Mebbin Rock F.P., Pumpenbil Creek, Limpinwood N.R., Tumbulgum, Stotts Island N.R. and Terranora.

**Timber and Uses** — White, hard, tough, firm and easy to work. Used for oars, furniture, joinery, lining, interior work. The sapwood is susceptible to borer attack.



0 2 4 6 cm

Plate 8  
*Elaeocarpus obovatus* G. Don

## ELAEOCARPUS RETICULATUS Sm.

**Synonym** — *Elaeocarpus cyaneus* Ait. ex Sims.

**Reference** — Rees Cyclopaedia 12: sub *Elaeocarpus* n. 6, 1809.

**Derivation** — *Reticulatus* from Latin "reticulatus" like a net, referring to the conspicuous net veins of the leaves.

**Common Name** — Lily-of-the-Valley Tree, Blue Oliveberry, Blueberry Ash, Ash Quandong, Scrub Ash.

**Standard Trade Name** — Ash Quandong.

An attractive shrub or small tree sometimes attaining a height of 22m and a stem diameter of 30cm. There are generally a few bright red old leaves in the crown. Both the showy white fringed bell-like flowers and the blue fruits are quite ornamental.

**Trunk** — Usually fairly straight and cylindrical when large; and often slightly flanged at the base.

**Outer Bark** — *Brown*, smooth or wrinkled with vertical cracks. Marked with numerous irregular pustules and lenticels. *Underbark chocolate-brown*. Outer surface of live bark brown, pitted and patterned with crooked yellow lines.

**Inner Bark** — Blaze on a tree 30cm diameter *yellowish-brown* with a few vertical crooked yellow stripes and numerous thread-like lines. Inner margin yellow, which darkens on exposure, but the main portion of the blaze has a tendency to fade. No distinct taste or smell. 18mm thick.

**Branchlets** — Slender, variable in colour, frequently green, sometimes red with the colour extending to the leaf stalks, smooth. Leaf scars small, distinct and fairly close together. Stipules inconspicuous, small, black, narrow triangular, on either side of the base of the leaf stalk, quickly shed as the leaves expand. Lenticels absent.

**Leaves** — Alternate, simple, *distinctly* but sometimes shallowly and *regularly toothed*, elliptical-oblong or oblong-lanceolate, 5-11cm long, drawn out into a fairly fine point at the tip, gradually tapering at the base; glossy above, green on both surfaces but paler beneath. *Leaf stalks* 6-18mm long, smooth, *swollen and bent where the leaf blade is attached*.

**Venation** — Strongly and conspicuously net-veined on both surfaces. Main lateral veins ten to fifteen. Inconspicuous *dark hairy hollow glands* (twelve to twenty) are often present *in the axils of most lateral veins and the midrib on the under surface*.

**Flowers** — Usually white but occasionally pink, licorice scented, somewhat bell-shaped, 6mm or slightly longer in racemes 2-8cm long. Sepals five, greenish, 6-8mm long. *Petals* five, 7-9mm long, *fringed*. Stamens fifteen to twenty, somewhat shorter than the petals, ending in a bristle. Flowering period October to January.

**Fruit** — *Drupe, sky blue, globular or oval, 8-13mm long*. The outer fleshy part thin with a slightly acid taste, enclosing a single large very hard seed with a rough and pimples surface. Fruit ripe all year round but mainly in May to October.

**Habitat** — Around the margins of rainforest, scrubby gullies and in open country along water courses. A common species extending from sea level to the tablelands and seemingly confined to the poorer type soils.

**Distribution** — From Flinders Island, Tasmania to Fraser Island, Queensland.

Recorded in N.S.W. from Green Cape, Mt. Imlay, Bermagui, Mt. Dromedary F.R., Batemans Bay, Jervis Bay, Nowra, Fitzroy Falls, Moss Vale, Stanwell Park, Sydney, Glenbrook, Wentworth Falls, Rylstone, Mt. Wilson, Mt. Coricudgy, Widdin Valley, Wyong, Gap Creek F.R., Mereweather, Myall Lakes N.P., Middlebrother S.F., Doyles River S.F., Styx River S.F., Way Way S.F., New England N.P., Bellinger River S.F., Dorrigo N.P., Never Never S.F., Pine Creek S.F., Orara West S.F., Bruxner Park F.R., Woolgoolga Creek F.R., Wild Cattle Creek S.F., Moonpar S.F., Clouds Creek S.F., Hyland S.F., Gibraltar Range N.P., Willowie Scrub, Forestland S.F., Unumgar S.F., Donaldson S.F., Mt. Lindesay, Roseberry S.F., Terania Creek, Whian Whian S.F., Quandong Falls, Wardell, Ballina, Byron Bay, Couchy Creek and Terranora.

**Timber and Uses** — In young trees the wood is creamy-white throughout, but larger trees usually have a large core of attractive brown heartwood, surrounded by a band of whitish sapwood which is attacked by borers. Medium hard and close-grained. Would make attractive turnery, inlays etc.



Plate 9  
*Elaeocarpus reticulatus* Sm.

## SLOANEA AUSTRALIS (Benth.) F. Muell.

**Synonym** — *Echinocarpus australis* Benth.

**Reference** — *Fragm. Phyt. Aust.* 4, 91, 1863-64.

**Derivation** — Sloanea after Sir Hans Sloane, principal founder of the British Museum; australis from Latin "australis" southern, referring to the distribution of this species within a generally tropical genus.

**Common Name** — Maiden's Blush, Blush Alder, Blush Carrabeen.

**Standard Trade Name** — Blush Alder.

A tree attaining a height of 30m and a stem diameter of 60cm with a shady and often wide-spreading crown of large and attractive glossy leaves. The *new leaves* are a characteristic *blush pink*.

**Trunk** — *Buttressed, often flanged and irregular*, crooked, with *numerous coppice shoots* and subsidiary trunks.

**Outer Bark** — Grey-brown, *scaly* or with shallow fissures. Underbark brown. Outer surface of live bark red.

**Inner Bark** — Blaze on a tree 40cm diameter *dark pinkish-red*, with a dark brown narrow band marking the outer margin. Inner margin next to the sapwood, pale, changing to yellowish-brown or orange after about eight minutes exposure. Astringent taste but no smell. 6mm thick.

**Branchlets** — Thick, brown, smooth, often marked by narrow brownish lenticels. Stipules narrow, furry, 3-5mm long, soon shed. Expanding leaves pale pink, smooth.

**Leaves** — Alternate, simple, *margins wavy, toothed*, reverse egg-shaped (broadest towards the tip), 7-30cm long, *rounded or shortly and bluntly pointed at the tip*. Tapering towards the base, then *slightly heart-shaped or blunt at the leaf stalk*. Upper surface glossy and green, underside paler. Leaf stalks 6-25mm long, usually swollen on the back at the junction with the leaf blade where there is a *definite bend*.

**Venation** — Midrib and lateral veins distinct on both surfaces, but raised and more conspicuous on the underside. Main lateral veins five to ten pairs. The leaves differ from those of *Sloanea woollsii* in lacking tufts of hairs in the axils of the midrib and lateral veins and in being broader and more blunt at the tip.

**Flowers** — *Cream, hairy, singly or in short racemes* springing from the ends of the branchlets or in the forks of the leaves. Flower stalks hairy, 13-50mm long. Individual flowers about 15mm diameter, *pendulous*. Sepals four or five, downy, oblong, about 8mm long. Petals four or five, oval, 12mm long. Stamens about forty, 5mm long. Flowering period October to November.

**Fruit** — A woody capsule, *usually four* (sometimes three or five) *celled, yellow to yellow-brown*, globular, 15-20mm long, covered with *dense short soft brown bristles*. Opening widely into three to five valves to expose one egg-shaped *black glossy seed* dangling from each cell, *almost completely covered by a fleshy orange aril*, 7-9mm long. Fruit ripe February to June.

**Habitat** — Riverine, littoral, as well as on the poorer warm temperate rainforests, where the rainfall or soil moisture is high. The tree attains its best development on the richer soil pockets along water courses. It also occurs on the summit of the McPherson Range where it sometimes forms low dense thickets.

**Distribution** — Common in coastal rainforests from Batemans Bay, N.S.W. to Cape Tribulation, North Queensland. Recorded in most rainforest areas on the North Coast of N.S.W.

Recorded in N.S.W. from Cambewarra, Kiama, Bulli, Otford, Ourimbah, Strickland S.F., Morriset, Gap Creek F.R., Williams River, Gloucester, Bulahdelah, Boorganna N.R., Middlebrother Mountain, Black Creek F.R., North Brother Mountain, Sea Acres, Bellangry S.F., Way way S.F., New England N.P., Bellinger River S.F., Dorrigo N.P., Pine Creek S.F., Coffs Harbour, Bruxner Park F.R., Mt. Coramba, Orara West S.F., Woolgoolga F.R., Wild Cattle Creek S.F., Gibraltar Range N.P., Richmond Range S.F., Murray Scrub, Toonumbar S.F., Yabbra S.F., Beaury S.F., Nothofagus Mountain F.R., Roseberry S.F., Levers Plateau, Wiangaree S.F., Lynchs Creek, Terania Creek, Big Scrub F.R., Minyon Falls, Booyong, Johnstons

Scrub, Davis Scrub N.R., Victoria Park N.R., Broken Head N.R., Hayters Hill, Brunswick Heads N.R., Mooball S.F., Round Mountain, Mt. Warning N.P., Mebbin Rock F.P., Pumbenbil Creek, Limpinwood N.R., Couchy Creek, Murwillumbah and Tumbulgum.

**Timber and Uses** — Rose fading to light brown, close textured, rather weak and easily worked. Sapwood very liable to attack by *Lyctus* borer. Suitable for cabinet work, cases, lining and interior decorations. 550-600kg per cubic metre.

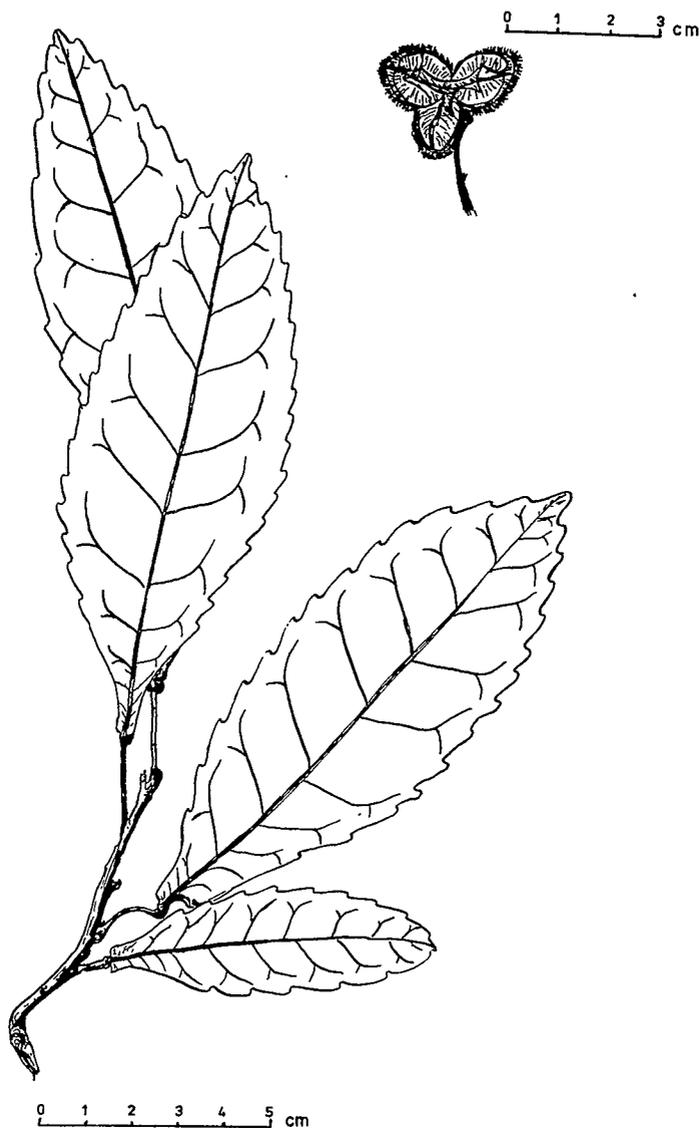


Plate 10  
*Sloanea australis* (Benth.) F. Muell.

## SLOANEA WOOLLSII F. Muell.

**Synonym** — *Sloanea austroqueenslandica* K. Domin.

**Reference** — *Fragm. Phyt. Aust.* VI, 171, 1867-68.

**Derivation** — Woollsii after Rev. Dr. William Woolls, 1814-93, schoolmaster, clergyman and botanist in N.S.W.

**Common Name** — Yellow Carabeen, Carribin, Carabeen, Grey Carrobean.

**Standard Trade Name** — Yellow Carabeen.

A large tree attaining a height of 55m and a stem diameter of 250cm with a characteristic large rounded light green crown. The new leaves are light green.

**Trunk** — Usually prominently buttressed, the typical *rudder-shaped buttresses* of this species, sometimes extending 5m up the trunk.

**Outer Bark** — Grey or greyish-brown, smooth, except for vertical lines of warts which are more numerous on the buttressed portion of the stem. Underbark brown. Outer surface of live bark orange-brown with creamy-orange and green blotches.

**Inner Bark** — Blaze on a tree 125cm diameter reddish-brown, outer half patterned by paler vertical bands and lines, inner half becomes gradually paler towards the sapwood. Inner surface of bark bright yellow. Bitter to taste, has a faint but unpleasant smell. 25mm thick.

**Branchlets** — Moderately thick, green near the growing tip but later turning grey-brown, young shoots finely downy. Stipules insignificant, narrow, black, under 1mm long, quickly shed.

**Leaves** — Alternate, simple, toothed, elliptic to elliptic-lanceolate, 7-15cm long, on large trees, but up to 28cm on luxuriant shoots. Drawn out into a point at the tip but tapering quickly and uniformly at the base. Smooth light green above and below. Leaf stalks 13-50mm long, swollen both ends, with a slight bend where the stalks join the leaf blades.

**Venation** — Lateral and net veins visible on both surfaces but more prominent beneath. Five to ten tufts of hairs where seven to ten pairs of main lateral veins join the midrib; and sometimes in the junction of the lateral and secondary veins also.

**Flowers** — White, in short racemes in the forks of the leaves. Individual flowers about 13mm diameter. Calyx lobes four or five, 3-4mm long, broadly egg-shaped, furry. Petals absent. Stamens about 24. Flowering period September to November.

**Fruit** — A prickly capsule, yellow-brown, oval, splitting into two halves, 12-20mm long, two-celled with generally one seed to each cell. Seed shiny black, narrow-oval, about 6mm long, almost completely covered by an orange to red-brown aril. Fruit ripe March to July.

**Habitat** — Characteristic of subtropical rainforest on fertile soils of volcanic origin, particularly in mountain valleys above 600m but also on lowland alluvium.

**Distribution** — From Barrington Tops, N.S.W. to Gympie, Queensland.

Recorded in N.S.W. from Barrington Tops N.P., Gloucester, Woko, Boorganna N.R., Black Creek F.R., Middlebrother Mountain, Sea Acres, Doyles River S.F., Mt. Boss S.F., Bellangry S.F., Carrai S.F., Way Way S.F., New England N.P., Bellinger River S.F., Deervale, Dorrigo N.P., Never Never S.F., Pine Creek S.F., Orara West S.F., Bruxner Park F.R., Mt. Coramba, Woolgoolga Creek F.R., Wild Cattle Creek S.F., Moonpar S.F., Clouds Creek S.F., Hyland S.F., Marengo S.F., Chaelundi S.F., Gibraltar Range N.P., Spirabo S.F., Forestland S.F., Willowie Scrub, Ewingar S.F., Girard S.F., Richmond Range S.F., Murray Scrub, Toonumbar S.F., Yabba S.F., Beaury S.F., Acacia Plateau, Mt. Wilson F.P., Nothofagus Mountain F.R., Mt. Lindesay, Mt. Glennie, Levers Plateau, Wiangaree S.F., Lynchies Creek, Terania Creek, Big Scrub F.R., Minyon Falls F.R., Johnstons Scrub, Booyong, Davis Scrub N.R., Broken Head N.R., Mooball S.F., Mt. Warning N.P., Mebbin Rock F.P., Pumpenbil Creek, Limpinwood N.R., Couchy Creek, Murwillumbah and Tumbulgum.

