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

PART XI

FAMILIES:

**Araliaceae
Alangiaceae
Epacridaceae
Myrsinaceae
Sapotaceae
Ebenaceae
Symplocaceae
Oleaceae**

AUTHOR

A.G. Floyd



**FORESTRY COMMISSION OF N.S.W.
RESEARCH NOTE No. 48**

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PART XI

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EPACRIDACEAE

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SAPOTACEAE

EBENACEAE

SYMPLOCACEAE

OLEACEAE

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SYDNEY 1982

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INTRODUCTION

This is the eleventh in a series of twelve 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 (1960)
Second Edition 1979—N.S.W. Rainforest Trees.
Part I, Family *Lauraceae*.
- Research Note No. 7 (1961)
Second Edition 1981—N.S.W. Rainforest Trees.
Part II, Families *Capparidaceae*,
Escalloniaceae, *Pittosporaceae*,
Cunoniaceae, *Davidsoniaceae*.
- Research Note No. 28 (1973)
Second Edition 1979—N.S.W. Rainforest Trees.
Part III, Family *Myrtaceae*.
- Research Note No. 29 (1976)
Second Edition 1979—N.S.W. Rainforest Trees.
Part IV, Family *Rutaceae*.
- Research Note No. 32 (1977)
Second Edition 1981—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*,
Caesalpinhiaceae, *Papilionaceae*,
Simaroubaceae, *Burseraceae*,
Meliaceae.
- Research Note No. 41 (1980) N.S.W. Rainforest Trees.
Part IX, Families *Euphorbiaceae*,
Anacardiaceae, *Corynocarpaceae*,
Celastraceae, *Siphonodontaceae*,
Icacinaceae.
- Research Note No. 43 (1981) N.S.W. Rainforest Trees.
Part X, Families *Rhamnaceae*,
Elaeocarpaceae, *Malvaceae*,
Sterculiaceae, *Eucryphiaceae*,
Flacourtiaceae, *Thymelaeaceae*.

In this part, 31 species of rainforest trees in the families *Araliaceae*,
Alangiaceae, *Epacridaceae*, *Myrsinaceae*, *Sapotaceae*, *Ebenaceae*,

Symplocaceae and *Oleaceae* have been described and illustrated with the emphasis on field characteristics. Diagnostic features are shown in italics. Standard Trade Names used are those in Australian Standard AS 02—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.

FAMILY ARALIACEAE

CHARACTERISTICS OF THE FAMILY IN N.S.W.

The family occurs mainly in the tropical regions of the world, particularly South East Asia and America, consisting of 55 genera and 700 species. However, there are representatives in Tasmania and in the cool temperate rainforests of South America and New Zealand (4 genera and 17 species). In Australia there are twelve genera and 32 species of which only two tree species of *Polyscias* are in N.S.W. rainforests.

Both *P. elegans* and *P. murrayi* are fast-growing small to medium trees with attractive umbrella or palm-like crowns. The trunks are unbuttressed, straight and unbranched for most of their height.

Outer Bark—Grey to grey-brown, smooth except for large specimens of *P. elegans* which become vertically fissured and scaly. Underbark light brown.

Inner Bark—White (*P. murrayi*) or light brown (*P. elegans*) with white vertical lines. On exposure the white margin of *P. murrayi* turns red-brown, whilst in *P. elegans* the whole surface turns darker brown with the sapwood surface becoming greenish-yellow. The bark smells like celery (*P. elegans*) or green beans (*P. murrayi*).

Branchlets—Thick with prominent leaf scars.

Leaves—Very large up to 130 cm long, alternate, simply pinnate (*P. murrayi*) or bipinnate (*P. elegans*) with opposite leaflets. Leaflet stalks constricted where attached to the main stalk (*P. elegans*) or with a gland on the main stalk between the paired leaflet stalks (*P. murrayi*).

Flowers—Creamy-green (*P. murrayi*) or purple (*P. elegans*), small but numerous in large branching heads of umbels (*P. murrayi*) or racemes (*P. elegans*). Sepals inconspicuous, petals and stamens five, about 3 mm long.

Fruit—More or less succulent drupe, pale blue (*P. murrayi*) or purplish-brown to black (*P. elegans*), 4-6 mm wide and laterally flattened with a prominent forked style on top. Two to three seeds in each fruit.

Habitat—Both are typical secondary species in disturbed subtropical, dry or warm temperate rainforest with a life span generally less than 100 years.

Distribution—*Polyscias* consists of about 80 species in tropical Africa and Asia. *P. murrayi* extends from New Guinea down the east coast of Australia to the Victorian border, whereas *P. elegans* occurs from Thursday Island to Jervis Bay. *P. sambucifolius* is only a shrub in wet sclerophyll forest from Southern Queensland to Tasmania, whilst *Cephalalaria cephalobotrys* is a vine in all types of rainforest from subtropical to cool temperate from Southern Queensland to the Illawarra, N.S.W.

Timber and Uses—Pale, soft and of light weight. Could be used for cases, models and some interior joinery.

KEY TO RAINFOREST TREE SPECIES OF ARALIACEAE IN N.S.W.

A. USING LEAVES AND BRANCHLETS ONLY

1. Leaves pinnate, gland on the leaf stalk between each pair of leaflets *Polyscias murrayi* (F. Muell.) Harms
1. Leaves bipinnate, gland absent *Polyscias elegans*
(C. Moore & F. Muell.) Harms

B. USING BARK ONLY

1. Outer portion of live bark white, turning red-brown on exposure. No celery smell *Polyscias murrayi* (F. Muell.) Harms
1. Outer portion of live bark light brown, turning darker brown on exposure. Celery smell *Polyscias elegans* (C. Moore & F. Muell.) Harms

POLYSCIAS ELEGANS (C. Moore & F. Muell.) Harms

Synonym—*Panax elegans* C. Moore & F. Muell., *Tieghemopanax elegans* R. Viguier.

Reference—Engler u. Prantl, *Natürlichen Pflanzenfamilien* III, 8, p. 45, 1894.

Derivation—Polyscias from Greek “polys” many, “scias”, an umbel referring to the inflorescence; elegans from Latin “elegans” neat referring to the decorative compound leaves.

Common Name—Celery Wood, Black Pencil Cedar, Silver Basswood.

Standard Trade Name—Silver basswood.

A handsome tree often with an umbrella-shaped crown attaining a height of 30 m and a stem diameter of 75 cm.

Trunk—Often straight and cylindrical with a *trichotomously branched crown*.

Outer Bark—Grey to grey-brown, usually smooth on young trees; but becoming vertically fissured, rough and scaly with scattered lenticals on larger trees. Underbark fawn-brown. Outer surface of live bark mottled creamy-brown and orange-brown.

Inner Bark—Blaze on a tree 35 cm diameter light brown patterned by numerous fine white and brown vertical lines of varying lengths, changing to a darker and more uniform brown after a few minutes exposure. The inner margin and sapwood surface changes to greenish-yellow. The *taste and smell* of the bark resembles *celery*. 13 mm thick.

Branchlets—Rather thick, grey, becoming green towards the tips. Young shoots downy. Leaf scars prominent.

Leaves—Very large alternate, *pinnate or bipinnate* with opposite or almost opposite leaflets. leaflets ovate, 5-13 cm long, abruptly drawn out into a distinct point at the tip and quickly tapering at the base. Upper surface shining, dark green, paler beneath. The *main leaf stalk is constricted at its junction with the minor leaf stalks and in turn with that of the leaflet stalklets*. Lateral leaflet stalk 1-7 mm long, terminal leaflet stalk 15-25 mm.

Venation—Midrib and lateral veins visible on both surfaces with sometimes a few net veins visible and more distinct on the underside.

Flowers—Purple, not scented, in *racemes* on a large much-branched panicle, the branches finely and densely hairy. Flowers small and very numerous with five petals about 3 mm long attached to the top of the flattened and rounded combined ovary and calyx. Stamens five, 2-3 mm long. Flowering period mainly February to March, but sometimes irregular.