**Timber and Uses** — Pale brown, firm and tough but easily worked. Sapwood liable to attack by *Lycetus*. It is used for furniture, flooring, lining, plywood, turnery, brush stocks etc. Said to be very strong for its weight. Old trees often have a large core of dark brown heartwood which has a characteristic smell and gives off a pleasant aroma when burning. 450-725kg per cubic metre.



0 2 4 6 cm

Plate 11  
*Sloanea woollsii* F. Muell.

# FAMILY MALVACEAE

## CHARACTERISTICS OF THE FAMILY IN N.S.W.

Cosmopolitan with 75 genera throughout the world. Of the sixteen genera and 144 species in Australia only three species of the genus *Hibiscus* occur in the rainforests of N.S.W.

Whereas *H. heterophyllus* and *H. splendens* are only small trees or tall shrubs, *H. tiliaceus* may reach a height of 10m and a diameter of 50cm in N.S.W.

The trunk is neither buttressed nor flanged.

**Outer Bark** — Grey, smooth (except for large trees of *H. tiliaceus* which may be fissured) with numerous small prickles on *H. heterophyllus* and *H. splendens*. Underbark brown.

**Inner Bark** — Blaze green with narrow white bands (*H. splendens*), yellow turning to dirty greenish-brown (*H. heterophyllus*) or banded pale pink and white turning brown and creamy-pink (*H. tiliaceus*).

**Branchlets** — Thick, green and prickly in *H. heterophyllus* and *H. splendens*. Covered with soft white hairs in *H. splendens*. Stipules insignificant (*H. heterophyllus*); furry, narrow, 10-15mm long (*H. splendens*) or smooth, broad oblong, 10-30mm long (*H. tiliaceus*).

**Leaves** — Alternate, simple, heart-shaped (*H. tiliaceus* and *H. splendens* in part) or three to five-lobed (*H. heterophyllus* and *H. splendens* in part). Densely white-hairy (*H. splendens*), felty-grey on the lower side (*H. tiliaceus*) or scarcely hairy (*H. heterophyllus*).

**Flowers** — Large to 7cm diameter, white with a deep red centre (*H. heterophyllus*), pink (*H. splendens*) or yellow with a red centre (*H. tiliaceus*), bisexual, regular. Either singly in the leaf axils (*H. heterophyllus* and *H. splendens*) or in terminal racemes (*H. tiliaceus*).

At the base of each flower is a calyx-like cup of five to twelve joined bracteoles. Sepals and petals five. Petals twisted in bud. Stamens numerous and partly joined into a tube around the five-branched style.

**Fruit**— A dry capsule, 1.5-3cm long, pointed egg-shaped, velvety or hairy, opening into five cells each containing several hard seeds.

**Habitat**— Either on the edge of littoral, riverine and dry rainforests (*H. heterophyllus*, *H. splendens*) or bordering on brackish swamps and estuaries (*H. tiliaceus*).

**Distribution**— There are 300 species of *Hibiscus* in the world. 30 of the 40 Australian species are restricted to this country and include *H. heterophyllus* and *H. splendens* which occur from North Queensland to the Illawarra, N.S.W. *H. tiliaceus* is found throughout the tropical Pacific and as far south as Port Macquarie, N.S.W.

**Timber and Uses**— White to pale yellow, soft, tough and open-grained (*H. heterophyllus* and *H. splendens*) or greenish, close-grained, figured (*H. tiliaceus*).

Roots and young shoots were eaten by the aborigines.

# KEY TO RAINFOREST TREE SPECIES OF MALVACEAE IN N.S.W.

## A. USING LEAVES AND BRANCHLETS ONLY

1. Leaves heart-shaped, smooth on the upper surface,  
without prickles on the branchlets ..... *Hibiscus tiliaceus* L.
1. Leaves not heart-shaped but often lobed, particularly on young plants,  
furry and/or with prickly branchlets ..... 2
2. Leaves with soft white hairs on both sides.  
Stipules 10-15mm long ..... *H. splendens* Fraser ex Graham
2. Leaves almost smooth, green. Stipules insignificant,  
not exceeding 1mm long ..... *H. heterophyllus* Vent.

## B. USING BARK ONLY

1. Blaze pale pink and white banded. Prickles absent  
from trunk and branches ..... *Hibiscus tiliaceus* L.
1. Blaze not pink. Prickles present on trunk and branches ..... 2
2. Blaze green and white banded ..... *H. splendens* Fraser ex Graham
2. Blaze yellow with a red-brown outer margin .... *H. heterophyllus* Vent.

## HIBISCUS HETEROPHYLLUS Vent.

**Reference**— Hort. Malm. t. 103.

**Derivation**— Hibiscus from Greek "hibiscos" the marsh-mallow; heterophyllus from Greek "heteros" different and "phyllon" a leaf, referring to the great variation in leaf shape on the same plant.

**Common Name**— Native Rosella, Native Cottonwood.

**Standard Trade Name**— None.

A shrub or small tree sometimes attaining a height of 6m and a stem diameter of about 25cm.

**Trunk**— Usually straight and cylindrical.

**Outer Bark**— *Green at first, but becoming grey or greyish-white on large trees*, smooth except for small prickles, *often with a striped appearance due to the presence of vertical rows of dark brown lenticels. Underbark chocolate-brown.* Outer surface of live bark dark green with vertical orange-brown streaks.

**Inner Bark**— Blaze on a tree 25cm diameter *yellow with a reddish-brown outer margin.* The bark yields a strong cordage. The surface darkens to a dirty greenish-brown after a few minutes exposure. No distinct taste or smell. 9mm thick.

**Branchlets**— Thick, green, *usually bearing small conical prickles. Stipules insignificant, not exceeding 1mm long, quickly shed. Lenticels obscure or absent. Leaf buds golden woolly.*

**Leaves**— Alternate, *simple or deeply three-lobed*, linear, lanceolate or elliptic-oblong, 6-15cm long, *usually wavy or finely toothed, scarcely hairy*, sometimes white underneath, *often with small prickles along the midrib, lateral veins and stalks.* Leaf stalks 6-50mm long.

**Venation**— Midrib, lateral and net veins visible on both surfaces.

**Flowers**— *White or more rarely yellow with a deep red centre*, singly on short stalks in the upper axils. *Bracteoles about six, not joined, narrow, 1-1.5cm long, forming a false outer calyx. Calyx green, five-lobed, 2cm long, densely hairy. Petals five, up to 7cm long, showy, joined at the base. Stamens joined into a purple column. Flowering period October to February.*

**Fruit**— *A capsule, light brown, egg-shaped, acutely pointed, bristly or fawn silky hairy, 1.5-2cm long with five valves. The persistent calyx lobes are longer than the fruit. Seeds several in each cell, dark brown with scattered small warts and curved striations, angular, curved pyramid-shaped, 3-4mm long. Fruit ripe December to March.*

**Habitat**— In and around the fringe of littoral, riverine and dry rainforests.

**Distribution**— Kiama, N.S.W. to Mareeba, North Queensland. The N.S.W. specimens belong to the subspecies *heterophyllus*. Recorded in N.S.W. from Kiama, Macquarie Pass, Dapto, Nepean River, Colo River, Wyong, Singleton, Upper Williams River, Woko, Myall Lakes N.P., Seal Rocks, Cape Hawke, Black Head, Saltwater, Coocumbac Island, Wingham, Black Creek F.R., Bellangry S.F., Kunderang Brook, Chandler Gorge, Willi Willi Caves N.R., Dorrigo N.P., Bellingen, Madmans Creek F.P., Hortons Creek, Blandford Creek, Chandlers Creek, OBX Creek, Guy Fawkes River N.P., Girard S.F., Boonoo Boonoo Falls, Tabulum, Mt. Pikapene S.F., Banyabba S.F., Richmond Range S.F., Toonambar S.F., Yabbra S.F., Beaury S.F., Acacia Plateau, Roseberry S.F., Wiangaree S.F., Wilson Park, Mt. Warning N.P. and Tweed Heads.

**Timber and Uses**— Wood white to pale yellow, soft and easy to work, open grain, tough, perishable in the weather. Could be used for musical instruments. In North Queensland, the aborigines ate the roots of young plants, young shoots and leaves without any preparation. The white strong fibre from the bark was used by aborigines for rope, fishing lines, twine for nets, thread and dilly bags.



0 1 2 cm  
x 5.

Plate 12  
*Hibiscus heterophyllus* Vent.

## HIBISCUS SPLENDENS Fraser ex Graham

**Synonym**— *Abelmoschus splendens* Walp.

**Reference**— Grah. in Edinb. Phil. Journ., Apr-June, 175, 1830.

**Derivation**— *Splendens* from Latin "splendens" brilliant, referring to the showy flowers.

**Common Name**— Pink Cottonwood, Hollyhock Tree, Splendid Hibiscus.

**Standard Trade Name**— None.

Up to 6m tall and 7cm diameter. A most attractive flower of single days duration on a short-lived plant which quickly becomes sparse-foliaged.

**Trunk**— Cylindrical, not buttressed or flanged.

**Outer Bark**— Green with faint paler vertical lines, very thin, smooth with numerous small sharp prickles. Underbark green. Outer surface of live bark green.

**Inner Bark**— Blaze on a tree 7cm diameter green with narrow white bands. No change of colour on exposure. No taste or smell. 6mm thick.

**Branchlets**— Moderately thick, covered by soft white hairs and armed with small scattered prickles or bristles. *Stipules* two, furry, very narrow, 10-15mm long on either side of the leaf stalk.

**Leaves**— Alternate, simple, regularly toothed, heart-shaped or broadly three to five-lobed, 7-20cm long. Tapering to a fine point at the tip and abruptly at the base. Densely covered in velvety white hairs on both surfaces. Leaf stalks 1-12cm long with small scattered prickles or bristles and dense fur.

**Venation**— Midrib and lateral veins visible on both surfaces.

**Flowers**— Rose pink, singly in leaf axils, about 7cm long, flower stalks 2-5 cm long with ten to fifteen hairy, narrow bracteoles, 2-5 cm long forming a false calyx. Calyx densely hairy, lanceolate, 2.5 cm long, divided into five lobes. Petals five, rose pink with darker veining, joined towards the base, 7-10 cm long. Stamens joined into a short column up to 3 cm long. Flowering period October to December.

**Fruit**— Capsule, grey-brown, egg-shaped and pointed, five-celled, 2-3cm long, silky with irritating hairs. Seeds several in each cell, dark brown with numerous small warts and curved striations, angular pyramid shaped, 3-4mm long. Fruit ripe January to February.

**Habitat**— Commonly on rather dry rainforest margins or in clearings.

**Distribution**— Bulli, N.S.W. to Blackdown Tableland, Queensland. Recorded in N.S.W. from Bulli, Bulahdelah, South Brother Mountain, Port Macquarie, Hat Head, Newry S.F., Bundagen F.R., Pine Creek S.F., Bellingen, Boambee, Bruxner Park F.R., Ramornie, Woodburn and Cudgera.

**Timber and Uses**— No uses known.



0 1 2 cm.  
E.S.

Plate 13  
*Hibiscus splendens* Fraser ex Graham

## HIBISCUS TILIACEUS L.

**Reference**— Dc. Prod. I, 454.

**Derivation**— Tiliaceus because the leaves resemble those of the lime or linden tree, *Tilia europaea*.

**Common Name**— Coast Cottonwood, Coast Hibiscus, Sea Hibiscus, Native Hibiscus, Native Rosella.

**Standard Trade Name**— Coast Cottonwood.

A medium sized heavily branched tree up to 10m tall and 50cm diameter with an ornamental dense grey-green crown.

**Trunk**— Cylindrical, not buttressed or flanged.

**Outer Bark**— Grey with black vertical fissures on larger trees, very hard and thick. (Small trees are grey, smooth with brown horizontally elongated lenticels). Underbark chocolate brown with thin, cream bands. Outer surface of live bark with pink and cream interlocked strands.

**Inner Bark**— Blaze on a tree 50cm diameter of pale pink and white vertical bands, turning brown and creamy-pink on exposure. No taste or smell. 30mm thick.

**Branchlets**— Thick, green where leafy, turning greenish-black with age. Stipules large, broadly oblong, 1-3cm long, quickly shed as the leaves expand leaving conspicuous scars. New leaves smooth.

**Leaves**— Alternate, simple, entire on adult leaves, (finely toothed on juveniles), heart shaped, 5-15cm long, quickly tapering to a short point at the tip and lobed at the base. Smooth bright green above, felty grey below. Leaf stalk 4-10cm long, mealy grey.

**Venation**— Midrib with three lateral veins on either side radiating from the base. Visible both sides. Net veins visible below.

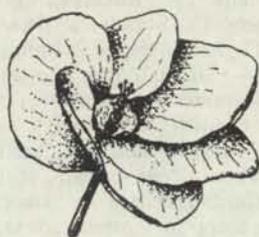
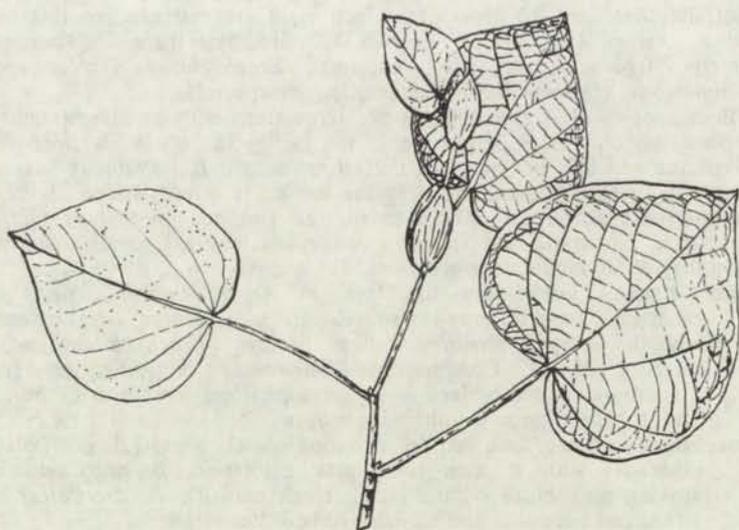
**Flowers**— Yellow with a red centre, often turning red before falling 6-7cm long in a terminal raceme. Each flower on a furry stalk, 2-4cm long with a small leaf or bract at its base. Flower in a cup formed by the fusion of about twelve narrow bracteoles with only the tips free. Sepals five, shortly furry, pointed, 2cm long, joined at their bases. Petals five, 6-7cm long. Stamens numerous, partly joined into a column around the five styles and stigmas. Flowering period September to February.

**Fruit**— Capsule, yellowish-brown, velvety, globular-pointed, 1.5-2cm long, splitting open into five or four segments each containing several dull brown kidney-shaped seeds, 5mm long and 3mm broad covered with numerous small fawn raised dots. Fruit ripe June to August.

**Habitat**— Common bordering on brackish swamp-forest, mangroves and lowland subtropical rainforest on alluvial flats near the sea.

**Distribution**— Port Macquarie, N.S.W. and along the Queensland and Northern Territory coastlines, New Guinea and Pacific Islands. Recorded in N.S.W. from Sea Acres Port Macquarie, Lord Howe Island, Crystal Waters, Arwarra Headland, Maclean, Iluka, Woodburn, Broadwater, Ballina, Brunswick Heads N.R., Stotts Island N.R., Terranora and Tweed Heads.