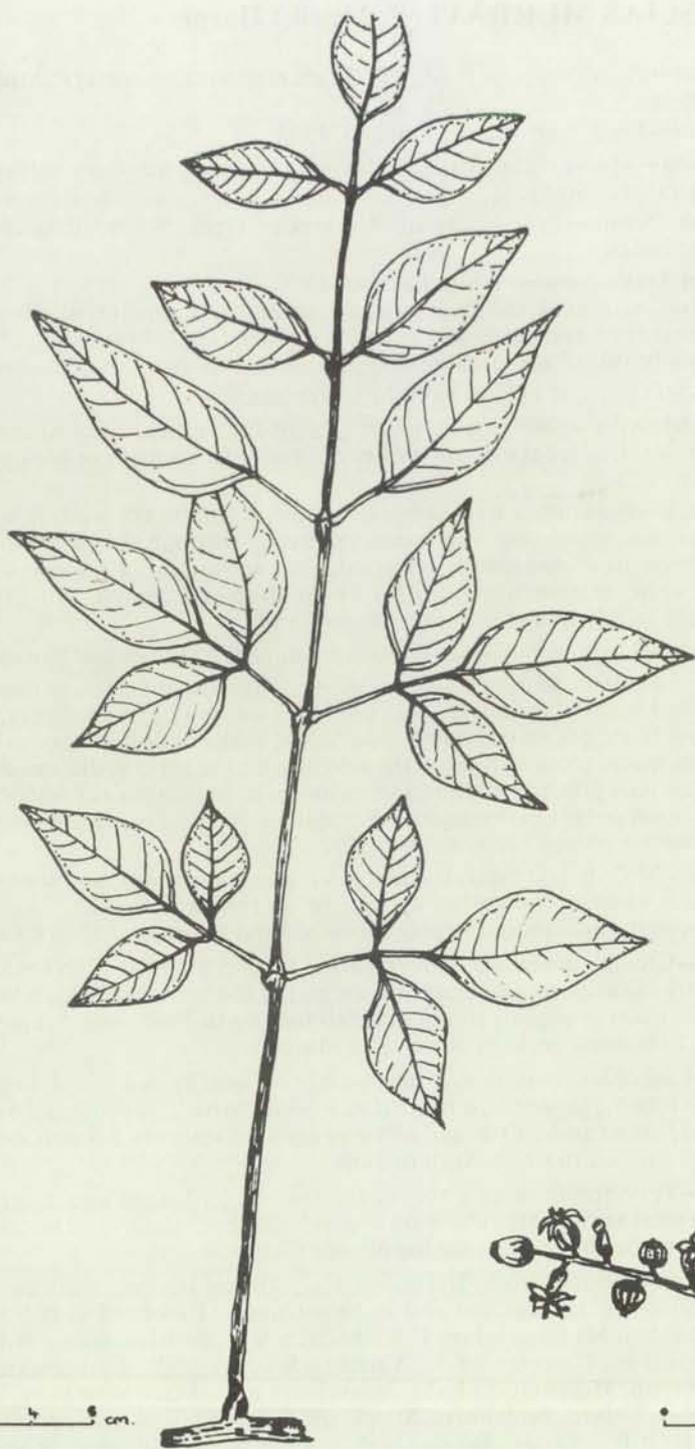
Fruit—Succulent drupe, dull purplish-brown to black, *globular-flattened* 5-7 mm wide *with two persistent curved styles* at the top. One seed in each of the two cells, green, 5 mm long. Fruit ripe March to July.

Habitat—Common in secondary rainforest on volcanic soils where it reaches its best development; but also on the poorer sedimentary soils.

Distribution—Extends from Jervis Bay, N.S.W. to Thursday Island, North Queensland. Recorded in N.S.W. from Beecroft Peninsula. Comerong Island, Kiama, Minnamurra Falls, Whispering Gallery, Royal N.P., Allyn and Williams Rivers, Snapper Island, John Gould Island N.R., Myall Lakes N.P., Seal Rocks, Cape Hawke, Booti Booti, Yahou Island, Woko, Saltwater, Manning Point, Harrington, Crowdy Bay N.P., Wingham Brush. Weelah N.R., Comboyne, Black Creek F.R., Sea Acres. Point Plomer, Big Hill, Mt Seaview N.R., Bellangry S.F., Toorumbree Creek, Kunderang Brook, Carrai S.F.,

Willi Willi Caves N.R., Wollomombi Gorge, Shark Island, Yarrhapinni, Way Way S.F., Scotchman S.F., Oakes S.F., New England N.P., Bellinger River S.F., Dorrigo N.P., Bellingen, Bundagen F.R., Pine Creek S.F., Boambee, Bruxner Park F.R., Mt Coramba, Woolgoolga Creek F.R., Madmans Creek F.P., Waihou F.R., Twelve Sixty F.P., Kangaroo River S.F., Wild Cattle Creek S.F., Mobong Creek F.R., Red Cedar F.R., Moonpar S.F., Clouds Creek S.F., Chapmans Plain F.R., Hortons Creek, Mt Hyland, Marengo S.F., Guy Fawkes R.N.P., Chaelundi S.F., Blandford Creek, Gibraltar Range N.P., Washpool S.F., Carnham, Ewinger S.F., Boonoo Boonoo Falls, Girard S.F., Rivertree, Copmanhurst, Iluka N.R., Bundjalung N.P., Mt Belmore S.F., Mt Pikapene S.F., Cambridge Plateau, Richmond Range S.F., Murray Scrub, Toonumbar S.F., Yabbra S.F., Beaury S.F., Legume Road F.P., Acacia Plateau, Mt Wilson F.P., Mt Clunie F.P., Mt Nothofagus F.R., Mt Lindesay, Moore Park, Roseberry S.F., Levers Plateau, Grady's Creek F.R., Wiangaree S.F., Blue Knob, Goonimbar S.F., Terania Creek, Whian Whian S.F., Minyon Falls F.R., Boomerang Falls, Big Scrub F.R., Wilson Park, Boatharbour, Johnstons Scrub, Booyong, Nashua, Davis Scrub N.R., Victoria Park N.R., Broken Head N.R., Brunswick Heads N.R., Mooball S.F., Cudgen Lake, Round Mtn, Mebbin S.F., Mt Warning N.P., Upper Pumpenbil Creek, Limpinwood N.R., Couchy Creek, Murwillumbah, Mt Cougal and Stotts Island N.R.

Timber and Uses—Wood white, mottled pale brown, soft, fissile, close and fine grained, showing a pleasing silver grain on the quarter which closely resembles European Maple. It could be used for light oars, brush backs, bee-hive frames, models, inlays, cases and violin bridges. However, it is susceptible to splitting and the sapwood is attacked by borers. 480 kg per cubic metre.



E.S.

Plate No. 1
Polyscias elegans (C. Moore & F. Muell.) Harms

POLYSCIAS MURRAYI (F. Muell.) Harms

Synonym—*Panax murrayi* F. Muell., *Tieghemopanax murrayi* (F. Muell.) Viguier.

Reference—Engl. Nat. Pflanz. Fam. 43, 1898.

Derivation—Murrayi after Patrick Murray, a nineteenth century patron of Australian botany.

Common Name—Pencil Cedar, Umbrella Tree, White Basswood, Pencilwood.

Standard Trade Name—White Basswood.

A tree attaining the height of 20 m and a diameter of 50 cm. Unbranched and palm-like up to 6-9 m, then finally branching, often into a beautiful and dichotomously branched crown.

Trunk—Straight and cylindrical, not buttressed.

Outer Bark—Brownish-grey, smooth, except for vertical lines of corky pustules. Underbark thin, pale brown. Outer surface of live bark pale green.

Inner Bark—Blaze on a tree 30 cm diameter, white on the outside with numerous white lines and bands extending through the pale brown inner portion towards the sapwood. On exposure for a few minutes, the white margin turns red-brown or deep orange-red. No taste. Smells faintly like green beans. 8 mm thick.

Branchlets—Thick, green, smooth, with prominent leaf scars and lenticels.

Leaves—Alternate, *pinnate*. *Leaflets eight to thirty*, opposite, entire or toothed, ovate-lanceolate, 8-15 cm long, but may exceed 25 cm on young trees; drawn out into a blunt point at the tip; often unequal at the base and more abrupt on the side nearest the main stalk, smooth, satiny, pale green above and somewhat paler beneath. *Leaf stalks up to 120 cm long*. Leaflet stalks 3-8 mm long. *A gland is present on the leaf stalk between each pair of leaflets*.

Venation—Midrib and lateral veins paler green on the upper surface. Midrib white or pale green and raised on the undersurface. Lateral veins on the undersurface darker in colour and less distinct than above.

Flowers—Creamy-green, on slender stalks, 2-4 mm long, 10-17 in *umbels* on large branching panicles from the end of the branches. Sepals very small, blunt or slightly toothed. Petals five, up to 3 mm long. Stamens five. Flowering period February to March.

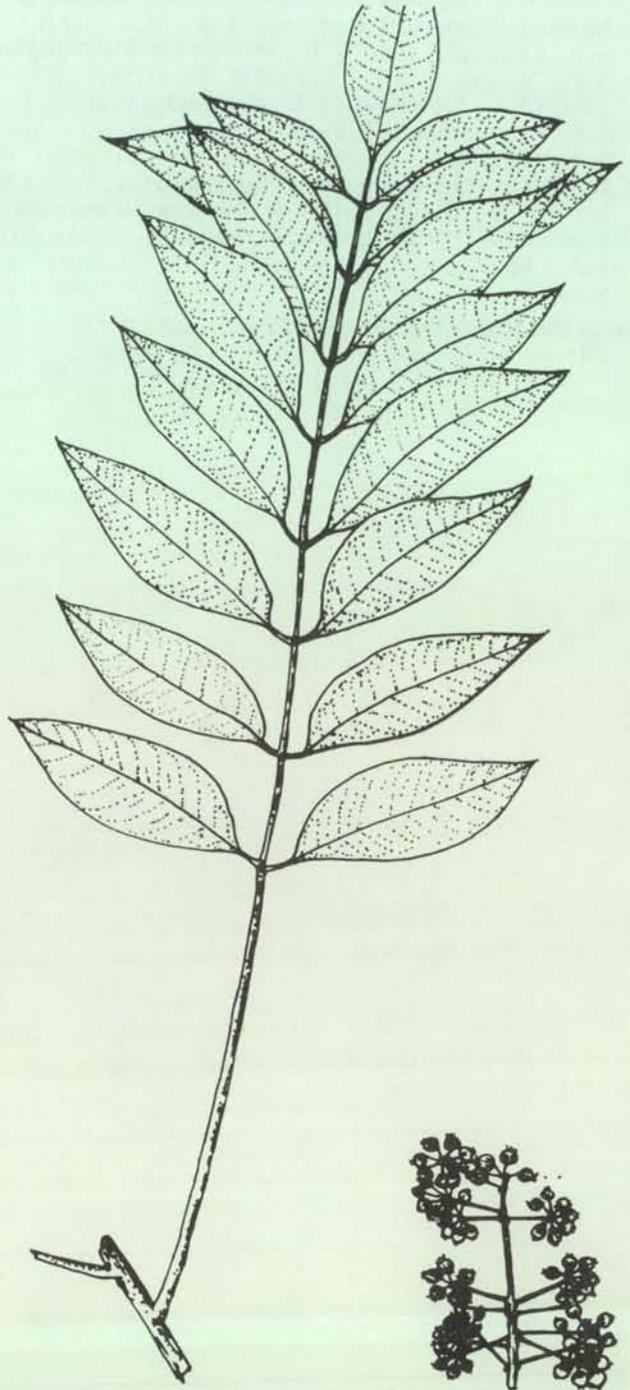
Fruit—More or less succulent drupe, pale blue, usually two lobed, rarely three lobed, *flattened on two sides*, 4-6 mm broad, *surmounted by a small forked style*. Fruit radially arranged on stalklets 3-5 mm long. Seeds three. Fruit ripe April to June.

Habitat—Very common as a secondary species on logged and cleared rainforest areas (particularly on roadsides) in both shaley and basaltic soil types with a preference for hillside forests.

Distribution—Found from Harrisons Ck., Howe Range, Victoria to Atherton, N. Queensland and in New Guinea. Recorded in N.S.W. from Eden, Mt Dromedary F.R., Bodalla S.F., Murrumbidgee N.P., Kioloa S.F., Currowan S.F., Yadboro S.F., Conjola, Cambewarra, Jamberoo, Minnamurra Falls, Jerusalem Creek, Macquarie Pass, Mt Kembla, Otford, Bullaburra, Strickland S.F., Bilpin, Woodford, Gap Creek F.P., Cedar Brush N.R., Allyn and Williams Rivers, Gloucester, Woko, Boorganna F.R., Comboyne, Black Creek F.R., Middlebrother S.F., Doyles River S.F., Mt Seaview N.R., Werrikimbe N.P., Mt Boss S.F., Banda Beech F.P., Toorumbec Creek, Way Way S.F., Oakes S.F., New England N.P., Bellinger River S.F., Dorrigo N.P., Never Never S.F., Tuckers Nob, Pine Creek

S.F., Orara West S.F., Bruxner Park F.R., Mt Coramba, Woolgoolga Creek F.R., Bagawa S.F., Twelve Sixty F.P., Kangaroo River S.F., Mobong Creek F.P., Red Cedar F.R., Moonpar S.F., Clouds Creek S.F., Chapmans Plain F.R., Munningyundo Mtn, Gibraltar Range N.P., Washpool S.F., Carnham, Forestland S.F., Ewingar S.F., Girard S.F., Mt Belmore S.F., Cambridge Plateau, Richmond Range S.F., Toonumbar S.F., Yabbra S.F., Beaury S.F., Acacia Plateau, Mt Nothofagus F.R., Roseberry S.F., Levers Plateau, Wiangaree S.F., Blue Knob, Goonimbar S.F., Terania Creek, Whian Whian S.F., Big Scrub F.R., Minyon Falls F.R., Lismore, Johnston's Scrub, Nashua, Broken Head N.R., Brunswick Heads N.R., Mooball S.F., Cudgen Lake, Mebbin S.F., Mt Warning N.P., Couchy Creek and Hogan's Scrub.

Timber and Uses—Pale, soft and light. Suitable for cases, models and some interior work. Susceptible to attack by borers.



0 2 4 cm.
E.S.

Plate No. 2
Polyscias murrayi (F. Muell.) Harms

FAMILY ALANGIACEAE

CHARACTERISTICS OF THE FAMILY IN N.S.W.

A small family of only one genus and 17 species in tropical Asia, Africa, Malesia, South-west Pacific and Australia. In Australia there are three species, of which only one subspecies *polyosmoides* of *Alangium villosum* occurs in N.S.W.

The description on the following page includes the characteristics of this single representative in N.S.W. which is a small to medium tree generally below the main canopy of subtropical or less commonly warm temperate rainforest. The brown wrinkled bark and the yellow-brown blaze with a deep yellow sapwood surface is distinctive. So also is the somewhat downy leaves with numerous small swellings along both the midrib and lateral veins on the undersurface. The flowers are pale yellow and fragrant, whilst the fruit is an oval black drupe, 10-20 mm long enclosing a single egg-shaped seed.

The three Australian species extend from Cape York to Newcastle, with only a single subspecies in N.S.W. A second genus supposedly in the family is *Metteniusa* which comprises three species all restricted to tropical South America. However, its placement here is in dispute. Such a distribution pattern strongly suggests that the family had a tropical origin and moved south into Australia.

ALANGIUM VILLOSUM (Bl.) Wangerin. ssp.

POLYOSMOIDES (F. Muell.) Bloemb.

Synonym—*Marlea vitiensis* Benth.

Reference—Bull. Jard. Bot. Buitenzorg, Ser III, 16, 209, 1939.

Derivation—Alangium being the Malabar name for *Alangium decapetalum*, the first species described; villosum from Latin "villosus" hairy, in relation to the hairy leaves; polyosmoides from *Polyosma* a rainforest tree with similar leaves and Greek "eidos" resembling.

Common Name—Black Muskheart, Brown Muskheart, Canary Muskheart, Muskwood.

Standard Trade Name—Canary Muskheart.

A tree attaining a height of 18 m and a stem diameter of 60 cm.

Trunk—Large trees sometimes shortly buttressed.

Outer Bark—Greyish-brown, with a faint greenish tinge, wrinkled, marked by numerous lenticels, corky pustules and small scales. Underbark brown. Outer surface of live bark yellow-brown.

Inner Bark—Blaze on a tree 30 cm diameter, pale brown with numerous paler vertical lines and broader brownish stripes which fade out near the *pale yellow inner margin*. Surface of the blaze *changes to yellowish-brown or orange* after about five minutes exposure; and the inner margin to a deeper yellow. Bitter taste and a distinctive but unpleasant odour. 7 mm thick.

Branchlets—Slender, grey, becoming green and hairy towards the ends. Young shoots downy.

Leaves—Alternate, entire, ovate oblong or oblong elliptic, 6-13 cm long, drawn out into a fairly long blunt point at the tip, unequal sided at the base where tapering more abruptly on the side nearer the branch tip. Smooth on the upper surface, slightly downy on the under side or sometimes hairy both surfaces, dark green above, paler beneath. Subspecies *tomentosus* is a form with more hairy leaves which is restricted to Queensland. *Numerous small swellings along the midrib and lateral veins*. Leaf stalks 6-13 mm long.

Venation—Midrib and lateral veins visible on the upper surface, raised and distinct beneath. Net veins at right angles to the lateral veins and midrib, distinct beneath.

Flowers—Pale yellow or faintly greenish-yellow, faintly fragrant like orange blossom, in short axillary cymes of three to five flowers, often not exceeding 2 cm long. Individual flowers tubular, about 8 mm long and about 6 mm wide when expanded. Densely downy. Calyx tube green, without lobes. Petals four to six, about 2 mm wide, joined towards the base, but with reflexed lobes, 5 mm long. Stamens yellow, five, erect, 5 mm long. Flowering period October to April.

Fruit—A drupe, black, oval, 10-20 mm long. Outer part succulent, enclosing a single egg-shaped seed, 10 mm long. Fruit ripe September to February.

Habitat—Coastal rainforest on both the poorer coachwood soils and the richer basalt soils. The species attains its best development in red basalt soils of the McPherson Range.

Distribution—From Newcastle, N.S.W. to McIlwraith Range, N Queensland. Recorded in N.S.W. from Blackbutt Park, Mt Allyn, Myall Lakes N.P., Woko, Cape Hawke, Black Head, Wingham Brush, Bulga S.F., Weelah N.R., Boorganna N.R., Middlebrother S.F., Black Creek F.R., Sea Acres, Racecourse Headland, Pappinbarra, Mt Seaview N.R.,

Mt Boss S.F., Bellangry S.F., Toorumbree Creek, Kunderang Brook, Willi Willi Caves N.R., Mt Sebastapol, Styx River S.F., Way Way S.F., Oakes S.F., New England N.P., Bellinger River S.F., Dorrigo N.P., Bellingen Island, Wedding Bells S.F., Twelve Sixty F.P., Bagawa S.F., Kangaroo River S.F., Hortons Creek, Mt Hyland, Marengo S.F., Chaelundi S.F., Blandford Creek F.P., Maclean, Susan Island, Cangi S.F., Gibraltar Range N.P., Washpool S.F., Carnham, Forestland S.F., Ewingar S.F., Girard S.F., Iluka N.R., Cambridge Plateau, Murray Scrub, Toonumbar S.F., Yabbra S.F., Beaury S.F., Legume Road F.P., Acacia Plateau, Mt Wilson F.P., Mt Nothofagus F.R., Mt Lindesay, Levers Plateau, Gradys Creek F.R., Wiangaree S.F., Bungabee S.F., Goonimbar S.F., Whian Whian S.F., Minyon Falls F.R., Boomerang Falls, Wilson Park, Boatharbour, Johnston's Scrub, Nashua, Booyong, Victoria Park N.R., Broken Head N.R., Hayter's Hill, Byron Bay, Brunswick Heads N.R., Round Mtn, Cudgen Lake, Mt Warning N.P., Upper Pumbenbil Creek, Couchy Creek, Murwillumbah, Mt Cougal, Hogans Scrub and Stotts Island N.R.