**Timber and Uses**— Invisible green, easy to work, close-grained, beautifully marked and takes a good polish. The fibre from the bark is used in many countries as twine. Queensland aborigines have used the roots and young shoots as food. In the West Indies, the mucilaginous bark is sucked for food.



0 2 4 cm.

E.S.

Plate 14  
*Hibiscus tiliaceus* L.

# FAMILY STERCULIACEAE

## CHARACTERISTICS OF THE FAMILY IN N.S.W.

This large family of 65 genera and about 1100 species is found throughout the tropical and subtropical zones of the world. It differs from the family Malvaceae in the anthers being two — rather than one-celled. In Australia there are 22 genera of which eight are restricted to this country and a total of 171 species. In N.S.W. rainforests there are four genera, namely *Argyrodendron* (two species), *Brachychiton* (three species), *Commersonia* (two species) and *Sterculia* (one species).

Both species of *Argyrodendron* are large trees with prominent buttresses, whereas the only other large tree in the family in N.S.W. is *Brachychiton acerifolius* which is not buttressed. *B. discolor* and *B. populneus* have rather stout unbuttressed trunks, which in the former is often swollen at the base. *Commersonia fraseri* is only a small tree and does not show buttresses, whereas *C. bartramia* and *Sterculia quadrifida* may exhibit slight buttressing when they attain moderate proportions.

**Outer Bark**— Dark grey to black in *Argyrodendron actinophyllum*, otherwise grey to grey-brown. Rough and fissured (*Argyrodendron*), smooth between shallow vertical fissures (*Brachychiton*), scaly in large trees of *Commersonia bartramia* or otherwise smooth. Underbark brownish-black in *A. actinophyllum*, cream in *C. bartramia* and *A. trifoliolatum* or otherwise brown.

**Inner Bark**— Blaze dark red (*A. actinophyllum*), white (*B. acerifolius*) or otherwise with at least some pink coloration. *B. populneus* has a striking pink blaze with a purple-black network. *B. acerifolius* smells like sliced cucumber and *C. fraseri* like water melon.

**Branchlets**— Characteristically thick in all species except *B. populneus* and *C. fraseri*. Buds and new shoots scaly (*Argyrodendron*), with starry hairs (*B. discolor*), furry or downy (*Commersonia*) or otherwise smooth. Stipules if present inconspicuous, except in *B. acerifolius* and *C. fraseri* where 2-4mm long. Quickly shed in all except *C. fraseri*.

**Leaves**— Simple (*Sterculia* and *Commersonia* in part), lobed (*Brachychiton*, *Commersonia fraseri*), compound with three leaflets (*A. trifoliolatum*) or with commonly seven radiating leaflets (*A. actinophyllum*). Alternate and not toothed except in *Commersonia*. Lower surface with silvery-brown scales (*A. trifoliolatum*), downy (*B. discolor*, *Commersonia*) or smooth. Leaf stalks usually rather long, smooth except in *Commersonia* where downy. Swollen at both ends forming a bend with the leaf blade in *Sterculia quarifida*. Deciduous in drought periods or before flowering in *B. acerifolius*, *B. discolor* and *Sterculia quadrifida*.

**Venation**— Three to seven major veins radiating from the base in *Brachychiton*, otherwise feather-veined. Hollow glands in some junctions of the lateral veins and the midrib in *A. actinophyllum* and *Sterculia quadrifida*. Major lateral veins four to nine on each side (*Commersonia*, *Sterculia*) or twelve to twenty (*Argyrodendron*).

**Flowers**— Red (*B. acerifolius*), dusky pink (*B. discolor*), cream with chocolate or reddish spots inside (*B. populneus*) or otherwise white to cream. Bisexual (*Commersonia*) or individual flowers of a single sex only (*Argyrodendron*, *Brachychiton* and *Sterculia*). Clustered into racemes (*Sterculia*), panicles (*Argyrodendron*, *Brachychiton*) or cymes (*Commersonia*). The showy portion of the flower is the commonly bell-shaped calyx of five lobes (four in *S. quadrifida* which are often joined at the tips), furry or hairy outside (except in *Argyrodendron* which are scaly and *B. acerifolius* which is smooth). Petals only present in *Commersonia*, five, split to the base rather than bell-shaped, narrow and inconspicuous in *C. bartramia* but obvious

and resembling the calyx in *C. fraseri*. Staminodes five, only conspicuous in *C. fraseri* where they resemble the petals. Stamens united into a column (except *Commersonia* where they are separate), fifteen to twenty (*Argyrodendron*, *B. acerifolius*, *B. populneus*), 25-30 (*B. discolor*) or five (*Commersonia*). Female flowers with three to five separate carpels, except *Commersonia* where they are joined at the base.

**Fruit**— A dry five-valved capsule containing two seeds in each valve (*Commersonia*), separate winged carpels (*Argyrodendron*) or boat-shaped follicles (stalked in *Brachychiton* or sessile in *Sterculia*). Within the follicles the large black seeds are smooth and in rows (*Sterculia*) or partially covered by a bristly cloak and irregularly arranged (*Brachychiton*).

**Habitat**— Mostly in subtropical rainforest or in mixtures with warm temperate rainforest either as the dominant climax species (*Argyrodendron*, *B. acerifolius*) or as regrowth (*Commersonia*). *A. trifoliolatum* is mainly below 600m altitude, whilst *A. actinophyllum* is above that altitude. Several species are restricted to dry rainforest and scrub (*B. discolor* and *B. populneus*). *S. quadrifida* is confined in N.S.W. to littoral and riverine rainforests.

**Distribution**— The four genera found in N.S.W. rainforests are of tropical origin; but have 42 of the 48 Australian species restricted to this country which strongly suggests that they may have evolved here from ancient stock. Fossil leaves resembling *Brachychiton* have been found in beds in south-eastern Australia which are about 50 million years old. *Sterculia* contains about 150 species which are mainly in the tropics, particularly Malaysia. (Of the four species in Australia, two are endemic). However, the N.S.W. species, *S. quadrifida* occurs from Broken Head to New Guinea.

*Brachychiton* is restricted to only Australia and New Guinea, with 29 of the 31 species confined to Australia. Of the N.S.W. species, *B. populneus* ranges through the drier areas from N.E. Victoria to North Queensland. *B. acerifolius* extends from the Illawarra also to North Queensland. *B. discolor* is restricted to the Dungog to Mackay area.

*Argyrodendron* consists of four species which are all in Australia. Only one of these species occurs further north in New Guinea and Indonesia, namely *A. trifoliolatum* which reaches its southern limit at Gloucester, N.S.W. The other N.S.W. species, *A. actinophyllum* ranges also from Gloucester in the south to Gympie, Queensland.

*Commersonia* has a similar distribution to *Argyrodendron* in that all twelve species are found in Australia, with only two of these extending as far north as Malaysia. One of these, *C. bartramia* reaches its southern limit at Urunga, N.S.W. *C. fraseri* is confined to coastal N.S.W., south to Gippsland, Victoria and north to Mt. Glorious in S.E. Queensland.

**Timber and Uses**— White, soft and light (*Brachychiton*, *Commersonia*, *Sterculia*) or pink- to red-brown, strong with a silky oak grain and useful for cabinets, tool handles and flooring (*Argyrodendron*). The aborigines made rope from the bark of *B. populneus*, *Commersonia* and *Sterculia*. The seeds of *B. populneus* and *Sterculia* are edible.

# KEY TO RAINFOREST TREE SPECIES OF STERCULIACEAE IN N.S.W.

## A. USING LEAVES AND BRANCHLETS ONLY

1. Leaves compound with separate leaflets ..... 2
  2. Leaflets three with silvery-brown scales beneath ..... *Argyrodendron trifoliolatum* F. Muell.
  2. Leaflets commonly five to nine,  
not scaly beneath ..... *Argyrodendron actinophyllum*  
(F.M. Bail.) H.L. Edlin
1. Leaves simple or lobed ..... 3
  3. Leaves toothed rather than merely lobed ..... 4
    4. Teeth four to six per cm ..... *Commersonia bartramia* (L.) Merr.
    4. Teeth two to three per cm ..... *Commersonia fraseri* J. Gay
  - Leaves lobed or entire without teeth ..... 5
    5. Leaves downy white beneath ..... *Brachychiton discolor* F. Muell.
    5. Leaves smooth beneath ..... 6
      6. Leaf stalks commonly over 7cm long ..... *Brachychiton acerifolius* F. Muell.
      6. Leaf stalks commonly under 7cm long ..... 7
        7. Leaves drawn out to a fine point ..... *Brachychiton populneus*  
(Schott et Endl.) R. Br.
        7. Leaves quickly tapering to a blunt point ..... *Sterculia quadrifida*  
R. Br.

## B. USING BARK ONLY

1. Bark rough and fissured ..... 1
  2. Blaze dark red ..... *Argyrodendron actinophyllum* (F.M. Bail.)  
H.L. Edlin
  2. Blaze pink with cream streaks ..... *Argyrodendron trifoliolatum* F. Muell.
1. Bark smooth between shallow fissures ..... 3
  3. Blaze white with a cucumber smell ..... *Brachychiton acerifolius* F. Muell.
  3. Blaze with some pink colour ..... 4
    4. Blaze pink with purple-black network ..... *Brachychiton populneus*  
(Schott et Endl.) R. Br.
    4. Blaze cream turning pink ..... *Brachychiton discolor* F. Muell.
1. Bark smooth to scaly ..... 5
  5. Underbark cream ..... *Commersonia bartramia* (L.) Merr.
  5. Underbark brown ..... 6
    6. Lenticels brown, horizontally elongated ... *Commersonia fraseri* J. Gay
    6. Lenticels inconspicuous or absent ..... *Sterculia quadrifida* R. Br.

## ARGYRONDENDON ACTINOPHYLLUM (F.M. Bail.)

H.L. Edlin

Synonym— *Tarrietia actinophylla* F.M. Bail., *Heritiera actinophylla* (F.M. Bail.) Kosterm.

Reference— New Phytologist, 34, 10, 1935.

Derivation— *Argyrodendron* from Greek “argyros” silver and “dendron” a tree, referring to the silvery underside of the leaflets of the type species *A. trifoliolatum*; *actinophyllum* from Greek “aktis” ray and “phyllon” a leaf, referring to the radiating leaflets.

Common Name— Black Booyong, Black Jack, Blush Tulip Oak, Tulip Oak, Stave Wood, Crowsfoot Elm.

Standard Trade Name— Blush Tulip Oak.

A large tree attaining a height of 50m and a stem diameter of 170cm. Crown often fairly dense, spreading, and of an attractive shade of dark green.

Trunk— Usually *prominently buttressed*, tall and straight.

Outer Bark— *Grey, dark grey or sometimes almost black*, rough, scaly and *fissured* in large trees, shed in small irregular pieces. *Underbark brownish-black*. Outer surface of live bark cream with pink vertical bands.

Inner Bark— Blaze on a tree 75cm diameter *dark red* becoming paler towards the sapwood; inner margin yellowish, changing to pale brown after a few minutes exposure. Ray markings show in short dark vertical lines on the surface of the blaze. Bark fibrous and appears to be arranged in layers. Astringent to taste, slight doughy smell. 6mm thick.

Branchlets— Moderately thick, green, smooth, stipules absent. Young shoots with fawn scales.

Leaves— Alternate, consisting of commonly *seven* (three to nine) *leaflets radiating from the top of the leaf stalk*. Not-toothed. Leaflets elliptical, 7-15cm long, and usually drawn out into a fairly long blunt point at the tip, tapering towards the base. Dull dark green above, somewhat paler below. Not hairy, and *differing from *Argyrodendron trifoliolatum* in the absence of scurfy scales on the underside* of the leaves. Leaf stalks 7-23cm long; leaflet stalks 6-13mm long.

Venation— Midrib raised on both surfaces but more prominent on the underside. Lateral and net veins distinct on both surfaces, but more conspicuous beneath. Major lateral veins twelve to twenty on either side. *Hollow glands present* at the junction of some lateral veins and the midrib.

Flowers— White, slightly lemon-scented, bell-shaped, in somewhat densely branched panicles in the leaf axils, sometimes longer than the leaves. Flower stalks slender, about 2-3mm long, clothed as well as the flowers in scattered silvery or brownish scurfy scales. Separate male and female flowers. Calyx broadly bell-shaped, tube creamy-green, 3-4mm long with five triangular lobes 3-4mm long, creamy green outside and smooth white within. Petals absent. Stamens united in the male flowers into a column with ten or more anthers on top. Female flowers have up to five distinct carpels. Flowering period March to April.

Fruit— *Two to four separate carpels or samaras*, consisting of a small round seed about 6-8mm diameter to which is attached a *flat thin wing 2-6cm long and 1-5cm broad*, clothed with coppery or brownish scurfy scales. The seeds which are soft, green and pea-like are extremely mucilaginous and become very slimy when chewed. *Fruit ripe May to June*.

Habitat— On the volcanic soils of the subtropical, riverine and dry rainforests; but also scattered in warm temperate rainforests on the poorer sedimentary soils where locally enriched. *Prefers altitudes above 600m on the north coast*.

**Distribution**— Gloucester, N.S.W. to Gympie, Queensland. The N.S.W. specimens belong to ssp. *actinophyllum*. Ssp. *diversifolium* ranges from Sarina to Proserpine, North Queensland.

Recorded in N.S.W. from Allyn and Williams Rivers, Craven S.F., Mograni Mountain, Coneac, Woko, Seal Rocks, Cape Hawke, Coochumbac Island, Wingham Brush, Elands, Boorganna N.R., Black Creek F.R., Middlebrother Mountain, Northbrother Mountain, Doyles River S.F., Mt. Boss S.F., Bellangry S.F., Kunderang Brook, Chandlers Gorge, Carrai S.F., Willi Willi Caves N.R., Way Way S.F., Scotchman S.F., Roses Creek S.F., Oakes S.F., New England N.P., Bellinger River S.F., Deervale, Dorrigo N.P., Never Never S.F., Tuckers Nob S.F., Orara West S.F., Bruxner Park F.R., Mt. Coramba, Orara East S.F., Woolgoolga Creek F.R., Bagawa S.F., Kangaroo River S.F., Wild Cattle Creek S.F., Mobong Creek F.R., Red Cedar F.R., Moonpar S.F., Clouds Creek S.F., Hyland S.F., Marengo S.F., Chaelundi S.F., Hortons Creek, Blandford Creek, Chandlers Creek, Mt. Pikapene S.F., Cherry Tree S.F., Richmond Range S.F., Murray Scrub, Toonumbar S.F., Unumgar S.F., Yabbra S.F., Beaury S.F., Koreelah S.F., Acacia Plateau, Mt. Wilson F.P., Mt. Clunie F.P., Nothofagus Mountain F.R., Mt. Lindesay, Mt. Glennie, Levers Plateau, Roseberry S.F., Wiangaree S.F., Goonimbar S.F., Terania Creek, Whian Whian S.F., Broken Head N.R., Brunswick Heads N.R., Mt. Warning N.P., Mebbin S.F., Pumbenbil Creek, Limpinwood N.R. and Couchy Creek.

**Timber and Uses**— Pink or brownish, straight-grained and strong with an ornamental silky oak-like grain. Very suitable for bent work, general building purposes, cabinet work, tool handles, fishing rods etc. Sapwood liable to destruction by borers. Rots quickly in the ground. 600-1000kg per cubic metre.



Plate 15  
*Argyroderon actinophyllum* (F.M. Bail.) H.L. Edlin

## ARGYRODENDRON TRIFOLIOLATUM F. Muell.

**Synonym**—*Tarrietia argyrodendron* Benth., *Heritiera trifoliata* (F. Muell.) Kosterm.

**Reference**—Fragm. Phyt. Aust. 1:2, 1858-59.

**Derivation**—Trifoliolatum from Latin "tres" three and "foliola" a leaflet, referring to the compound leaf of three leaflets.

**Common Name**—White Booyong, Brown Crowsfoot Elm, Hickory, Red Booyong, Brown Tulip Oak, Brown Booyong.

**Standard Trade Name**—Brown Tulip Oak.

A large tree exceeding 40m in height and attaining a diameter of 100cm. The crown is rather dense and *when viewed from beneath, the leaves often appear brownish or copper-coloured.*

**Trunk**—Cylindrical, except at the base where it is usually *strongly buttressed.*

**Outer Bark**—*Brown or grey, fissured, sometimes scaly, cracking longitudinally and shedding in irregular flakes. Underbark cream. Outer surface of live bark deep red.*

**Inner Bark**—Blaze on a tree 60cm diameter *pinkish with streaks of cream* and a yellow layer next to the sapwood. Blaze on spurs white to pale pink. When exposed, the inner bark shows thin transverse white layers. The inner-most layer and sapwood change to tan-brown on exposure. Sapwood white. Astringent taste but no smell. 8mm thick.

**Branchlets**—Moderately thick, grey, roughened by the presence of numerous lenticles. Stipules absent. Young shoots densely covered by silver-brown scales.

**Leaves**—Alternate, pinnate with *three leaflets*, margins entire, elliptical to narrowly elliptical, 7-14cm long, tapering to a blunt, narrow point at the tip or occasionally shortly tapered, gradually tapering at base. Smooth and green on the upper surface, smooth, *silvery-grey to copper-coloured beneath* due to small numerous scales. Leaf stalks 2-4cm long, clothed in fine rust-coloured scales. Leaflet stalks 5-6mm long, rusty-red and wrinkled at their bases.

**Venation**—Midrib distinct and prominently raised on both upper and lower surfaces, twelve to fifteen major lateral veins barely visible on either surface, *glands in the axils absent.*

**Flowers**—Silvery-brown on the outside, cream inside, in much branched panicles in the leaf axils, sometimes longer than the leaves. Flowers about 6mm diameter on distinct slender stalks. Calyx 3-4mm long, broadly bell-shaped with five triangular lobes at the rim. Petals absent. Stamens united in the male flowers into a column bearing a small round mass of ten or more anthers at the top. In the female flowers there are three to five more or less distinct carpels, each tapering at their tip into a style. Flowering period July to September.

**Fruit**—*One to four separate carpels or samaras* consisting of a brown scaly round seed 8-13mm diameter, attached to a thin flat silvery-brown scaly wing, 3cm long and 1.5cm wide. *Fruit ripe October to January.*

**Habitat**—Very common in *lowland subtropical rainforest* on basaltic or alluvial soil up to 600m altitude.

**Distribution**—Hastings River, N.S.W. to Gladstone, Queensland with isolated occurrences at Eungella and Atherton, Celebes and New Guinea. There is a single tree of indeterminate origin on a pastoral property near Paterson in the Hunter valley.

Recorded in N.S.W. from Bellangry S.F., Jarrett Park Bellingen, Pine Creek S.F., Dorrigo N.P., Tuckers Nob, Bruxner Park F.R., Mt. Coramba, Coramba, Woolgoolga Creek F.R., Madmans Creek F.P., Hortons Creek, Mt. Pikapene S.F., Richmond Range S.F., Toonumbar S.F., Murray Scrub, Unumgar S.F., Acacia Plateau, Mt. Lindesay F.R., Roseberry S.F., Levers Plateau, Wiangaree S.F., Goonimbar S.F., Terania Creek, Big Scrub F.R., Wilson Park, Boatharbour, Booyong, Johnstons Scrub, Davis Scrub N.R., Victoria Park N.R., Hayters Hill,

Brunswick Heads N.R., Mebbin S.F., Pumpenbil Creek, Limpinwood N.R., Couchy Creek, Murwillumbah, Tumbulgum and Stotts Island N.R.

**Timber and Uses**— Dark brown to red-brown, straight-grained and strong, with a grain like silky oak. Used for indoor work, lining, flooring, turnery, cabinet work. 600-1000kg per cubic metre.



0 1 2 cm

Plate 16  
*Argyrodendron trifoliolatum* F. Muell.

## BRACHYCHITON ACERIFOLIUS F. Muell.

**Synonym**— *Sterculia acerifolia* A. Cunn.

**Reference**— *Fragm. Phyt. Aust.* I, 1, 1858-9.

**Derivation**— Brachychiton from Greek "brachys" short, "chiton" a coat of mail in allusion to the loose bristly outer covering of the seeds; acerifolius from Latin "acer" and maple tree, "folius" a leaf, referring to the similarity in leaf shape.

**Common Name**— Flame Tree, Illawarra Flame Tree, Flame Kurrajong.

**Standard Trade Name**— Flame Kurrajong.

A large tree attaining a height of 37m and a stem diameter of 100cm. Commonly cultivated for its showy flame red flowers massed on the tree whilst leafless.

**Trunk**— Not buttressed or swollen at the base, usually fairly tall, straight and cylindrical. Emits a *characteristic hollow sound when tapped* with the knuckles.

**Outer Bark**— *Grey or brown, fissured*, sometimes with the surface slightly ridged vertically with cracks down the centre of the ridges. Underbark brown. Outer surface of live bark creamy-white to pale pink.

**Inner Bark**— *Blaze* on a tree 90cm diameter *white*, the outer layer patterned by a few fine pale brown horizontal straight lines. The middle layer consists of a series of thread-like curved lines extending to an *inner distinct fibrous net-like layer* about one third the thickness of the blaze. No change in colour on exposure. No taste, but has a cucumber-like smell. 30mm thick.

**Branchlets**— Thick, green, smooth, marked by leaf scars. Stipules narrow, fawn downy, 3-4mm long, quickly shed as the leaves expand. Leaf buds fawn downy.

**Leaves**— Alternate, *very variable in shape, three-lobed and entire leaves* may occur on the same adult tree. Not toothed. Narrowly egg-shaped, 10-30cm long. On luxuriant young growth the leaves are deeply divided into five to seven lobes and may be 25cm in diameter. Shining above, smooth. Green both surfaces, paler beneath. Leaf stalks 7-25cm long.

**Venation**— Midrib and lateral veins distinct on both surfaces. Midrib raised on both surfaces but more prominent beneath. The entire leaves are generally three to five and the lobed leaves five to seven veined.

**Flowers**— *Red*, large, in showy panicles 18-20cm long, springing from the forks of the upper leaves or from the scars of the fallen leaves. Individual flowers bell-shaped, 1cm or over in diameter on *stalks 7-11mm long*. Separate male and female flowers. Sepals five-lobed, red, smooth up to 1cm long. Petals absent. *Stamens* in male flowers *ten to fifteen*, joined into a column. Female flowers with separate carpels on a short stalk. Flowering period October to January.

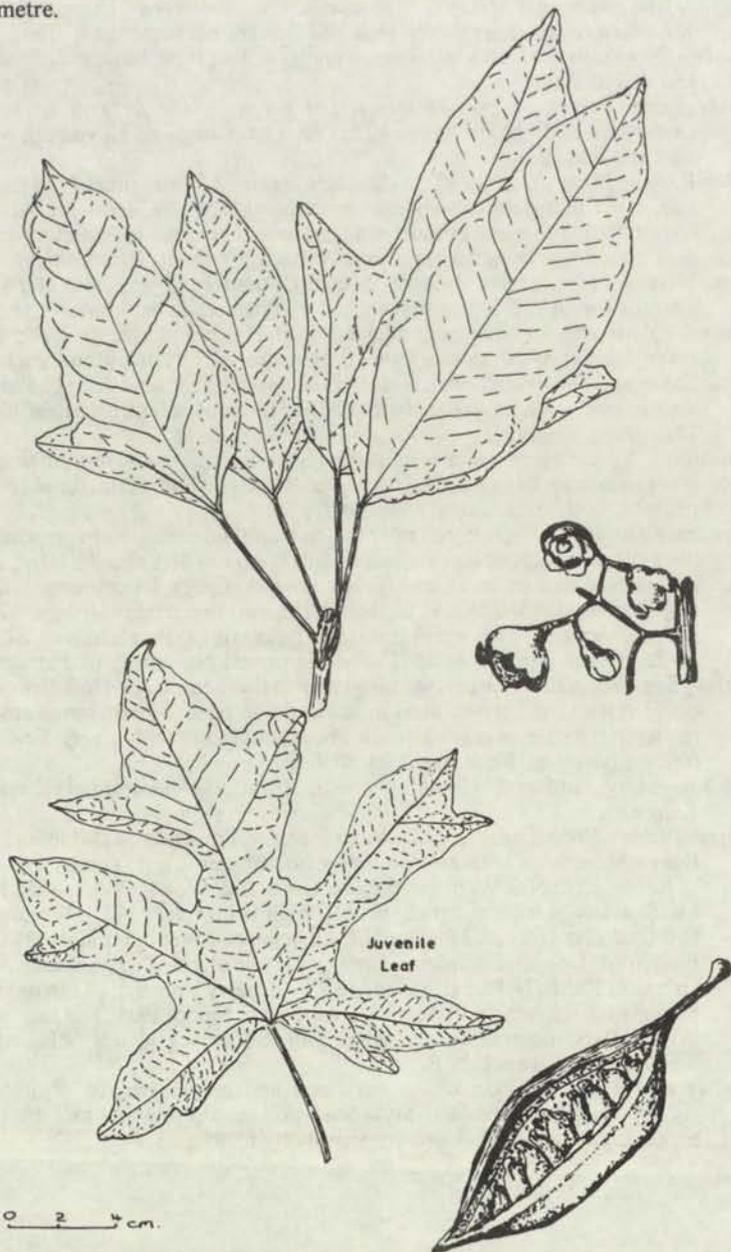
**Fruit**— Three to five separate carpels forming a cluster of follicles about 10-18cm long, boat-shaped with a distinct point at the tip. The numerous seeds are liberated by the follicle opening along one side. Seeds somewhat oval, about 1cm long *enclosed in a yellow hairy covering*. Fruit ripe May to July.

**Habitat**— Lowland subtropical rainforest on red basaltic loam and rich alluvial flats, but also on the poorer sedimentary soils in sheltered valleys.

**Distribution**— Illawarra, N.S.W. to Iron Range on Cape York, North Queensland. Recorded in N.S.W. from Jamberoo, Minnamurra Falls, Albion Park, Peats Ridge, Gosford, Gap Creek F.R., Muswellbrook, Cedar Brush N.R., Allyn and Williams Rivers, Craven S.F., Woko, Cocumbac Island, Wingham Brush, Boorganna N.R., Doyles River S.F., Mt. Boss S.F., Kunderang Brook, Carrai S.F., New England N.P., Bellinger River S.F., Deervale, Dorrigo N.P., Jarrett Park Bellingen, Orara West S.F., Bruxner Park F.R., Mt. Coramba, Woolgoolga Creek F.R., Bagawa S.F., Kangaroo River S.F., Wild Cattle Creek S.F., Mobong Creek F.R., Moonpar S.F., Hortons Creek, Blandford Creek, Chandlers Creek, Mt. Hyland, Marengo S.F., Gibraltar Range N.P., Willowie Scrub, Ewingar S.F., Girard S.F., Richmond Range S.F., Toonumbar S.F., Murray Scrub, Unumgar S.F., Yabba S.F., Beaury

S.F., Koreelah S.F., Acacia Plateau, Mt. Wilson F.P., Mt. Clunie F.P., Nothofagus Mountain F.R., Mt. Lindesay, Moore Park, Roseberry S.F., Wiangaree S.F., Goonumbar S.F., Terania Creek, Whian Whian S.F., Big Scrub F.R., Minyon Falls F.R., Wilson Park, Booyong, Davis Scrub N.R., Victoria Park N.R., Brunswick Heads N.R., Nullum S.F., Mebbin S.F., Pumpenbil Creek, Mt. Warning N.P., Limpinwood N.R., Couchy Creek and Murwillumbah.

**Timber and Uses**— White, very soft and light. Suitable for toys, models, light cases, buoys and floats. Very susceptible to attack by borers. 400kg per cubic metre.



E.S.

Plate 17  
*Brachychiton acerifolius* F. Muell.

## BRACHYCHITON DISCOLOR F. Muell.

**Synonym**— *Sterculia discolor* F. Muell., *Brachychiton luridum* C. Moore.

**Reference**— *Fragm. Phyt. Aust.* 1, 1, 1858-59.

**Derivation**— *Discolor* from Latin "dis" unlike and "color" colour, referring to the dark green upper leaf surface and the contrasting paler underside.

**Common Name**— Lace Bark Tree, Lace Kurrajong, Pink Kurrajong, Scrub Bottle Tree, White Kurrajong, Hat Tree, Sycamore.

**Standard Trade Name**— Brush Kurrajong.

A tree attaining a height of 30m and a stem diameter of 75 cm. Sometimes cultivated for its large dusky pink bell flowers borne whilst leafless.

**Trunk**— Not buttressed but sometimes slightly swollen at the base, usually straight and cylindrical.

**Outer Bark**— Grey or greyish-brown but green in the fissures or furrows. Underbark mid-brown, hard and brittle. Outer surface of live bark mottled dark red and fawn.

**Inner Bark**— Blaze on a tree 45 cm diameter cream or faintly pinkish on the outer half, inner half pale brownish; the whole surface streaked with yellowish-brown lines with some broader white stripes. The outer half often changes to pink after some minutes exposure. No taste or smell. 20 mm thick.

**Branchlets**— Thick, brown, smooth, becoming densely downy with starry hairs towards the tips. Stipules present but inconspicuous and quickly shed.

**Leaves**— Alternate, broadly heart-shaped or almost round, deeply three, five or seven lobed, 10-20 cm diameter. Smooth to slightly furry and dark green above and downy and often white on the underside. Leaves on seedlings and young trees much more deeply lobed than those of older trees. Leaf stalks 8-17 cm long, smooth.

**Venation**— Five to seven major veins radiating from the base and terminating at the tip of each lobe. Major and lateral veins distinct on both surfaces, but more so beneath. Net veins scarcely visible.

**Flowers**— Dusky pink, clustered near the ends of the branches or springing from the axils of the upper leaves. Individual flowers nearly sessile, large; 3-4 cm diameter. Separate male and female flowers. Calyx 4-6 cm long, funnel or bell-shaped, divided almost to the middle into five triangular lobes, downy with soft bristles outside and soft starry hairs within. Petals absent. Stamens 18-25, joined into a column. Flowering period November to January.