Timber and Uses—Brownish-black with a musk-like fragrance. In large and mature trees there is a fairly thick band of yellow sapwood surrounding the true wood. Close grained, and firm, it is excellent for turnery, carving, inlays and cabinet work. Large trees, however, are comparatively rare and the dark fragrant timber would be known only to a very few connoisseurs of rare and beautiful woods.



0 1 2 cm.

E.S.

Plate No. 3
Alangium villosum (Bl.) Wangerin
ssp. *polyosmoides* (F. Muell.) Bloemb.

FAMILY EPACRIDACEAE

CHARACTERISTICS OF THE FAMILY IN N.S.W.

This family is mainly in Australia but with a few species in New Zealand, Hawaii, the high mountains of S.E. Asia, and the southern tip of South America. Of the 30 genera and 400 species in the world, Australia possesses 28 genera (of which 21 genera are restricted to it) and 340 species. It differs from the closely related family Ericaceae in having five rather than eight to ten stamens which are not attached to the corolla tube. There are two genera of N.S.W. rainforest trees, namely *Acrotriche* (one species) and *Trochocarpa* (two species).

All are small crooked trees not exceeding 15 m tall with fluted rather than buttressed trunks.

Outer Bark—Dark brown, black or grey (*Acrotriche aggregata* and *Trochocarpa Laurina*) or pinkish-brown and mottled (*Trochocarpa sp.*). Finely fissured and scaly (*Acrotriche* and *T. laurina*) or smooth with loose scales (*T. sp.*). Underbark dark brown (*Acrotriche* and *T. sp.*) or fawn (*T. laurina*).

Inner Bark—Pinkish-brown (*Acrotriche* and *T. laurina*) or pinkish-cream (*T. sp.*) darkening to yellow-brown on exposure (*Trochocarpa*). Astringent taste and a sugar cane or musty smell.

Branchlets—Slender with short hairs or down on the younger shoots, except *T. laurina* which is smooth.

Leaves—Alternate (clustered in *T. laurina*), simple, usually not toothed, elliptic and tapering at both ends (lanceolate and rounded at the base in *Acrotriche*), 1-4 cm long (5-7 cm in *T. laurina*), paler green beneath (*Acrotriche* is white). New leaves pink or cream (red in *T. sp.*).

Venation—Conspicuous longitudinal veins, three in *Acrotriche*, five in *T. sp.* and five to seven in *T. laurina*.

Flowers—Cream to white (*Acrotriche* and *T. laurina*) or creamy-brown (*T. sp.*), in clusters on the leafless branchlets (*Acrotriche*) or terminal spikes (*Trochocarpa*). Petals forming a tube with five lobes, bearded inside only except for *Acrotriche* which has also a tuft of hairs at the tip of the lobes. Sepals and stamens five.

Fruit—Drupe, red (*Acrotriche*) or blue-black (*Trochocarpa*), globular-flattened, 3-8 mm diameter, containing a bony endocarp of four to five cells (*Acrotriche*) or ten cells (*Trochocarpa*).

Habitat—In wet sclerophyll forest and warm temperate rainforest up to 800 m altitude (*T. laurina*), at higher altitudes in low temperate rainforest or scrub (*Acrotriche*) or also at high altitude but associated with *Nothofagus* forest (*T. sp.*).

Distribution—Whereas the family Ericaceae is widespread throughout the rest of the world, in Australia its place is largely taken by the family Epacridaceae which in more recent times appears to have occupied the high mountains to the north in New Guinea, Celebes and Sabah. A common origin possibly in Africa of the two families whilst the northern and southern hemisphere super-continent were still joined has been suggested.

Both *Acrotriche* and *Trochocarpa* have the majority of species in Eastern Australia, but each has a single species in the south-west of Western Australia where fossil pollen indicates an ancient cool temperate rainforest environment. All eight species of *Acrotriche* are restricted to Australia from Western Australia and South Australia to the east coast as far north as North Queensland. *A. aggregata* extends

from Picton, N.S.W., to Atherton, North Queensland. *Trochocarpa* consists of 15 species of which one is in Western Australia, eight in Eastern Australia from Tasmania to North Queensland and six in the mountains of New Guinea, Indonesia and Sabah. *T. laurina* ranges from the Illawarra, N.S.W., to South Queensland and then again on the highest peaks of North Queensland. *T. sp.* has a very restricted range being found only with *Nothofagus moorei* or its associates throughout its southern distribution from the Barrington Tops to Marengo, west of Dorrigo in N.S.W.

Timber and Uses—Brown to pink, hard, close-grained and tough. Too small to be used, although *T. laurina* was used by the Aborigines for waddies.

KEY TO RAINFOREST TREE SPECIES OF EPACRIDACEAE IN N.S.W.

A. USING LEAVES AND BRANCHLETS ONLY

1. Leaves white beneath *Acrotriche aggregata* R. Br.
1. Leaves paler green beneath 2
 2. Leaves clustered, 5-7 cm long *Trochocarpa laurina* R. Br.
 2. Leaves not clustered 1-4 cm long *Trochocarpa* sp.

B. USING BARK ONLY

1. Outer bark mottled pink and brown,
smooth with loose scales *Trochocarpa* sp.
1. Outer bark dark brown, black or grey,
finely fissured and scaly 2
 2. Dead underbark dark brown *Acrotriche aggregata* R. Br.
 2. Dead underbark fawn *Trochocarpa laurina* R. Br.

ACROTRICHE AGGREGATA R. Br.

Synonym—*Styphelia aggregata* (R. Br.) Spreng.

Reference—Prodr. 547, 1810.

Derivation—Acrotriche from Greek “akron” tip and “triklos” hairs, referring to the distinctive erect tuft of hairs near the tip of the corolla lobes; aggregata from Latin “aggregatus” clustered, referring to the flower arrangement.

Common Name—Red Cluster Heath, Tall Acrotriche, Tall Groundberry.

Standard Trade Name—None.

A small tree up to 15 m high and 30 cm diameter.

Trunk—Commonly-crooked and fluted often consisting of several stems.

Outer Bark—Dark brown to black, finely fissured to scaly. Chocolate-brown in the fissures. Underbark dark brown. Outer surface of live bark white, cream or light brown with vertical white flecks.

Inner Bark—Blaze on a tree 30 cm diameter pink-brown to creamy white with fine white lines on smaller trees. No change in colour on exposure. Sapwood white with prominent rays. Astringent to taste. Sugar cane smell. 3 mm thick.

Branchlets—Slender, fawn then later black on the leafless sections, sparsely downy with prominent leaf scar projections. New seasons growth protected by bracts, their bases forming a ring around the stem for several years.

Leaves—Alternate, simple, sometimes finely toothed towards the tip only, lanceolate, 10-30 mm long, tapering quickly to a short point at the tip, rounded to heart-shaped at the base. Shiny dark green above, *white beneath* due to minute numerous hairs. Leaf stalks less than 1 mm long.

Venation—Indistinct above, but with *three prominent longitudinal veins on the lower surface* and finer net veins between.

Flowers—Creamy-white, in *stalkless clusters of four to seven on the leafless branches*. Sepals five, ovate-lanceolate, blunt, under 1 mm long and hidden by the bracts. Petals united into a tube 1-2 mm long with five spreading lobes 1 mm long, hairy inside only, except for a *tuft of hairs at the tip of the lobes*. Stamens five, enclosed and attached to the tube. *Ovary six to ten-celled*. Flowering period mainly July to November.

Fruit—Like a drupe, red with a thin fleshy covering over four to five hard cells, depressed globular with the remains of the style attached, 3-6 mm diameter. Fruit ripe mainly November to April.

Habitat—Commonly in depauperate temperate rainforest or scrub on shallow rocky soils on steep slopes or ridge tops at high altitudes.

Distribution—From Picton, N.S.W., to Atherton, North Queensland. Recorded in N.S.W. from Yerranderie west of Picton, Lawson Ridge, Katoomba, Blackheath, Wentworth Falls, Kanangra, Hazelbrook, Kowmung, Colo River, Doyles River S.F., Boorganna N.R., Styx River S.F., New England N.P., Deervale, Bishops Creek F.P., Meldrum, Dorrigo N.P., Lanes Lookout, Tuckers Knob, Wild Cattle Creek S.F., Mt Hyland, Marengo S.F., Washpool S.F., Forestland S.F., Girard S.F., Wilson's Downfall, Bald Rock N.P., Mt Wilson F.P., Mt Glennie, Levers Plateau, Roseberry S.F., Terania Creek, Whian Whian S.F., Byron Bay, Mt Warning N.P., North Pumpenbil Creek and Limpinwood N.R.

Timber and Uses—Too small and therefore not used.



0 1 2 cm.

Plate No. 4
Acrotriche aggregata R. Br.

TROCHOCARPA LAURINA R. Br.

Reference—Prod. 548, 1810.

Derivation—Trochocarpa from Greek "trochos" wheel and "carpos" a fruit, referring to the cogwheel-shaped fruit; laurina from Latin "laurus" the laurel because of the leaf resemblance.

Common Name—Tree Heath, Axebreaker, Sandberry, Wheel-fruit, Waddy Wood, Laurel Heath, Turkey Bush.

Standard Trade Name—None.

A small tree 8 m tall, 35 cm diameter with heavy low branches characteristically hosting many epiphytes.

Trunk—Crooked, not buttressed but slightly flanged at the base.

Outer Bark—Grey to brownish-black, corky, finely fissured to platy. Underbark fawn. Outer surface of live bark deep pinkish-black.

Inner Bark—Blaze on a tree 35 cm diameter dark pink-brown with pale pink vertical lines. White vertical threads appearing after two to three minutes. Sapwood margin cream, turning yellow-brown. Whole blaze darkening on exposure. Very astringent with a musty smell. 12 mm thick.

Branchlets—Moderately thin, pale green turning grey on leafless older branchlets. Smooth. Base of each season's growth marked by stipule scars.

Leaves—Alternate but grouped at the ends of the branchlets, simple, not toothed, elliptic to broad elliptic, 5-7 cm long, pointed at the tip and gradually tapering at the base. Glossy both sides, smooth, dark green above, paler beneath. New leaves pink. Leaf stalks 3-6 mm long, smooth.

Venation—Five to seven parallel veins, raised above, but more conspicuous and darker below.

Flowers—White, in terminal single or clustered interrupted spikes, 2-3 cm long, with a persistent bract in the axil of each flower. Petals tubular about 2 mm long with five shorter spreading lobes bearded on the inside. Sepals five, triangular, 1 mm long, streaked. Stamens five, attached near the top of the tube, short. Ovary ten-celled, tapering into a short thick style. Flowering period in all months but with a peak in June and July.

Fruit—Drupe, dull blue-black, globular flattened, ribbed when dried, 6-8 mm diameter. Within the pulp is a ten-ribbed bony endocarp separating with difficulty into ten cells, each with a single seed. Fruit ripe June to September.

Habitat—In wet sclerophyll forest and warm temperate rainforest up to 800 m altitude.

Range—Illawarra, N.S.W., to South Queensland and again on the summit of Mt Bellenden Ker and Thornton Peak, North Queensland. Recorded in N.S.W. from Mt Kembla, Mt Kiera, Bulli, Royal N.P., Parramatta, Colo, Wondabyne, Calga, Morissett, Olney S.F., Gap Creek F.P., Watagan S.F., Newcastle, Pokolbin S.F., Stewarts Brook S.F., Barrington Tops N.P., Allyn and Williams Rivers, Crawford Road, Craven S.F., Seal Rocks, Smiths Lake, Forster, Crowdy Bay N.P., Bulga S.F., Weelah N.R., Middlebrother S.F., Sea Acres, Doyles River S.F., Pappinbarra, Mt Seaview N.R., Werrikimbe N.P., Mt Boss S.F., Cockerawombeeba F.P., Toorumbec Creek, Kunderang Brook, Smoky Cape, Yarrhapinni, Way Way S.F., Scotchman S.F., Roses Creek S.F., Ringwood F.P., Oakes S.F., New England N.P., Bellingong River S.F., Dorrigo N.P., Dome Mtn, Never Never S.F., Killungoondie Plain F.P., Tuckers Knob, Bellingen, Pine Creek S.F., Bundagen F.R., Orara West S.F., Coffs Harbour,

Bruxner Park F.R., Mt Coramba, Orara East S.F., Woolgoolga Creek F.R., Madman's Creek F.P., Waihou F.R., Conglomerate S.F., Bagawa S.F., Twelve Sixty F.P., Mobong Creek F.R., Moonpar S.F., Clouds Creek S.F., Marengo S.F., Hyland S.F., Epur, Chaelundi S.F., Blandford Creek F.P., Sherwood N.R., Ramornie S.F., Munningyundo Mtn, Cangi S.F., Gibraltar Range N.P., Washpool S.F., Little Spirabo S.F., Forestland S.F., Boonoo Boonoo, Drake, Girard S.F., Iluka N.R., Richmond Range S.F., Toonumbar S.F., Unumgar S.F., Wardell, Urbenville, Beaury S.F., Acacia Plateau, Donaldson S.F., Mt Nothofagus F.R., Lindsay Creek, Mt Lindesay, Mt Glennie, Roseberry S.F., Wiangaree S.F., Blue Knob, Goonimbar S.F., Terania Creek, Whian Whian S.F., Big Scrub F.R., Minyon Falls F.R., Brunswick Heads N.R., Round Mountain, Mooball S.F., Mebbin S.F., Mt Warning N.P., Couchy Creek and Hogan's Scrub.

Timber and Uses—Brown to pink, hard, close-grained, tough with an attractive grain. Useful for turnery or purposes requiring a tough fine-grained wood. Requires careful seasoning and is apt to tear under the plane. Used as waddies by Aborigines.



Plate No. 5
Trochocarpa laurina R. Br.

TROCHOCARPA SP.

Reference—Blakely and McKie in 1940 proposed to describe this species as *T. McRaeana*, but never published it.

Common Name—Mountain Tree Heath.

Standard Trade Name—None.

A small tree 10 m tall and 30 cm diameter.

Trunk—Fluted, crooked.

Outer Bark—Pinkish-brown or mottled brown and fawn *smooth with loose scales*. Very thin. *Underbark dark brown* towards the exterior, cream within. Outer surface of live bark cream to biscuit-brown.

Inner Bark—Blaze on a tree 30 cm diameter uniformly *pinkish-cream*. Changing to yellow-brown on exposure. Astringent taste with a cane smell. 2 mm thick.

Branchlets—*Dark grey to black with short rigid hairs*, base of each season's growth marked by stipular scars.

Leaves—Alternate, not grouped at the end of the branchlets as in *T. laurina*, simple, not toothed, *elliptic to narrow elliptic*, 1.5-4 cm long, bluntly pointed at the tip and gradually tapering at the base. Slightly glossy both sides, smooth, dark green above, paler beneath. *New leaves bright red*. Leaf stalks 2-3 mm long, with *grey-brown hairs*.

Venation—Five parallel veins, slightly raised above and below, inconspicuous above but more obvious below.

Flowers—*Creamy-brown* in terminal single or clustered spikes, 1-2.5 cm long with a persistent bract in the axil of each flower. Petals tubular, about 2 mm long with five shorter erect lobes, cream with brown margin, bearded on the inside. Sepals five, triangular, 1 mm long. Stamens five, shorter than the petals. Flowering period March to July.

Fruit—Drupe, blue-black to dark purple, globular flattened, 4-6 mm diameter. Within the pulp is a ten-ribbed bony endocarp consisting of ten cells, each with a single seed. Fruit ripe November to February.

Habitat—In cool temperate rainforest above 1 300 m altitude. Often associated with *Nothofagus moorei* and *Doryphora sassafras*.

Distribution—From Barrington Tops to Marengo, N.S.W. Recorded in N.S.W. from Barrington Tops N.P., Mt Paterson, Gloucester Tops, Styx River S.F., Upper Georges River, New England N.P., Round Mountain, Barren Mountain, Bellingen River S.F., Bishops Creek F.R., Mt Hyland and Marengo S.F.

Timber and Uses—Not known.

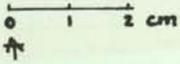


Plate No. 6
Trochocarpa sp.

FAMILY MYRSINACEAE

CHARACTERISTICS OF THE FAMILY IN N.S.W.

The family is represented by 35 genera and 1 000 species throughout the tropics and subtropics of the world, South Africa, Australia and New Zealand. In Australia there are seven genera and 25 species of which those tree species in N.S.W. consist of one species each in *Ardisia* and *Tapeinosperma* with two species in *Rapanea*.

Rapanea howittiana and *R. variabilis* are small trees 15-18 m tall, whilst *Ardisia bakeri* and *Tapeinosperma pseudo-jambosa* are only tall shrubs or small trees under 10 m tall. Trunk cylindrical, not buttressed.

Outer Bark—Brown (*Ardisia*) or fawn to cream, rough corky (*R. variabilis*) or mainly smooth. Underbark red-brown (*Ardisia*) or creamy brown to orange fawn.

Inner Bark—Blaze cream with pink streaks (*Ardisia*) or with deeper pink streaks. Sapwood surface unchanged (*Ardisia*), turning a deeper pink (*R. howittiana*) or turning from pale brown to purple-black (*R. variabilis*). Specimens were too small in *Tapeinosperma* for inclusion.

Branchlets—Slender (*Ardisia*) or thick, rusty hairy on the leafy section (*R. howittiana*) or smooth, winged and triangular (*Tapeinosperma*). Protuberances on the leafless branchlets due to old flower clusters (*Rapanea* spp.) Buds with rusty brown hairs (*Rapanea* spp.) or smooth.