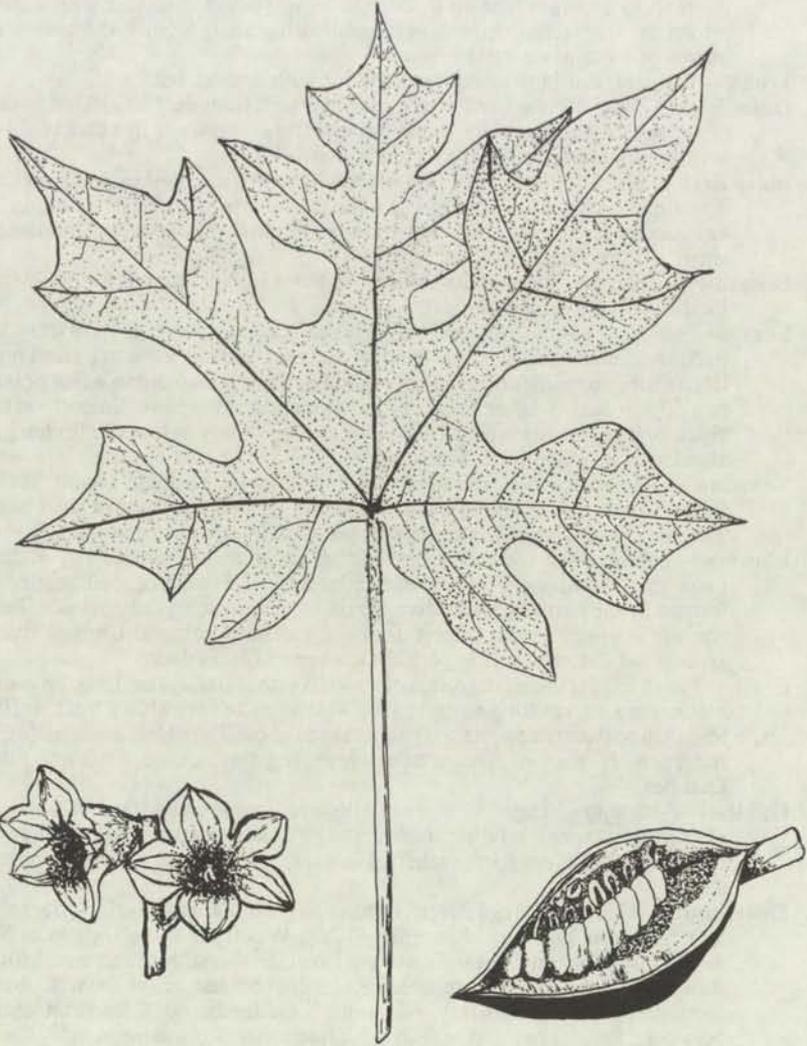
**Fruit**— Separate stalked carpels forming three to five boat-shaped follicles densely covered with rigid brown hairs inside and out, each 7-20 cm long containing ten to thirty pale oval seeds each about 9 mm long with a very fine, close, cottony covering. Fruit ripe May to July.

**Habitat**— Dry rainforest. Commonly with *Araucaria cunninghamii* north of Kempsey.

**Distribution**— From Dungog, N.S.W. to Mackay, Queensland and inland to the Bunya Mountains with an isolated occurrence on Cape York.

Recorded in N.S.W. from Dungog, Copeland, Woko, Coocumbac Island, Mt. Seaview N.R., Kunderang Brook, Willi Willi Caves N.R., Wollomombi and Chandler Gorges, Dorrigo N.P., Kangaroo River S.F., Hortons Creek, Blandford Creek, Chandlers Creek, Guy Fawkes N.P., Susan Island, Gibraltar Range N.P., Mt. Pikapene S.F., Cherry Tree S.F., Unumgar S.F., Koreelah S.F., Acacia Plateau, Mt. Lindesay, Moore Park, Roseberry S.F., Wilson Park, Boatharbour, Hayters Hill, Brunswick Heads N.R., Mebbin S.F. and Limpinwood N.R.

**Timber and Uses**— Wood white, very soft and coarse-grained. Suitable for plywood centres, cases and toys. Sapwood susceptible to attack by *Lyctus* borer. Light in weight. Used for shields by aborigines.



E.S.

Plate 18  
*Brachychiton discolor* F. Muell.

## BRACHYCHITON POPULNEUS (Schott et Endl.) R. Br.

**Synonym**— *Sterculia diversifolia* G. Don.

**Reference**— Benn. Pl. Jav. Rar. 234, 1852.

**Derivation**— *Populneus* from Latin "Populus" related to the poplar tree, referring to the similarity of the leaves.

**Common Name**— Kurrajong, Black Kurrajong, Forest Kurrajong.

**Standard Trade Name**— Kurrajong.

A small to medium tree up to 20m tall and 100cm diameter with a dense crown of light green shiny leaves contrasting sharply with the grey-green leaves of most associated species.

**Trunk**— Straight, not buttressed, rather stout with a short bole.

**Outer Bark**— Grey-brown, hard with shallow vertical fissures. *Underbark mottled orange-fawn and dark chocolate*, stringy. Outer surface of live bark pink with a vertically elongated purplish-black network.

**Inner Bark**— Blaze on a tree 75 cm diameter *pink with a purple-black network* and occasional vertical white bands. Hard and stringy. Paler towards the sapwood with an oak grain. No change in colour on exposure. No taste or smell. 30mm thick.

**Branchlets**— Slender, green, quite smooth. Stipules insignificant and quickly shed. Leaf buds very small, conical.

**Leaves**— Alternate simple, not toothed but juvenile leaves may consist of three long narrow pointed lobes whereas intermediate leaves may have two short broad lateral lobes only. *Mature leaves* egg-shaped but drawn out to a fine point *as in a poplar leaf*, 5-10cm long, abruptly tapering at the base. Smooth on both sides, *bright glossy green above*, paler and less shiny below. Stalks long and slender as in a poplar, 2-5cm long.

**Venation**— Midrib scarcely raised above, but more so beneath, clearly visible. Lateral veins six to ten on each side, more conspicuous above than below. The basal pair somewhat more conspicuous. Net veins obscure.

**Flowers**— *Cream with chocolate or reddish spots inside*, unisexual, in small panicles, 4-7cm long. Flowers on slender stalks 3-5 mm long, bell-shaped and formed by the partially joined five sepals, 10-15 mm long, felty outside. Petals absent, Stamens ten to fifteen, forming a central column. Carpels five on separate stalks. Flowering period October to December.

**Fruit**— Tough hard follicles in groups of up to five on stalks 2-4cm long, brownish-black, smooth, splitting along the top side so as to resemble a boat, 4-10cm long. Up to twenty egg-shaped yellow seeds about 7mm long, each seated in a *short prickly-hairy outer coat* from which they are released. Fruit ripe July to October.

**Habitat**— Although widespread on stony hillslopes in open woodland, it is also one of the more common larger trees in the dry rainforests in the Macleay and Guy Fawkes Rivers gorges where it occurs on very steep dry rocky or scree slopes.

**Distribution**— Upper Murray River, Victoria to Gulf of Carpentaria, Queensland and Northern Territory. Recorded in N.S.W. on the tablelands from Wee Jasper, Wombeyan Caves, Kowmung River, Bathurst, Mt. Victoria, Moonbi Range, Walcha and Tenterfield. Recorded on the coast from Cobargo, Nerrigundah, Batemans Bay, Benandra S.F., Jamberoo, Camden, Cobbity, Newport, Bouddi N.P., Watagan S.F., Bundook, Gloucester, Apsley Gorge, Kunderang Brook, Wollomombi and Chandler Gorges, Bowraville, Urunga, Kangaroo River S.F., Madmans Creek F.P., Blandford Creek, Chandlers Creek, Guy Fawkes N.P., Unumgar S.F. and Roseberry S.F.

**Timber and Uses**— The timber is not cut because this tree is too valuable as a shade tree and as reserve fodder for stock when lopped in times of drought. The aborigines made rope from the fibres of the bark and fire sticks from the wood. They ate the tuberous roots of young plants as well as the seeds either raw or roasted. The roots when cut gave a plentiful supply of drinkable water; and the roasted and ground seeds make a good substitute for coffee.

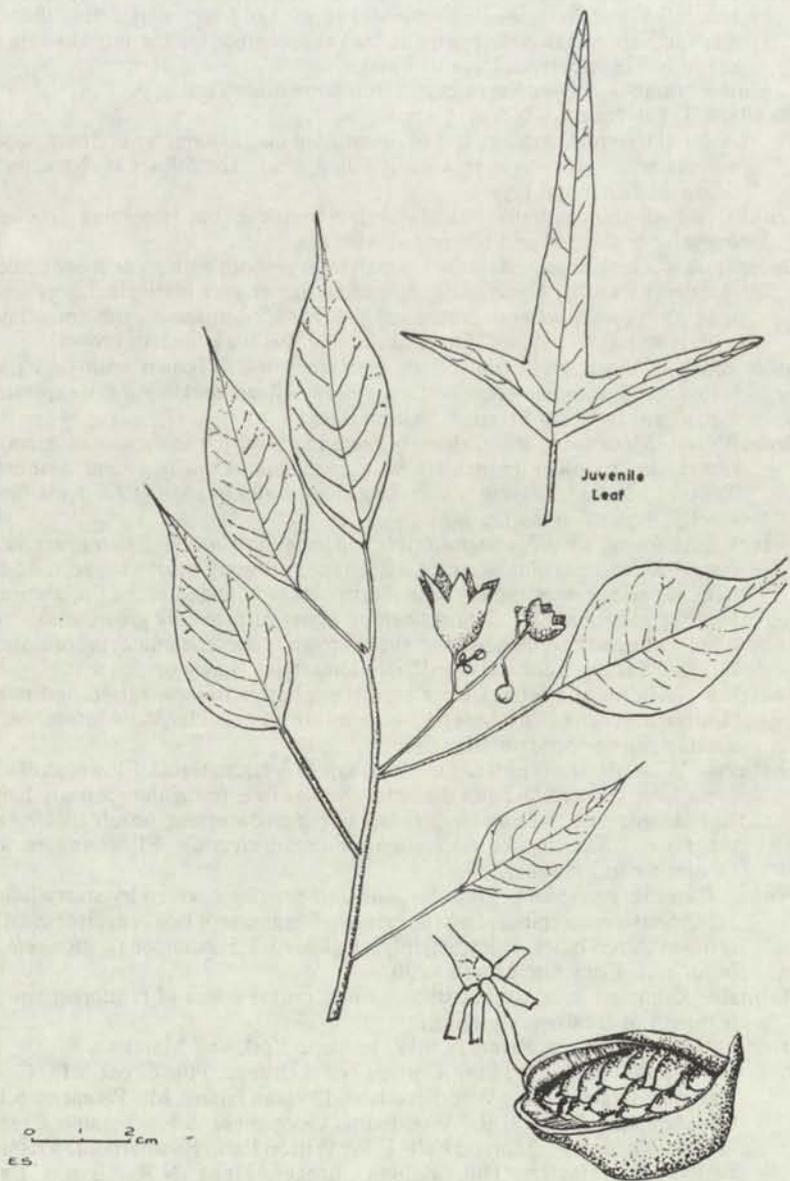


Plate 19  
*Brachychiton populneus* (Schott et Endl.) R. Br.

## COMMERSONIA BARTRAMIA (L.) Merr.

**Synonym**— *Commersonia echinata* Forst. & Forst. f., *Muntingia bartramia* Stchm.

**Reference**— Interpr. Rumph. Herb. Amboin., 124, 1917.

**Derivation**— Commersonia, after Philibert Commerson (1727-73), French naturalist on Bougainville's expedition in 1766-69; bartramia after J. Bartram, an Anglo-American who was responsible for the introduction of many North American trees to Europe.

**Common Name**— Brown Kurrajong, Scrub Christmas Tree.

**Standard Trade Name**— None.

A small tree reaching a height of about 25m and a diameter of 50cm, often seen as second growth in previously felled areas. The foliage is characteristically in horizontal layers.

**Trunk**— Small trees usually straight and cylindrical, but becoming crooked, irregular to flanged and buttressed with age.

**Outer Bark**— Grey or greyish-brown. Small trees smooth with some loose scales, usually marked by horizontally elongated lighter grey lenticels. *Large trees with light grey and grey-brown scaly bark.* Underbark cream, sometimes with grey-brown patches. Outer surface of live bark pinkish-brown.

**Inner Bark**— Blaze on a tree 50cm diameter pinkish-brown with fine pale transverse lines. Sapwood surface yellow. Blaze darkening on exposure. Astringent taste but no smell. 20mm thick.

**Branchlets**— Moderately thick, densely fawn hairy on the leafy shoots, smooth brown on the older branchlets with *conspicuous white round lenticels.* *Stipules obscure, narrow, 1mm long, very quickly shed.* Leaf buds fawn woolly, *expanding leaves pink.*

**Leaves**— Alternate, simple, margins *finely* and irregularly *toothed, four to six teeth per cm,* or at times almost entire, egg-shaped or rarely heart-shaped, 6-15cm long, tapering rather rapidly to a short point or rounded at the tip, abruptly tapering at the base. Dull on both sides, upper surface dark green, smooth or often with sparse stellate hairs, grey (or brown in cooler climate) more closely downy beneath. Leaf stalks 6-18mm long, fawn, hairy or downy.

**Venation**— Midrib and lateral veins visible on both surfaces, raised and more conspicuous beneath where the net veins are also visible. *Main lateral veins usually four or occasionally five.*

**Flowers**— White or faintly pinkish, in broad cymes 3-10cm broad. Flower stalks 2-4mm long. Flowers 4-5mm diameter. Sepals five, triangular, densely hairy and conspicuous, 1-2mm long. *Petals* five, narrow erect, *barely as long as the sepals.* *Staminodes and stamens inconspicuous.* Flowering period December to February.

**Fruit**— Capsule, *grey-black, globular with soft bristles* covered by starry hairs, 1.5-2.5cm diameter including the bristles. Seeds one or two in each of the five cells, oval, red-black, shiny, slightly roughened, 1.5-2mm long with a *yellow basal aril.* Fruit ripe March to July.

**Habitat**— Common in coastal scrubby gullies, on the edges of rainforest and in regrowth of subtropical rainforest.

**Distribution**— Bellingen River, N.S.W. to Cape York and Malaysia.

Recorded in N.S.W. from Dorrigo N.P., Urunga, Pine Creek S.F., Coffs Harbour, Bagawa S.F., Woodford Island, Susan Island, Mt. Pikapene S.F., Copmanhurst, Iluka N.R., Woodburn, Goonimbar S.F., Terania Creek, Whian Whian S.F., Minyon Falls F.R., Wilson Park, Boatharbour, Victoria Park N.R., Hayters Hill, Ballina, Broken Head N.R., Byron Bay, Mullumbimby, Brunswick Heads N.R., Mooball S.F., Nullum S.F., Uki, Mebbin S.F., Couchy Creek, Murwillumbah, Stotts Island N.R. and Bilambil.

**Timber and Uses**— White, soft, close-grained and light but has no particular use. Leaves and shoots palatable to stock. The tough fibrous bark was used by the aborigines for making kangaroo and fishing nets and also lines.

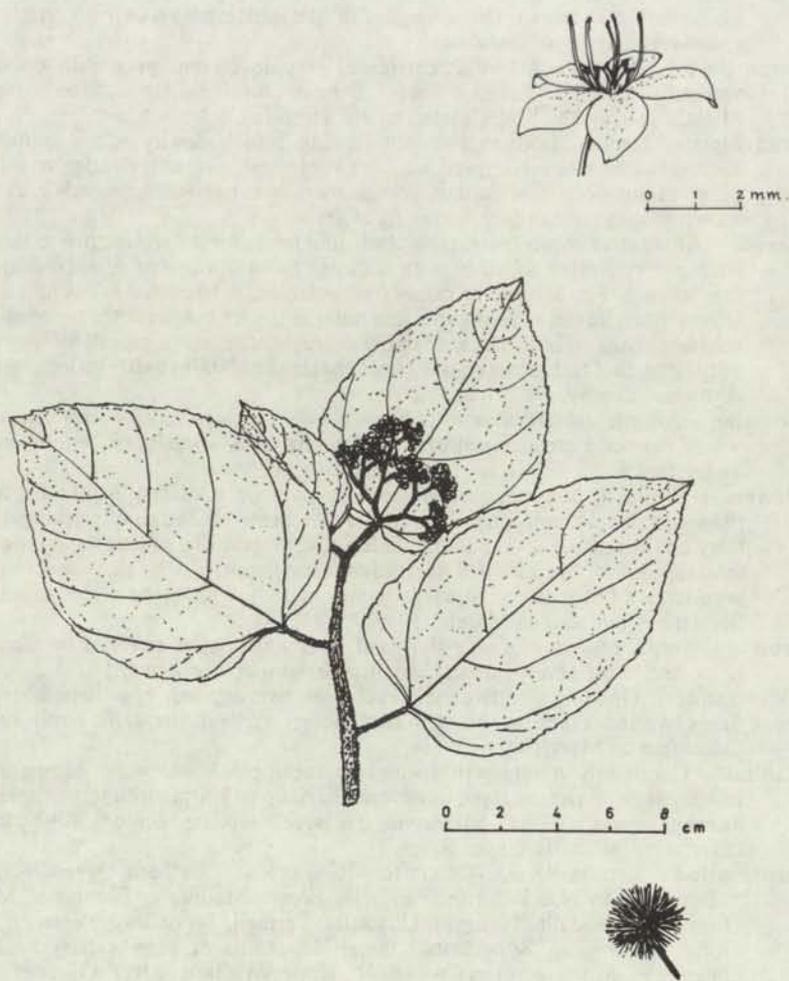


Plate 20  
*Commersonia bartramia* (L.) Merr.