Leaves—Alternate, simple, occasionally toothed on mature leaves (*R. variabilis*), on juvenile leaves only (*R. howittiana*) or not toothed but finely wavy. Elliptic to reverse egg-shaped (*Tapeinosperma*), 3-12 cm long. Oil glands or lighter spots present (*Ardisia*, *Tapeinosperma*). Leaf stalks 5-15 cm (*R. howittiana*) or less than 5 cm, extending as a wing down the stem (*Tapeinosperma*) or not winged.

Venation—Lateral veins obscure on either surface at 70°-80° to the midrib (*Tapeinosperma*) or clearly visible and at 45°, numerous.

Flowers—White (*Ardisia*, *R. variabilis*) or yellow-green (*R. howittiana*, *Tapeinosperma*), in short axillary racemes (*Ardisia*), clusters (*Rapanea* spp.) or terminal panicles (*Tapeinosperma*). Flower stalks 2-4 mm long (*Rapanea* spp.) or 6-8 mm (*Ardisia*, *Tapeinosperma*). Sepals four or five (*R. variabilis*) or five, up to 1 mm long. Petals of similar number as sepals, joined for at least half their length (*R. variabilis*) or at the base only. Stamens attached to the petals and of equal number, protruding beyond them (*Tapeinosperma*) or enclosed.

Fruit—Berry (*Ardisia*) or drupe, black, blue-black or purple, globular, 5-7 mm diameter, raised glands on surface absent (*Ardisia*) or present. Fruit in clusters on stalks 2-4 mm long (*Rapanea* spp.) or on a main axis with stalks at least 5 mm long (*Ardisia*, *Tapeinosperma*).

Habitat—On steep poorer rhyolite soils (*Ardisia*, *Tapeinosperma*) on the transition between cool and warm temperate or subtropical rainforest and sclerophyll forest (*Rapanea* spp.).

Distribution—This is an ancient family, being the southern hemisphere equivalent of the northern family Primulaceae, although both now overlap. It probably originated before the separation of Laurasia and Gondwana. It was in England 50 million years ago and has also been in tropical Asia for a long time.

Ardisia consists of 400 species distributed throughout the warmer zones of the world. The six species in Australia are restricted to it, with five species from South to North Queensland and *A. bakeri* confined

to the slopes of the Springbrook Plateau on the N.S.W.-Queensland border. An ancient migration from Asia appears likely.

Rapanea contains 200 species from the tropics and subtropics, with the ten Australian species confined to here, although showing affinities with Asian species and suggesting such an origin. The Australian distribution is from Gippsland, Victoria, to North Queensland. Of the two N.S.W. tree species, *R. howittiana* extends from the Upper Yarra Valley, Victoria, to South Queensland. *R. variabilis* is from Milton on the N.S.W. South Coast to North Queensland. In addition, a third shrubby species *R. sessilis* is confined to the Richmond-Tweed Valleys of N.S.W. and adjacent Queensland coastal areas. A possible fourth but undescribed species confined to the Lower Richmond River has not been found this century and may be extinct.

Tapeinosperma consists of 40 species, which are all restricted to Australia and the South-West Pacific region. The two Australian species are confined to far northern N.S.W. and Queensland. *T. pseudo-jambosa* extends from the Tweed River, N.S.W., to North Queensland. Similarly *Embelia* is restricted to coastal N.S.W. and Queensland, with the vine *E. australiana* extending in N.S.W. as far south as Wyong.

The overall picture is therefore one of an ancient Asian migration south into Australia but with a long period of isolation resulting in many endemic species and even genera.

Timber and Uses—Pale (*Ardisia*), creamy-brown with conspicuous paler rays (*R. howittiana*) or pink with distinct rays (*R. variabilis*). Straight and close-grained, hard. Generally too small to be used; but would be suitable for turnery, tool handles, cabinets and furniture.

KEY TO RAINFOREST TREE SPECIES OF MYRSINACEAE IN N.S.W.

A. USING LEAVES AND BRANCHLETS ONLY

1. Leaf-bearing branchlets winged and triangular in cross-section *Tapeinosperma pseudo-jambosa* (F. Muell.) Mez
1. Leaf-bearing branchlets neither winged nor triangular in cross-section 2
 2. Leaf stalk 5-15 mm long *Rapanea howittiana* Mez
 2. Leaf stalk not exceeding 5 mm long 3
 3. Leaf buds covered by rusty-brown hairs *Rapanea variabilis* (R. Br.) Mez
 3. Leaf buds smooth *Ardisia bakeri* C. T. White

B. USING BARK ONLY

1. Bark surface rich brown, dead underbark red-brown *Ardisia bakeri* C. T. White
1. Bark surface cream to fawn, dead underbark creamy-fawn 2
 2. Background of blaze pink with darker rays and pale brown sapwood surface *Rapanea variabilis* (R. Br.) Mez
 2. Background of blaze cream or pink with darker rays and purple-red sapwood surface *Rapanea howittiana* Mez

Specimens of *Tapeinosperma pseudo-jambosa* (F. Muell.) Mez were too small in N.S.W. to display bark characteristics.

ARDISIA BAKERI C. T. White

Synonym—*Ardisia racemosa* R. T. Baker.

Reference—Proc. Roy. Soc. Qld. 53, 13, 223, 1942.

Derivation—*Ardisia* from Greek “ardēs” a point, referring to the pointed corolla lobes; *bakeri* after R. T. Baker, Curator of the Technological Museum, Sydney, who first described this species but under a pre-occupied name.

Common Name—*Ardisia*.

Standard Trade Name—None.

A tall shrub or small tree up to 10 m tall and 15 cm diameter.

Trunk—Cylindrical with the knobby remains of the old branches.

Outer Bark—*Rich brown*, smooth with numerous small round pustules. Underbark red-brown. Outer surface of live bark with brown and cream patches.

Inner Bark—Blaze on a tree 15 cm diameter cream on the outer portion, but with pink vertical streaks on the inner section. No change in colour on exposure. No taste. Sappy smell. 4 mm thick.

Branchlets—*Thin*, light brown, wrinkled with distinct leaf and bud scars on the leafless older stems. Buds smooth.

Leaves—Alternate, simple, margins entire, broad lanceolate, 5-12 cm long, blunt at the tip, tapering gradually into the stalk at the base. Smooth and dull on both surfaces, paler green beneath, thin. The edges are *slightly crinkled or waved*. Scattered orange-red glands visible with a lens and raised on the upper surface. Leaf stalk 4-5 mm, channelled above and twisted through 90°.

Venation—Midrib and lateral veins visible on both surfaces. Net veins only obvious on the lower surface of dried leaves, where as seen with a hand lens each reticulation contains branched unconnected fine veins. Midrib sunken above, raised below. Lateral veins 15-25 at 45° to the midrib.

Flowers—White in short axillary racemes. Flower stalks 8 mm long. Sepals five, 1 mm long, marked with dark purple spots, not hairy, edges chaffy. Petals five, 3 mm long, overlapping and twisted in bud, tapering to a point, not hairy, spotted, the lower half of the inner surface densely rusty downy. Stamens five with short filaments. Flowering period October—November.

Fruit—Berry, black, globular with a short point at the tip, 7 mm diameter, on short stalks 5 mm long with several arising from a short thick common stalk 4 mm long on the leafless branchlets. Fruit ripe May.

Habitat—Warm temperate rainforest on rhyolitic soils at approximately 600-700 m altitude.

Distribution—Springbrook Plateau on N.S.W.-Queensland border. Apparently now rare in Queensland due to extensive clearing. Recorded in N.S.W. from Couchy Creek and Upper Crystal Creek at the base of the Springbrook Plateau. Previously at Murwillumbah and Tumbulgum.

Timber and Uses—Light coloured, close-grained and moderately hard. Could be used for turning and tool handles if sufficiently large and plentiful.



0 1 2 cm
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Plate No. 7
Ardisia bakeri C. T. White

RAPANEA HOWITTIANA Mez

Synonym—*Myrsine howittiana* F. Muell. (but never published).

Reference—Engl. Pflanzenreich 354, 1902.

Derivation—*Rapanea* of obscure origin, *howittiana* after Dr A. W. Howitt (1839-1908) explorer, botanist and police magistrate of the Gippsland goldfields where he presumably made the type collection.

Common Name—Howitt's Muttonwood, Brush Muttonwood.

Standard Trade Name—None.

A small tree up to 23 m high and 60 cm diameter.

Trunk—Crooked, cylindrical, not buttressed.

Outer Bark—Creamy-grey, smooth with horizontal cracks. Underbark creamy-brown. Outer surface of live bark olive-green and pinkish-brown.

Inner Bark—On a tree 25 cm diameter *cream with purple-red oak-like pattern* becoming more crowded towards the sapwood until almost uniform purple-red. No change in colour on exposure except for the sapwood margin which turns deeper pink. Bitter taste and a cane-like smell. 8 mm thick.

Branchlets—Moderately thick, grey, with scattered rusty-brown hairs on the leafy sections, lenticels conspicuous as white dots. Buds and expanding leaves with dense rusty-brown hairs.

Leaves—Alternate, simple, always not toothed on mature foliage (some toothed in *R. variabilis*), elliptic, 4-9 cm long, rounded at the tip and tapering gradually at the base. Shiny above, dull below, not hairy, dark green above and slightly paler below. Leaf margin transparent. *Leaf stalk 5-15 mm long*, smooth or with scattered rusty hairs.

Venation—Prominent on dried leaves only, where even the net veins are visible on both sides. Lateral veins 15-25 at 45° to the midrib, ending in an intramarginal vein about 1 mm from the leaf edge.

Flowers—Pale yellowish-green, unscented, in axillary clusters of 10-15 on the leafless branchlets. Flower stalks 2-4 mm long. Sepals five, triangular with finely fringed margins, under 1 mm long. *Petals five*, narrow elliptical, *joined at the base only*, 2 mm long. Stamens five, apparently stalkless, attached to the inside centre of the petals. Flowering period November to January.

Fruit—Drupe, thinly fleshy, blue-black with *glandular dots*, globular, 5-7 mm diameter on *somewhat furry stalks 2-4 mm long*. Seeds single fawn, globular 4-6 mm diameter. Fruit ripe December to June.

Habitat—Commonly in the ecotone between wet sclerophyll forest and subtropical or warm temperate rainforest.

Distribution—From Upper Yarra, Victoria to Wellington Point, Queensland. Recorded in N.S.W. from Wolumla, Tathra, Mt Dromedary F.R., Narooma, Dampier trig., Moruya, Murramarang N.P., Currowan S.F., Yabboro S.F., Morton N.P., Milton, Sassafras, Conjola, Beecroft Peninsula, Wingello, Bungonia Caves, Minnamurra Falls. Whispering Gallery, Robertson N.R., Macquarie Pass, Shell Harbour, Mt Kembla, Royal N.P., Kogarah, Lion Island, Cattai Creek, Springwood, Jenolan Caves, Mt Tomah, Mt Wilson, Mt Coricudgy, Gap Creek F.P., Widdin Valley, Rylestone, Munghorn, Merriwa, Warrah Creek, Kelaher Brush, Stewart Brook, Allyn and Williams River, John Gould Island N.R., Bulahdelah, Myall Lakes N.P., Woko, Gloucester, Boorganna N.R., Comboyne, Middle Brother S.F., Lorne S.F., Sea Acres, Point Plomer, Racecourse Headland, Upper Hastings, Wilson River F.P..

Toorumbee Creek, Kunderang Brook, Chandler Gorge, Shark Island, Warrell Creek, Upper Georges River, Oakes S.F., New England N.P., Bellinger River S.F., Dorrigo N.P., Pine Creek, Wild Cattle Creek S.F., Moonpar S.F., Clouds Creek S.F., Hyland S.F., Marengo S.F., Blandford Creek F.P., Munningyundo Mtn, Gibraltar Range N.P., Washpool S.F., Forestland S.F., Ewingar S.F., Girard S.F., Iluka N.R., Woodford Island, Beaury, Tooloom S.F., Acacia Plateau, Mt Wilson, Mt Nothofagus, Mt Lindesay, Wiangaree S.F., Big Scrub F.R., Brunswick Heads N.R. and Mt Warning N.P.

Timber and Uses—Creamy-brown with conspicuous paler medullary rays giving a good figure, fairly hard, straight-grained. Could be used for furniture, tool handles and cabinet work.



0 1 2 cm.
ES.

Plate No. 8
Rapanea howittiana Mez

RAPANEA VARIABILIS (R. Br.) Mez

Synonym—*Myrsine variabilis* R. Br.

Reference—Engl. Pflanzenreich, 355, 1902.

Derivation—*Variabilis* from Latin “*variabilis*” variable in reference to the variation in the leaves which are large and conspicuously toothed on young plants but smaller and scarcely toothed on older trees.

Common Name—Variable Muttonwood, Muttonwood.

Standard Trade Name—Rapanea.

A tree attaining a height of 15 m and occasionally 50 cm stem diameter with a dense crown of wavy dark-green leaves.

Trunk—Straight, fairly cylindrical and not buttressed.

Outer Bark—Cream to greyish-brown, often with a rough corky surface and short vertical fissures but sometimes smooth with horizontal raised rings. Underbark creamy to orange-fawn to brown. Outer surface of live bark pinkish brown to reddish-black.

Inner Bark—Blaze on a tree 22 cm diameter, pinkish-red at the outer margin becoming paler towards the centre which is pink with darker pink-brown vertical lines, then grading to pale brown at the inner margin which is somewhat granular in texture. The numerous rays in the wood show distinctly in the blaze towards the inner margin. Sometimes there are scattered holes on the surface of the inner half of the blaze due to the presence of hollow pores. Slight darkening in colour on exposure, except for the sapwood surface which turns purple-black. Slightly astringent and bitter, but no smell. 15 mm thick.

Branchlets—Moderately thick, grey or greyish-brown, smooth, with *small protuberances along the branches* at the nodes where the flowers arose. Buds and new leaves with dense rusty-brown hairs.

Leaves—Alternate, simple, margins often acutely toothed on young trees. On old trees the *margins mostly wavy* with an occasional tooth, reverse lance-shaped, ovate-oblong leaves may be found on the same branch, 3-8 cm long, blunt or rarely shortly tapering to a point at the tip and into the leaf stalk at the base. *Leaf stalks 2-5 mm long*, smooth, greenish-brown.

Venation—Midrib, lateral and net veins distinct and raised on both surfaces. Main lateral veins numerous, 15-25 at 45° to the midrib, joining to form an intramarginal vein 1 mm from the margin.

Flowers—Creamy-white, clustered along the branchlets, small, bell-shaped, about 2 mm long, flowerstalks up to 4 mm long. Sepals four to five, free, pointed, 0.5 mm long, yellowish. *Petals four to five*, lobed and blunt at the tips, *joined for at least half their lengths*, 2 mm long. Stamens of equal number as the petals, attached to their tube, and shorter than the lobes. Flowering period mainly July to August but occasionally in December.

Fruit—A drupe, blue when ripe, globular, with *numerous raised glands*, up to 5 mm diameter, on smooth slender stalks 2-4 mm long in clusters on the branchlets. Seeds single, globular, 4-5 mm diameter. Fruit ripe November and December.

Habitat—In and around the borders of all rainforest types.

Distribution—From Milton, N.S.W., to McIlwraith Range, North Queensland. Recorded in N.S.W. from Milton, Pig Island, Nowra, Shoalhaven River, Bomaderry, Minnamurra Falls, Whispering Gallery, Shellharbour, Mt Keira, Bulli, Picton, Camden, Campbelltown, Silverdale, Royal N.P., Como, Elizabeth Bay, Beecroft, Church Point, Hawkesbury River, Kurrajong Heights, Mt Wareng, Watagan S.F., Gap Creek F.P., Lake Macquarie, Newcastle, Aberdeen, Scone,

Kelahers Brush, Cedar Brush N.R., Murrurundi, Allyn and Williams Rivers, Upper Patterson, Port Stephens, John Gould Island N.R., Myall Lakes, N.P., Seal Rocks, Cape Hawke, Yahou, Gloucester, Woko, Curricabah Creek, Black Head F.R., Saltwater, Manning Point, Harrington, Crowdy Bay N.P., Wingham, Weelah N.R., Boorganna N.R., Comboyne, Middlebrother S.F., Sea Acres, Doyles River S.F., Mt Seaview N.R.; Werrikimbe N.P., Toorumbee Creek, Kunderang Brook, Willi Willi Caves N.R., Wollombi Gorge, Hat Head N.P., Shark Island, Yarrahapinni, Way Way S.F., Warrell Creek, Scotchman S.F., New England N.P., Bellinger River S.F., Dorrigo N.P., Tuckers Knob, Bellingen Island, Pine Creek S.F., Coramba Mtn, Kangaroo River S.F., Wild Cattle Creek S.F., Clouds Creek S.F., Hyland S.F., Guy Fawkes River N.P., Chaelundi S.F., Blandford Creek F.P., Sherwood N.R., Glenugie F.R., Dalmorton, Ramornie S.F., Carnham, Bald Rock N.P., Boonoo Boonoo, Iluka N.R., Paddys Land S.F., Mt Pikapene S.F., Toonumbar S.F., Unumgar S.F., Urbenville, Beaury S.F., Acacia Plateau, Mt Wilson F.P., Mt Clunie F.P., Mt Nothofagus F.R., Mt Lindesay, Mt Glennie, Roseberry S.F., Levers Plateau, Wiangaree S.F., Blue Knob, Whian Whian S.F., Broken Head N.R., Brunswick Heads N.R., Mooball S.F., Limpinwood N.R. Murwillumbah and Terranora.

Timber and Uses—Wood pinkish with distinct rays, close-grained, hard and tough with an attractive figure when cut on the quarter resembling silky oak, but seldom, if ever, used.



0 1 2 cm
*

Plate No. 9
Rapanea variabilis (R. Br.) Mez

TAPEINOSPERMA PSEUDO-JAMBOSA

(F. Muell.) Mez.

Synonym—*Ardisia pseudo-jambosa* F. Muell.

Reference—Engl. Pflanzenreich, Myrsin 170, 1902.

Derivation—Tapeinosperma from Greek "tapeinos" low and "sperma" a seed, because of its depressed seeds; pseudo-jambosa from Greek "pseudo" false and "Jambosa" one of the edible species of tropical myrtles which the tree resembles in general appearance.