## COMMERSIONIA FRASERI J. Gay

**Reference**— Mem. Mus. Hist. Nat., Paris 10, 215, t 15, 1823.

**Derivation**— *Fraseri* after Charles Fraser, a collector in Oxley's party and first Superintendent of the Botanic Gardens, Sydney.

**Common Name**— Brush Kurrajong, Blackfellow's Hemp, Commersonia.

**Standard Trade Name**— None.

A medium to small tree or tall shrub up to 8m tall and 15cm diameter. Very showy when in flower.

**Trunk**— Cylindrical, not buttressed, straight and lightly branched.

**Outer Bark**— Grey, smooth with horizontally elongated brown lenticels. Underbark mid brown. Outer surface of live bark *olive green with creamy-green small spots* or lenticels.

**Inner Bark**— Blaze on a tree 15cm diameter pale creamy-pink with darker vertically arranged net-like fibres. Quickly turning light orange-brown. Slightly astringent. Water melon smell. 8mm thick.

**Branchlets**— Slender, fawn downy but turning brown downy when leafless. Lenticels absent or inconspicuous. Bark very tough. *Stipules* slender, woolly, 2-3mm long, *persistent* until the leaves are fully expanded. Leaf buds grey or brown woolly, *expanding leaves light green*.

**Leaves**— Alternate, simple, margins *coarsely and irregularly toothed, two to three teeth per cm*, often lobed or with a *larger tooth at the end of each major lateral vein*. Egg-shaped or rarely heart-shaped, 6-16cm long, but juvenile leaves much larger, tapering to a fine point at the tip but abruptly tapering at the base. Dull on both sides, sparsely downy above, more closely downy or felty beneath. Dark green above, grey beneath. Leaf stalks 8-20mm long, grey or brown, downy.

**Venation**— Midrib and lateral veins only visible above, more conspicuous beneath where net veins are also visible. *Main lateral veins usually six*, ending in a larger tooth.

**Flowers**— White, in leaf-opposed or axillary cymose panicles, 3-5cm broad. Flower stalks 3-5mm long. Flowers 5-7mm diameter. Sepals five, triangular furry on the outside, 2-3mm long. Petals five, ribbon-like as long as or longer than the sepals. *Staminodes* five, *resembling the petals* but more erect and producing a fluffy effect. Stamens inconspicuous. Flowering period mainly September but also to March.

**Fruit**— Capsule, *brown, globular-flattened* with soft bristles covered by starry hairs and with *several strap-like bristles projecting beyond*, 1.5-2.5cm diameter. Opening into five cells each with two angular, egg-shaped, dull, finely warted black seeds, 1.5-2mm long, *without an aril*. Fruit ripe December to March.

**Habitat**— Commonly a regrowth species in subtropical and warm temperate rainforest or on the eucalypt forest boundary up to 700m altitude. Although its range overlaps with *C. bartramia*, it is largely replaced ecologically by the latter north of the Bellinger River.

**Distribution**— Genoa River, Victoria to Mt. Glorious, Southern Queensland. Recorded in N.S.W. from Pambula, Brown Mountain, Bermagui, Mt. Dromedary, Bodalla, Nelligen, Ulladulla, Termeil, Jervis Bay, Whispering Gorge, Gerringong, Robertson, Kiama, Nepean River, Hawkesbury River, Olney S.F., Morisset, Gap Creek F.R., Upper Williams River, Gloucester, Woko, Seal Rocks, Wang Wauk, Nabiak, Cape Hawke, Black Head, Kiwarak S.F., Saltwater, Harrington, Broken Bago S.F., Bellangry S.F., Sea Acres Port Macquarie, Limeburners Creek N.R., Crescent Head, Mistake S.F., Dorrigo N.P., Bellingen, Orara West S.F. & Wild Cattle Creek S.F.

**Timber and Uses**— Wood white, soft, close-grained and light. No particular use. The tough fibrous bark was used by the aborigines for cordage and in weaving net bags.



Plate 21  
*Commersonia fraseri* J. Gay

## STERCULIA QUADRIFIDA R. Br.

**Reference**— Benn. Pl. Jav. Rar. 233.

**Derivation**— *Sterculia* from Latin "sterculius" the Roman god of manure heaps, referring to the bad scent of the flowers of some species; *quadrifida* from Latin "quadri" four and "fidus" split, alluding to the calyx lobes being four rather than five as in most species.

**Common Name**— Red-fruited Kurrajong, Smooth-seeded Kurrajong, Peanut Tree, Orange-fruited Kurrajong, Small-flowered Kurrajong.

**Standard Trade Name**— Red-fruited Kurrajong.

A medium sized tree attaining a height of 18m and a stem diameter of 45 cm. Useful for ornamental purposes because of its foliage and showy fruits. The light green new spring leaves resemble those of *Ficus virens* from a distance.

**Trunk**— Cylindrical or slightly buttressed at the base on large trees.

**Outer Bark**— Grey to fawn-grey, smooth or slightly scaly or pimply. Underbark pale brown, very thin. Outer surface of live bark mottled light and dark green.

**Inner Bark**— Blaze on a tree 45 cm diameter cream with pink flames in the outer layer. Inner section pale pink to almost white with a darker pink fine network. Changing to brownish pink on exposure. Slightly astringent and with a sappy smell. 15 mm thick.

**Branchlets**— Medium thick, grey, smooth, finely wrinkled with scattered raised lenticles and small white blotches. Stipules small, narrow, dark brown, shed as soon as the leaves expand. Young shoots brown, densely downy.

**Leaves**— Alternate, simple, not toothed, egg-shaped or heart-shaped, 5-15 cm long, rounded or shortly and bluntly pointed at the tip, green on both surfaces. Young leaves and leaf stalks often hairy. Almost deciduous in early spring. *Leaf stalks 1-5 cm long, swollen at both ends with a bend where joined to the underside of the leaf blade.*

**Venation**— Midrib, lateral and net veins visible on both surfaces, but raised and more distinct on the underside. Main lateral veins seven to nine on each side.

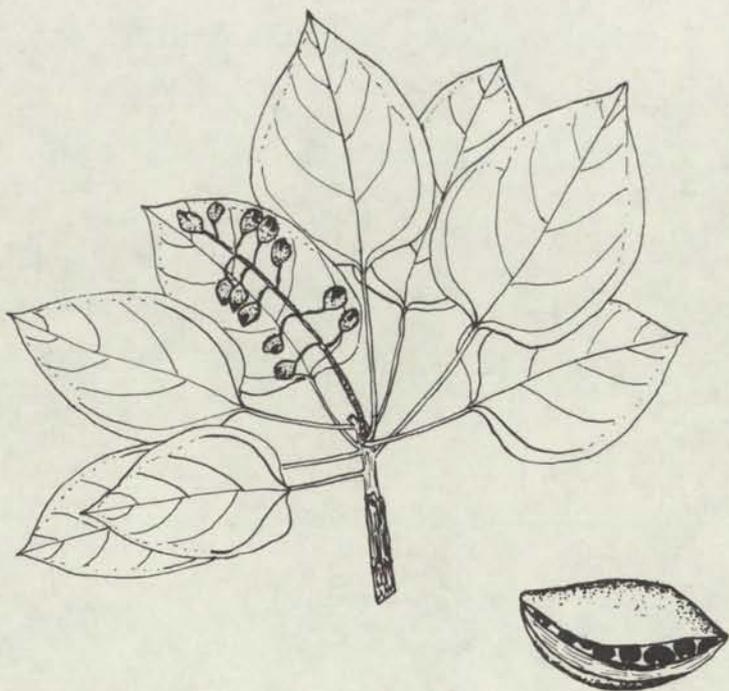
**Flowers**— *Creamy-green*, lemon-scented, in numerous short racemes amongst the uppermost leaves, 2-6 mm long. Individual flowers bell-shaped, dull yellow, hairy. Separate male and female flowers. *Sepals four*, about 8 mm long, hairy, joined for about half their length into a bell but *often with the tips also joined*. Petals absent. Stamens ten to fifteen in a short column. Carpels four. Flowering period November to January.

**Fruit**— Separate stalkless carpels forming one to four boat-shaped or ovoid, smooth, *bright red follicles 5-7 cm long*, hard and almost woody. Each follicle may contain two to eight *smooth ovoid, dull bluish-black seeds 13-18 mm long and 9 mm diameter (without a hairy covering as in Brachychiton)*. Fruit ripe November to January.

**Habitat**— Littoral rainforest close to the sea and in riverine rainforest.

**Distribution**— Broken Head, N.S.W. to Northern Australia and New Guinea. Recorded in N.S.W. from Broken Head N.R., Stotts Island N.R., Cudgen Lake, Bilambil, Terranora, Cobaki and Tweed Heads.

**Timber and Uses**— Wood white when in the green state, but may season to a light grey colour. Very soft and light. Close-grained and easily worked. Suited for light cases, toys, models. Very susceptible to attack by borers. 350-400 kg per cubic metre. Fibre from the bark was used by aborigines for making kangaroo nets. The seeds are edible.



0 2 4 cm.

E.S.

Plate 22  
*Sterculia quadrifida* R. Br.

# FAMILY EUCRYPHIACEAE

## CHARACTERISTICS OF THE FAMILY IN N.S.W.

This family consists of a single genus comprising five species which are confined to Eastern Australia and Chile. It is closely related to the family Cunoniaceae from which it differs in the flowers being borne singly rather than in groups and in the fruit having four to fourteen cells instead of two. There is only one species in N.S.W., namely *Eucryphia moorei*.

The most diagnostic features of this species are:-

**Leaves** — Opposite, pinnate with five to eleven leaflets. Although stipules are present as in the family Cunoniaceae, the leaves are not toothed as are all N.S.W. species in that family.

**Flowers** — Solitary or several together. The four sepals are joined to form a cap which is shed as the flower opens. There are four showy separate petals and numerous stamens.

**Fruit** — Capsule separating into six to eight free carpels on ripening, each containing several winged seeds. It resembles *Vesselowskya rubifolia* of the Cunoniaceae in the fruit and seed shape but is larger with more carpels.

**Habitat** — *E. moorei* occupies a similar cool temperate rainforest niche in southern N.S.W. to that of *Nothofagus moorei* in northern N.S.W. Associated species common to both are *Acmena smithii*, *Doryphora sassafras*, *Atherosperma moschatum*, *Elaeocarpus holopetalus* and *Acacia melanoxylon*.

**Distribution** — *Eucryphia* consists of two species restricted to Chile, two species to Tasmania and one species from the Victorian border to west of Wollongong. Hence the distribution shows considerable similarity to that of *Nothofagus* with its antarctic origin.

## EUCRYPHIA MOOREI F. Muell.

**Reference** — *Fragm. Phyt. Aust.* IV, 2, 1863.

**Derivation** — *Eucryphia* from Greek "eu" well and "kryphios" covered, referring to the cap formed by the sepals fusing at their tips; *moorei* in honour of Mr. Charles Moore, one-time director of the Sydney Botanic Gardens.

**Common Name** — Pinkwood, Plumwood, Stinkwood, Eastern Leatherwood, *Acacia* Plum, White Sally, Leatherwood, Mainland Leatherwood.

**Standard Trade Name** — Pinkwood.

Although only a small tree in Victoria, it may attain a height of 30m and a diameter of 80cm north of the border. An attractive tree because of its pinnate leaves and large white scented flowers.

**Trunk** — Sometimes crooked, low-branched. Although not buttressed, it may be considerably swollen at ground level with numerous epicormic shoots as is often found with *Nothogagus moorei*.

**Outer Bark** — Grey-brown, smooth with vertical cracks or lightly vertically fissured. Underbark fawn. Outer surface of the live bark yellow-brown with red-brown patches.

**Inner Bark** — On a tree 40cm diameter pink with creamy vertical stripes, turning yellow-brown after a few minutes. Very astringent but no smell. 15mm thick.

**Branchlets** — Slender, with brownish-black dense hairs. *Young leaves sticky*, emerging from the *conspicuous red-brown shiny sticky ovate-pointed stipules* and bracts, 3-7mm long.

**Leaves** — Opposite, *pinnate with five to seven leaflets*, entire, narrow-oblong, the *terminal leaflet 4-5cm long* but the basal ones only 1-2cm. Leaflets quickly tapering to a *fine black point at the tip* and blunt at the base. Dull on both sides, grey with white hairs below, dark green and smooth above. Stalk to the first pair of leaflets 0.5-1.0cm long, lateral leaflets sessile, terminal leaflet stalk 2-4mm long.

**Venation** — Midrib alone visible on the upper surface, but midrib and lateral veins conspicuous below, yellow-brown and raised.

**Flowers** — White, fragrant, 2-3cm diameter, borne singly on long slender hairy stalks 2-3cm long, with a cluster of bracts about 1cm from the base. *Sepals four, papery, pale brown, joined at their tips and being shed as a cap* as the flower opens, 8-10mm long. Petals four, almost round, 1-1.5cm. Stamens numerous in several rows. Ovary elliptical, densely clothed in long rusty hairs. Flowering period January to March.

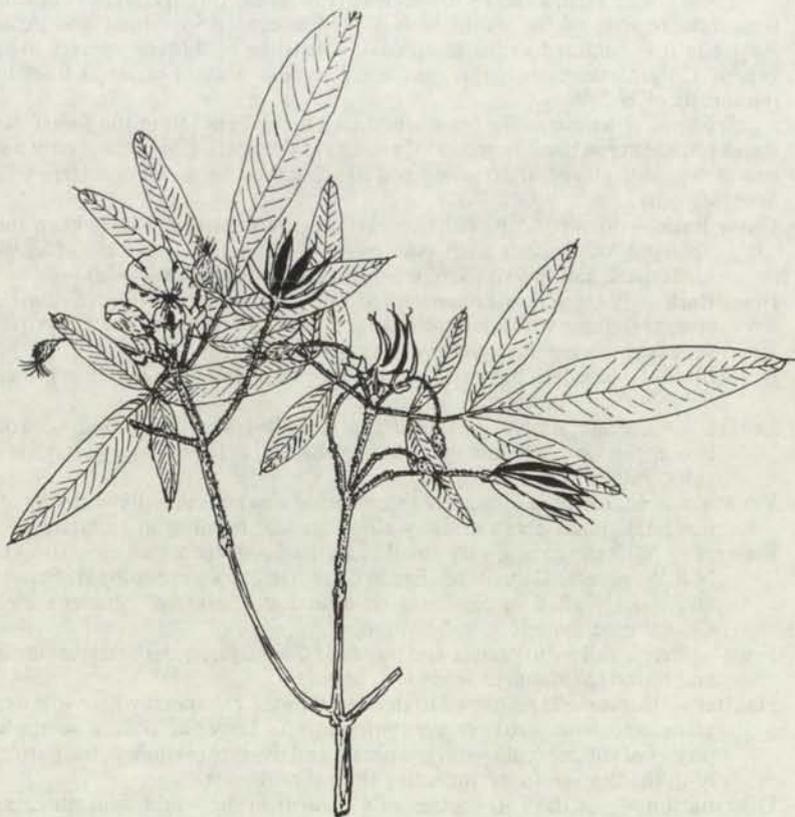
**Fruit** — *Capsule, brown, oblong*, about 1-1.5cm long, the *six to eight carpels separating* as the fruit ripens. Densely covered in pale grey shaggy hairs. Seeds dark brown, flat, winged, elliptic-pointed, 3-4mm long, several in each carpel. Fruit ripe March to May.

**Habitat** — Cool temperate rainforest on rich moist soils in sheltered gullies associated with *Acmena smithii*, *Doryphora sassafras* and *Acacia melanoxylon*. Seedlings often epiphytic on tree ferns.

**Distribution** — From Howe Range, Victoria (just south of the N.S.W. border) to the I Woronora Plateau west of Wollongong, N.S.W.

Recorded in N.S.W. from Naghi S.F., Brown Mountain, Mt. Dromedary, Dampier S.F., Nerrigundah, Clyde Mountain, Monga S.F., Currockbilly Mountain, Budawang Range, Sassafras, Bundanoon, Mossvale, Cambewarra Range, Jamberoo, Fitzroy Falls, Carrington Falls, Minnamurra Falls, Macquarie Pass, Avon River, Mt. Keira, Cataract River and Burrawang.

**Timber and Uses** — Pink, close-grained, rather tough. Could be used for cabinet work, axe and tool handles. 750-800kg per cubic metre.



0 1 2 cm.  
E.S.

Plate 23  
*Eucryphia moorei* F. Muell.

# FAMILY FLACOURTIACEAE

## CHARACTERISTICS OF THE FAMILY IN N.S.W.

There are 95 genera and 1300 species in this family throughout the tropical and temperate regions of the world with a preponderance in Africa and Asia. In Australia it is confined to the east coast, consisting of thirteen species in seven genera. Only *Casearia multinervosa* and *Scolopia braunii* occur as trees in the rainforests of N.S.W.

*Scolopia* is an attractive ornamental tree up to 25m tall in the forest, with a dense rounded crown to the ground if planted in the open. *Casearia* is only a small tree of the understorey. Buttressing and flanging may be present on large trees of *Scolopia* only.

**Outer Bark** — Brown, scaly with depressions where the scales have been shed in *Scolopia* or smooth with two types of numerous lenticels (*Casearia*). Underbark mid-brown (*Scolopia*) or pinkish-fawn (*Casearia*).

**Inner Bark** — Blaze yellow-brown with a few fine paler vertical lines (*Casearia*) or creamy-yellow with vertical orange streaks (*Scolopia*). In *Casearia* the sapwood margin turns yellow. The bark is bitter in *Scolopia*.

**Branchlets** — Slender, brown to grey with paler lenticels. Juvenile growth of *Scolopia* may be thorny. Stipules absent.

**Leaves** — Alternate, simple, not toothed but juvenile leaves of *Scolopia* with one or two angles on each side, oval to egg-shaped, 4-10cm long, glossy on both sides, rather thick in *Scolopia*.

**Venation** — In *Scolopia* obscurely three-veined and occasionally with one or two marginal glands about midway along the leaf forming an undulation.

**Flowers** — White to cream, very small in axillary clusters or panicles. Bisexual in N.S.W. genera. Calyx lobes five in *Casearia* or four in *Scolopia*. Petals four and quickly shed in *Scolopia* or absent in *Casearia*. Stamens eight in *Casearia* or numerous in *Scolopia*.

**Fruit** — Berry, yellow to orange and pointed (*Casearia*) or dark red turning black and round (*Scolopia*). Seeds few, angular.

**Habitat** — *Casearia* is restricted to dry and riverine rainforest where it is usually associated with *Araucaria cunninghamii*. *Scolopia* occurs in the drier phases of subtropical, warm temperate and riverine rainforest; but particularly in the dry rainforest including littoral rainforest.

**Distribution** — Of the 160 species of *Casearia* in the world, only three are in Australia of which either one or two are confined to this country. *C. multinervosa* is restricted to the Richmond River, N.S.W. to west of Bundaberg, Queensland.

*Scolopia* comprises 45 species from Africa to India and South East Asia. *S. braunii* is the only species in Australia and is confined to the east coast from the Illawarra, N.S.W. to Cape York, Queensland.

**Timber and Uses** — *Casearia* is too small to be used; but *Scolopia* has a very hard, tough, close-grained timber which could be used for special purposes such as hard turnery and tool handles.

# KEY TO RAINFOREST TREE SPECIES OF FLACOURTIACEAE IN N.S.W.

## A. USING LEAVES AND BRANCHLETS ONLY

1. Pair of basal lateral leaf veins extending for one third of leaf length.  
Leaf diamond-shaped, thick ..... *Scolopia braunii* (Klotsch) Sleumer
1. Basal lateral leaf veins not extended.  
Leaf elliptic oblong ..... *Casearia multinervosa* White et Sleum.

## B. USING BARK ONLY

1. Bark orange-brown, scaly ..... *Scolopia braunii* (Klotsch) Sleumer
1. Bark dark brown, smooth to pimply ... *Casearia multinervosa* White et Sleum.

## CASEARIA MULTINERVOSA White et Sleum.

**Reference** — Notizbl. Berlin — Dahlem XII, 474, 1935.

**Derivation** — Casearia after J. Casearius, a Dutch botanist and co-author of Hortus Malabaricus; multinervosa from Latin "multus" many, "nervus" nerve and "osus" abounding in, in relation to the prominent leaf veins.

**Common Name** — Casearia.

**Standard Trade Name** — None.

An under shrub or small tree up to about 10m high and 20cm diameter.

**Trunk** — Straight, not buttressed.

**Outer Bark** — *Dark brown, smooth*, usually marked by two forms of numerous corky lenticels. One form is small, pale yellowish-brown in colour, circular in shape and often depressed or cup-shaped. In the other form they are in vertical rows and opening longitudinally. Underbark pinkish-fawn. Outer surface of live bark apple green.

**Inner Bark** — Blaze on a tree 20cm diameter yellowish-brown with a few fine pale vertical lines becoming gradually paler towards the inner margin. There is a darkening of the surface after a few minutes exposure and the *surface of the sapwood* and the inner margin of the bark *turns yellow*. No distinct taste or smell. 3mm thick.

**Branchlets** — Thin, brown, smooth, marked by numerous small pale dots.

**Leaves** — Alternate, simple, entire, oval elliptic to elliptic oblong, 5-10cm long, drawn out into a fairly long and often blunt point at the tip, tapering towards the base. Dark green above, paler beneath, *drying black, glossy* on both surfaces. Leaf stalks 5-9mm long.

**Venation** — Midrib and lateral veins scarcely visible above, but a little more prominent and paler on the underside. Major lateral veins curved, eight to ten. Net veins not visible.

**Flowers** — White, very small, in axillary clusters. Flower stalks slender shortly hairy, 3mm long. Calyx five-lobed, round, about 2mm diameter. Petals absent. Stamens eight, alternating with the shorter staminodes. Style lobed. Flowering period November to February.

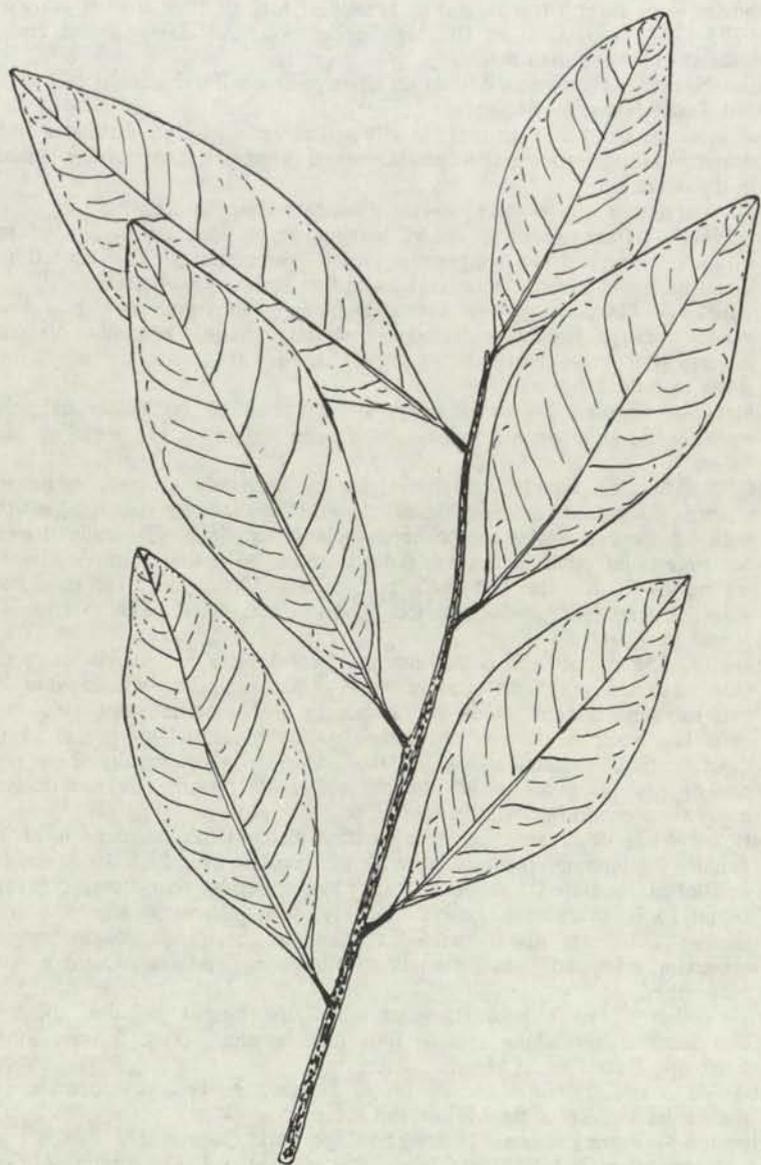
**Fruit** — *A berry, yellow to orange*, somewhat three-angled and pointed, smooth, slightly succulent, 8mm long opening into three valves. Seeds several in each valve, egg-shaped to round, 1.5mm diameter, with a finely roughened surface. Fruit ripe December to February.

**Habitat** — Dry rainforest, often associated with Hoop Pine.

**Distribution** — From the Richmond River, N.S.W. to Goodnight Scrub near Bundaberg, Queensland.

Recorded in N.S.W. from Mt. Pikapene S.F., Cherry Tree S.F., Richmond Range S.F., Toonumbar S.F., Unumgar S.F., Acacia Creek, Roseberry S.F., Levers Plateau, Boatharbour and Brunswick Heads N.R.

**Timber and Uses** — Very pale brown, fairly hard, close-grained and tough. However, the tree is generally too small to be of much use.



0 1 2 cm.  
E.S.

Plate 24  
*Casearia multinervosa* White et Sleum.

## SCOLOPIA BRAUNII (Klotzsch) Sleumer.

**Synonym** — *Scolopia brownii* F. Muell., *Adenogyrus braunii* Klotzsch.

**Reference** — Blum. 20, 40, 1972.

**Derivation** — *Scolopia* from Green "scolos" a thorn, referring to some species having very thorny trunks and/or branches; *braunii* after Robert Brown, 1773-1858, naturalist on Flinder's expedition and distinguished early collector of Australian plants.

**Common Name** — Flintwood, Mountain Cherry, Brown Birch, *Scolopia*.

**Standard Trade Name** — *Scolopia*.

A medium sized tree up to 25m tall and 50cm diameter. This is a fine ornamental species forming a dense-crowned symmetrical tree when planted in the open.

**Trunk** — Large tree sometimes moderately buttressed or flanged.

**Outer Bark** — *Orange-brown, scaly*, leaving depressions as in *Syzygium francisii*. Marked by numerous small paler pustules. Very thin. Underbark mid-brown. Outer surface of live bark orange-brown.

**Inner Bark** — Blaze on a tree 35cm diameter creamy-yellow with a few vertical orange streaks and lateral undulating bands, becoming yellow towards the inner margin. No rapid change in colour on exposure. Bitter to taste. No smell. 6mm thick.

**Branchlets** — Slender, brown or grey, smooth, marked by numerous pale lenticels. *Juvenile growth often armed with spines in the forks of the leaves.*

**Leaves** — Alternate, simple, margins entire or obscurely toothed, ovate to oblong lanceolate or sometimes *diamond-shaped in young growth* with one or two angles in the upper half. 4-9cm long. Generally drawn out to a blunt point at the tip, but sometimes to a fine point or almost so; narrowed into the leaf stalk at the base. Green both surfaces, but paler beneath. Somewhat smooth, *glossy* and thick. Leaf stalks 4-10mm long, smooth.

**Venation** — The midrib and sometimes the lateral veins are visible on both sides, but the net veins are indistinct. *Obscurely three-veined*, due to two extra basal veins close to the margin visible on the underside and extending about a third of the length of the blade. Major lateral veins three to five. Venation raised on the underside. Occasionally there are *one or two marginal glands on the underside forming an undulation approximately midway along the leaf.*

**Flowers** — White or creamy, scented, small, with numerous stamens in short axillary or terminal panicles from under 1cm to over 2cm long. Calyx four-lobed, rounded, about 1.5mm long. Petals four, white, oval, slightly longer than the calyx, quickly shed. Stamens numerous on slender filaments, about twice as long as the petals. Style single, projecting beyond the stamens. Flowering period October to November.

**Fruit** — A berry, dark red turning black when ripe, almost globular, about 1 cm diameter containing two to four hard angular seeds, 3-5mm long. Fruit ripe December to March.

**Habitat** — Coastal rainforest of all types. Reaches its best development on the red basalt soils of the McPherson Range.

**Distribution** — From Illawarra, N.S.W. to Cape York, Queensland.

Recorded in N.S.W. from Jervis Bay, Gerringong, Foxground, Albion Park, Broughton Vale, Royal N.P., Gap Creek F.P., Ash Island, Allyn and Williams Rivers, Snapper Island, John Gould Island N.R., Myall Lakes N.P., Seal Rocks, Wallis Lake, Cape Hawke, Black Head, Saltwater, Manning Point, Cooembac Island, Wingham Brush, Harrington, Sea Acres, Point Plomer, Doyles River S.F., Bellangry S.F., Carrai S.F., Willi Willi N.R., lower Macleay River, Smoky Cape, Shark Island, Way Way S.F., Oakes S.F., New England N.P., Dorrigo N.P., Pine Creek S.F., Bundagen F.R., Bruxner Park F.R., Mt. Coramba, Madmans Creek F.P., Kangaroo River S.F., Wild Cattle Creek S.F., Hortons Creek, Blandford Creek, Chandlers Creek, Glenugie F.R., Gibraltar Range

N.P., Willowie Scrub, Billilimbra S.F., Ewingar S.F., Iluka N.R., Mt. Pikapene S.F., Cherry Tree S.F., Richmond Range S.F., Toonumbar S.F., Unumgar S.F., Rivertree, Yabbra S.F., Beaury S.F., Acacia Plateau, Mt. Wilson F.P. Mt. Clunie F.P., Donaldson S.F., Nothofagus Mountain F.R., Mt. Lindesay., Roseberry S.F., Levers Plateau, Wiangaree S.F., Terania Creek, Quandong Falls, Johnstons Scrub, Booyong, Victoria Park N..R., Broken Head N.R., Mt. Warning N.P., Mebbin S.F., Pumpenbil Creek, Limpinwood N..R., Couchy Creek and Stotts Island N.R.

**Timber and Uses** — Pinkish next to the thin band of pale sapwood, becoming darker towards the centre. Very hard, tough and difficult to chop. Close-grained. Little seems to be known about the timber, but it should be suitable for hard turnery, small tool handles, mallets and chisel handles.



Juvenile Leaf

0 1 2 cm.

E.S.

Plate 25  
*Scolopia braunii* (Klotzsch) Sleumer

# FAMILY THYMELAEACEAE

## CHARACTERISTICS OF THE FAMILY IN N.S.W.

A family of 50 genera and 500 species in the temperate and tropical zones of the world, especially in Africa. In Australia there are six genera and 89 species. There is however only one tree species in N.S.W. rainforests, namely *Phaleria chermsideana*.

The most diagnostic features of this species are:—

**Branchlets** — Slender with a very tough bark.

**Leaves** — Opposite, not toothed, smooth, glossy beneath. Leaf stalks red.

**Flowers** — Pink, downy tubular, about 15mm long in axillary clusters without stalks. The tubular calyx with four oval lobes. Petals absent and stamens eight.

**Fruit** — Shiny red drupe with a white mealy pulp, about 1.2cm long.

**Habitat** — In dry rainforest.

**Distribution** — The genus consists of twenty species from Sri Lanka through S.E. Asia to Australia and the S.W. Pacific. In Australia there are five species, all confined to this country from North Queensland to northern N.S.W. *P. chermsideana* extends from Kangaroo River S., F. west of Coffs Harbour to Atherton, North Queensland.

## PHALERIA CHERMSIDEANA (F.M. Bail.) C.T. White

**Synonym** — *Leucosmia chermsideana* Bail.

**Reference** — Queensl. Dept. Agric. and Stock, Bot. Bull. 21, 19-21, 1919.

**Derivation** — Phaleria from Greek "phaleros" white, possibly referring to the

flowers; chermsideana after Lady Chermside, a lover of botany.

**Common Name** — Scrub Daphne.

**Standard Trade Name** — None.

An attractive tree when in flower and fruit attaining a height of 10cm and a stem diameter of 20cm.

**Trunk** — Not buttressed but often crooked.

**Outer Bark** — *Dark brown, almost smooth*, marked by numerous small reddish-brown lenticels and shallow vertical fissures. Underbark yellow-brown. Outer surface of live bark with dark red and biscuit vertical stripes.

**Inner Bark** — Blaze on a tree 20cm diameter almost with white silvery vertical threads, becoming brown towards the outer margin. *Very fibrous and tough*, no rapid change in colour, no distinct taste, but with a faint characteristic smell. 5mm thick.

**Branchlets** — Thin, green-brown, smooth, very finely wrinkled. *Bark tough*.

**Leaves** — *Opposite*, simple, entire, elliptic, 4-7cm long, tapering to a fine point at the tip and also tapered at the base. Upper surface *often dull with the underside more glossy*. Green on both surfaces. *Leaf stalks* 5mm long, *red*, smooth.

**Venation** — Midrib clearly visible on both surfaces, lateral veins less clear, raised and a little more distinct on the underside. Net veins obscure.

**Flowers** — *Pink, very fragrant, downy, tubular* up to about 16mm long, in sessile clusters, *enclosed in two white hemispherical bracts, up to about six flowers* in the axils of the leaves. Calyx tubular, 10-12mm long with four, downy oval lobes. Petals absent. Stamens eight, as long as the calyx. Flowering period October to December.

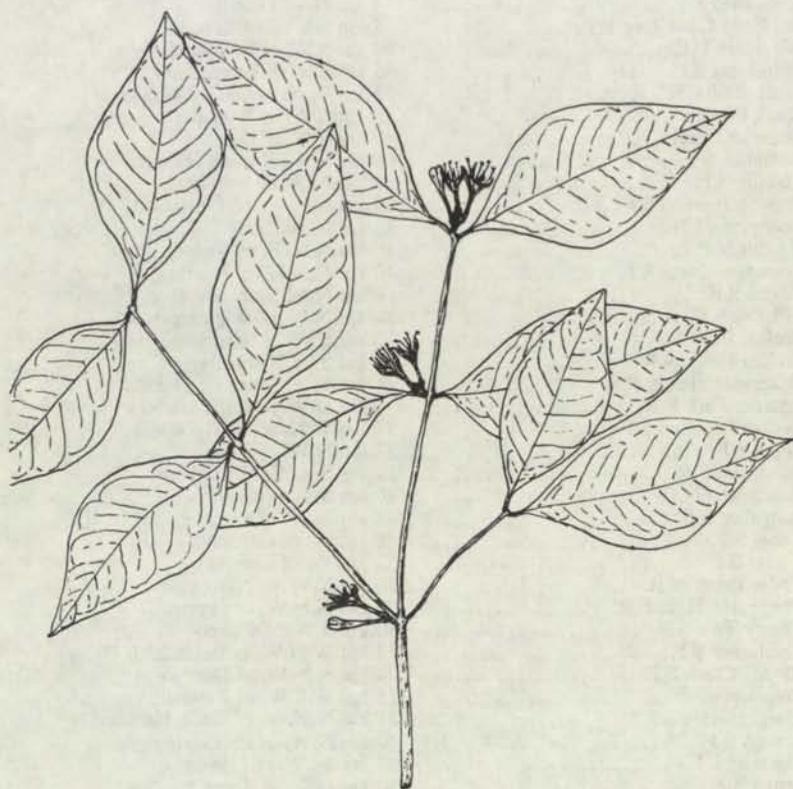
**Fruit** — *A drupe, shiny red, elliptical, 1.2cm long*. The white mealy pulp surrounds a cream elliptical-pointed seed, 1 cm long. The fruits are readily eaten by brush turkeys. Fruit ripe February.

**Habitat** — Dry rainforest.

**Distribution** — Kangaroo River S.F. west of Coffs Harbour, N.S.W. to Benarkin, west of Brisbane and again at Atherton, North Queensland. There is also an unsubstantiated record from Bruschy Mountains, Gloucester.

Recorded in N. S. W. from Kangaroo River S.F., Hortons Creek, Blandford Creek, Richmond Range S.F., Yabbra S.F., Beaury S.F., Acacia Plateau, Mt. Clunie F.P., Wiangaree S.F. and Mebbin S.F.

**Timber and Uses** — Wood white, tough, moderately hard, not durable.



0 1 2 cm.  
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Plate 26  
*Phaleria chermsideana* (F.M. Bail.) C.T. White

## APPENDIX

LIST OF LOCATIONS OF STATE FORESTS, FLORA RESERVES  
(INCLUDING FOREST PRESERVES), NATIONAL PARKS & NATURE RESERVES

Forest	Location
Bagawa S.F.	23 km NW of Coffs Harbour
Banda Banda F.P.	40 km WSW of Kempsey
Barcoongere S.F.	35 km SE of Grafton
Barrington Tops N.P.	35 km N.W. of Dungog
Beary S.F.	20 km S.W. of Urbenville
Bellangry S.F.	27 km N.W. of Wauchope
Bellinger River S.F.	13 km S.S.W. of Dorrigo
Bielsdown S.F.	4 km N. of Dorrigo
Big Fella Gum Tree F.R.	8 km S.S.W. of Kendall
Big Scrub F.R.	20 km S.W. of Mullumbimby
Billilimbra S.F.	35 km S.E. of Tenterfield
Black Bull F.R.	38 km W.N.W. of Coffs Harbour
Black Creek F.R.	15 km S.W. of Wauchope
Blandford Creek F.P.	40 km S.W. of Grafton
Boambee S.F.	6 km S.W. of Coffs Harbour
Bodalla S.F.	8 km N.W. of Narooma
Boonoo Boonoo S.F.	15 km N.N.W. of Tenterfield
Boorganna N.R.	32 km N. of Taree
Bouddi N.P.	45 km N.N.E. of Sydney
Boundary Creek S.F.	40 km N.N.W. of Dorrigo
Boyne S.F.	8 km N. of Batemans Bay
Bril Bril S.F.	24 km N.W. of Wauchope
Broken Bago S.F.	3 km S.W. of Wauchope
Broken Head N.R.	8 km S. of Byron Bay
Brunswick Heads N.R.	1 km N. of Brunswick Heads
Bruxner Park F.R.	6 km N.W. of Coffs Harbour
Buckra Bendinni S.F.	27 km W.N.W. of Macksville
Bulga S.F.	37 km N.W. of Taree
Bundagen F.R.	11 km S. of Coffs Harbour
Bundjalung N.P.	70 km N.E. of Grafton
Bungabee S.F.	18 km N.W. of Lismore
Cangi S.F.	48 km W. of Grafton
Carrai S.F.	52 km W. of Kempsey
Cedar Brush N.R.	170 km N.W. of Newcastle
Chapmans Plain F.R.	20 km N.N.W. of Dorrigo
Cherry Tree S.F.	30 km S.W. of Casino
Chichester S.F.	53 km W.N.W. of Bulahdelah
Clouds Creek S.F.	24 km N.N.W. of Dorrigo
Comboyne S.F.	15 km W.S.W. of Kendall
Conglomerate S.F.	21 km N.N.W. of Coffs Harbour
Craven S.F.	40 km N.W. of Bulahdelah
Dampier S.F.	32 km N.W. of Narooma
Dingo S.F.	30 km N.W. of Taree
Donaldson S.F.	16 km N. of Urbenville
Dorrigo N.P.	3 km S.E. of Dorrigo
Doyles River S.F.	58 km W. of Wauchope
Edinburgh Castle S.F.	10 km E. of Urbenville
Ellis S.F.	29 km N.W. of Dorrigo
Ewingar S.F.	42 km E. of Tenterfield
Forestland S.F.	15 km S.E. of Tenterfield
Gap Creek F.P.	32 km W.S.W. of Newcastle
Gibraltar Range S.F. & N.P.	47 km N.E. of Glen Innes
Girard S.F.	32 km N.E. of Tenterfield
Gladstone S.F.	8 km S.W. of Bellingen
Glenugie S.F. & F.R.	19 km S.E. of Grafton
Goonimbar S.F.	7 km N.N.E. of Nimbin
Guy Fawkes River N.P.	45 km N.W. of Dorrigo
Hyland S.F.	31 km W.N.W. of Dorrigo
Ingalba S.F.	18 km S.W. of Macksville
John Gould Island N.R.	52 km N.E. of Newcastle
Kangaroo River S.F.	34 km N.W. of Coffs Harbour
Killungoondie S.F.	13 km N.E. of Dorrigo
Kiwarrak S.F.	5 km S. of Taree
Koreelah S.F.	20 km N.W. of Urbenville

Levers Plateau F.R.	35 km N.N.W. of Kyogle
Limpinwood N.R.	20 km W. of Murwillumbah
Little Spirabo S.F.	34 km S.S.E. of Tenterfield
Lower Bucca S.F.	14 km N.N.W. of Coffs Harbour
Madmans Creek F.R.	10 km N.W. of Woolgoolga
Marengo S.F.	34 km N.W. of Dorrigo
Masseys Creek S.F.	89 km W.N.W. of Bulahdelah
Mebbin S.F.	24 km N.N.E. of Kyogle
Mebbin Rock F.P.	21 km N.N.E. of Kyogle
Minnamurra N.P.	15 km S.W. of Moss Vale
Minyon Falls F.R.	13 km S.W. of Mullumbimby
Mistake S.F.	23 km W. of Macksville
Mobong Creek F.R.	16 km N.N.E. of Dorrigo
Monga S.F.	27 km N.W. of Batemans Bay
Mooball S.F.	8 km S.E. of Murwillumbah
Moonpar S.F.	16 km N.N.W. of Dorrigo
Mt. Belmore S.F.	42 km S.W. of Casino
Mt. Boss S.F.	48 km N.W. of Wauchope
Mt. Clunie F.P.	22 km N. of Urbenville
Mt. Dromedary F.R.	13 km S.W. of Narooma
Mt. Hyland	40 km N.W. of Dorrigo
Mt. Lindesay S.F. & F.R.	19 km N.E. of Urbenville
Mt. Pikapene S.F.	39 km S.W. of Casino
Mt. Warning N.P.	10 km S.W. of Murwillumbah
Mt. Wilson F.P.	25 km N.N.W. of Urbenville
Myall Lakes N.P.	13 km S.E. of Bulahdelah
Nambucca S.F.	10 km N.N.E. of Macksville
Never Never S.F.	11 km E. of Dorrigo
New England N.P.	75 km E. of Armidale
Newry S.F.	19 km N. of Macksville
Norfolk Falls F.R.	25 km N.E. of Coolah
Nothofagus Mountain F.R.	20 km N.N.E. of Urbenville
Nulla Five-Day S.F.	48 km N.W. of Kempsey
Nullum S.F.	16 km W.S.W. of Mullumbimby
Oakes S.F.	40 km N.W. of Macksville
Olney S.F.	24 km N.W. of Wyong
Orara East S.F.	10 km N.W. of Coffs Harbour
Orara West S.F.	18 km W. of Coffs Harbour
Ourimbah S.F.	6 km S.W. of Wyong
Pine Brush S.F.	24 km N.E. of Grafton
Pine Creek S.F.	16 km S.S.W. of Coffs Harbour
Red Cedar F.R.	18 km N.N.W. of Dorrigo
Red Scrub F.R.	20 km S.W. of Mullumbimby
Riamukka S.F.	25 km S.S.E. of Walcha
Richmond Range S.F.	35 km N.W. of Casino
Roseberry S.F.	32 km N.N.W. of Kyogle
Roses Creek S.F.	25 km S.W. of Bellingen
Rowleys Creek F.R.	32 km N.W. of Wingham
Royal N.P.	5 km S.S.W. of Sutherland
Scotchman S.F.	10 km W.S.W. of Bellingen
Sea Acres Reserve	Port Macquarie
Sheas Nob S.F.	34 km N.N.W. of Dorrigo
Sherwood N.R.	20 km N.W. of Woolgoolga
Stotts Island N.R.	12 km N.E. of Murwillumbah
Strickland S.F.	64 km S.S.W. of Newcastle
Styx River S.F.	53 km E. of Armidale
Tabbimoble S.F.	65 km N.E. of Casino
Tooloom S.F.	19 km S.W. of Urbenville
Toonumbar S.F.	23 km W.N.W. of Kyogle
Tuckers Nob S.F.	13 km S.W. of Coffs Harbour
Unumgar S.F.	14 km N.E. of Urbenville
Victoria Park N.R.	15 km S.E. of Lismore
Waihou F.R.	18 km W.N.W. of Woolgoolga
Wallingat S.F.	23 km E.N.E. of Bulahdelah
Warung S.F.	25 km N.E. of Coolah
Washpool S.F.	72 km W.N.W. of Grafton
Watagan S.F.	35 km N. of Wyong
Way Way S.F.	10 km S.E. of Macksville
Wedding Bells S.F.	19 km N. of Coffs Harbour
Weelah N.R.	42 km N.N.W. of Taree

Whian Whian S.F. ....	16 km S.W. of Mullumbimby
Wiangaree S.F. ....	24 km N. of Kyogle
Wild Cattle Creek S.F. ....	32 km W. of Coffs Harbour
Willi Willi N.R. ....	40 km W.N.W. of Kempsey
Wilson River F.R. ....	37 km S.W. of Kempsey
Wollumbin S.F. ....	16 km W.S.W. of Murwillumbah
Woodburn S.F. ....	42 km N.N.E. of Batemans Bay
Woolgoolga Creek F.R. ....	5 km W. of Woolgoolga
Yabbra S.F. ....	16 km S. of Urbenville
Yarrahapinni S.F. ....	5 km S.E. of Macksville

**F.C. of N.S.W. Photofile**

Plate 1 — SC7434; 2 — 7420; 3 — 7422; 4 — 7432; 5 — 7417; 6 — 7428  
Plate 7 — SC7430; 8 — 7429; 9 — 7449; 10 — 7426; 11 — 7433; 12 — 7424  
Plate 13 — SC7431; 14 — 7427; 15 — 7423; 16 — 7425; 17 — 7441; 18 — 7436  
Plate 19 — SC7442; 20 — 7440; 21 — 7448; 22 — 7421; 23 — 7435; 24 — 7437  
Plate 25 — SC7438; 26 — 7439.

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