Common Name—None.

Standard Trade Name—None.

A small tree up to 9 m tall; but only seen in N.S.W. up to 2.5 m tall.

Trunk—Not recorded.

Outer Bark—Not recorded.

Inner Bark—Not recorded.

Branchlets—Thick, the leafy sections *winged and triangular in cross section*. Smooth with scattered raised lenticels. Buds smooth.

Leaves—Alternate, simple, not toothed but finely wavy, reverse egg-shaped being broadest towards the tip, 5-12 cm long. Tapering to a short point or blunt at the tip, wedge-shaped at the base. Shiny on both sides, not hairy, with numerous characteristic yellow spots. Leaf stalk 2-3 mm long, smooth, broad and channelled, *extending down the stem as a wing*.

Venation—Midrib alone clearly visible, sunken above but raised below. Lateral veins obscure, very numerous, parallel, at 70°-80° to the midrib.

Flowers—Creamy-green, in large terminal panicles often over 15 cm long. Flower stalks 6-8 mm long. Sepals and petals five, under 1 mm long, shiny. Anthers five protruding, yellow. Flowering period November.

Fruit—Drupe, moderately fleshy, deep purple, globular, smooth with *numerous raised glands*, 6-7 mm diameter. On stalks 4-6 mm long. Seed single, fawn, globular flattened at the ends, 5-6 mm diameter within a thinly woody shell, streaked outside but very smooth and shiny within. Fruit ripe May.

Habitat—In subtropical rainforest along streams and in mountains on rhyolite scree slopes.

Distribution—Tweed River, N.S.W., to Bloomfield River, North Queensland. Recorded in N.S.W. from Couchy Creek in the Tweed Valley.

Timber and Uses—Too small to be used.



Plate No. 10
Tapeinosperma pseudo-jambosa (F. Muell.) Mez.

FAMILY SAPOTACEAE

CHARACTERISTICS OF THE FAMILY IN N.S.W.

There are between 35 and 126 ill-defined genera with approximately 800 species found throughout the tropical regions. *Planchonella* and *Palaquium* with 215 species are mainly in South East Asia whereas the predominantly tropical American genera of *Chrysophyllum* and *Pouteria* represent a further 200 species. In Australia there are seven genera comprising 31 species, of which 20 are confined to this country. In N.S.W. there are six species of *Planchonella* and a single species in *Amorphospermum* and *Niemeyera* respectively. The approach taken by Aubreville in maintaining the latter two genera as distinct rather than including them under *Chrysophyllum* as proposed by Vink has been adopted here.

Usually medium-sized trees of 20-30 m height and 50-60 cm diameter as in *Amorphospermum antilogum*, *Niemeyera prunifera*, *Planchonella australis*, and *P. pohlmaniana*. However, *P. chartacea*, *P. cotinifolia* and *P. myrsinoides* are only small trees, whilst *P. laurifolia* may reach 40 m high and 90 cm diameter. All species exhibit flanging or fluting at the base, although in *Niemeyera* and *P. australis* it is most pronounced. Crown silvery-brown in *Amorphospermum* or rusty in *Niemeyera*.

Outer Bark—Brown in *P. australis*, *P. laurifolia* and *P. myrsinoides*, grey-brown or creamy-grey in *Niemeyera*. Scaly, fissured (*Chrysophyllum*, *P. australis*, *P. chartacea*) or corky (*Niemeyera*). Underbark brown, fawn (*P. australis*) or cream (*P. chartacea*).

Inner Bark—Blaze white (*P. myrsinoides*), yellowish (*P. chartacea* and *P. cotinifolia*), brown (*P. pohlmaniana*), or pink to red (*Amorphospermum*, *Niemeyera*, *P. australis* and *P. laurifolia*). Darkening on exposure in *Niemeyera* and *P. australis*. All produce a milky latex from the inner half.

Branchlets—Usually thick but slender in *P. chartacea*, *P. cotinifolia* and *P. myrsinoides*. Smooth, downy (*P. laurifolia*, *P. myrsinoides*), felty pale fawn (*Amorphospermum*) or rusty hairy (*Niemeyera*), shoots smooth to downy, rusty-brown felt (*Amorphospermum*) or hairy (*Niemeyera*, *P. myrsinoides*, *P. pohlmaniana*). Exuding a milky latex when cut.

Leaves—Alternate, but clustered at the ends of the branchlets in *P. chartacea* and *P. pohlmaniana*, simple, not toothed, generally broad lanceolate to ovate, but obovate-narrow oblong in *P. pohlmaniana* and almost round in *P. cotinifolia*. Mostly over 8 cm long except *P. myrsinoides* 5-8 cm and *P. cotinifolia* 1-3 cm long. Drawn out to a long point at the tip (*P. chartacea*), rounded (*P. cotinifolia*) or bluntly pointed. Mature leaves smooth below, silvery silky hairy (*Amorphospermum*) or rusty hairy (*Niemeyera*). Leaf stalk over 2 mm long except in *P. cotinifolia*. Mature stalks smooth in *P. australis*, *P. chartacea* and *P. laurifolia*.

Venation—Midrib, lateral and net veins visible on both sides, except in *P. cotinifolia*, *P. laurifolia* and *P. myrsinoides* where the net veins are indistinct. Main lateral veins six to twenty, except *P. cotinifolia* where three to six.

Flowers—White to creamy-green in clusters (rarely singly) in the axils of the leaves, somewhat bell-shaped due to the joining of the petals at their bases. Not stalked in *Amorphospermum* and *Niemeyera*, but 2-14 mm long in *Planchonella*. Sepals, petals and stamens usually five, but may also be six in *P. pohlmaniana* or four in *P. myrsinoides*. Sepals often in two rows with darker hairs than the smooth petals. Stamens attached to the petals and projecting beyond them in *Amorphospermum* and *Niemeyera* only. In *Planchonella* there are

staminodia alternating with the stamens, but are absent in the other genera.

Fruit—A one to five-seeded berry, black to purple-black, globular (*Amorphospermum*, *Niemeyera*, *P. pohlmaniana*), plum-shaped (*P. australis*), oval to egg-shaped (*P. chartacea*, *P. cotinifolia*, *P. laurifolia*) or oval-pointed (*P. myrsinoides*). 2-5 cm diameter (*Amorphospermum*, *Niemeyera*, *P. australis*), 1.0-1.5 cm (*P. cotinifolia*) or of intermediate size. Seeds with a large elliptical scar, usually single and globular (*Amorphospermum*, *Niemeyera*), single and flattened (*P. cotinifolia*) or two to five and elliptical compressed. Seed coat hard and woody (*Amorphospermum*, *Planchonella*) or papery (*Niemeyera*).

Habitat—Commonly in dry rainforest (*P. australis*, *P. cotinifolia*, *P. laurifolia*, *P. myrsinoides*, *P. pohlmaniana*), littoral rainforest (*P. australis*, *P. chartacea*, *P. laurifolia*, *P. myrsinoides*, *P. pohlmaniana*), lowland subtropical rainforest (*Amorphospermum*, *P. australis*, *P. chartacea*), and gully and warm temperate rainforest (*Niemeyera*, *P. australis*).

Distribution—*Planchonella* is one of the largest genera in the family with about 100 species extending from the Seychelles Islands in the west Indian Ocean, through South-East Asia to New Guinea, Australia, New Caledonia and Lord Howe Island. There are also two species in South America. However, 66 of these species are endemic to New Guinea, Australia and New Caledonia; but this may not indicate its centre of origin but rather a zone of rapid expansion under changing climatic conditions. The disjunct distribution of *P. myrsinoides* in N.S.W. is of interest, as this species occurs in coastal rainforests from North Queensland to the Richmond River, several populations 170 km further south at Sawtell, a distinctive form with red hairy shoots at Cape Hawke 220 km further south and then the normal form on Lord Howe Island, 330 km east out in the Pacific. Its absence from the intervening suitable habitats south of the Richmond River appears to suggest long distance dispersal by birds or ocean currents rather than that the disjunct occurrences are relicts of a once more widespread flora. This would suggest that *Planchonella* could be of tropical Asian origin as are other tropical genera with representatives in Queensland, such as *Pouteria*, *Mimusops*, *Palaquium* and *Manilkara*. Of the six species in N.S.W., *P. australis* has the most southern range from the Illawarra to Gympie in South Queensland. The remainder extend to North Queensland, with *P. laurifolia* found west on Melville island and *P. chartacea* in western New Guinea. *P. myrsinoides* is found as far south as Forster, *P. chartacea*, *P. cotinifolia* and *P. pohlmaniana* to the Richmond River and *P. laurifolia* to the Brunswick River.

Amorphospermum and *Niemeyera* are both restricted to Australia and have very large fruit and non maritime occurrences in N.S.W. which are not conducive to long distance dispersal. Hence an Australian origin could be postulated. *Amorphospermum antilogum* is the only species in the genus and is found from the Tweed River, N.S.W., to North Queensland. *Niemeyera* consists of only two species, both restricted to Australia; and with *N. prunifera* occurring from the Macleay River, N.S.W., to North Queensland.

Timber and Uses—Yellow, yellow-brown (*P. chartacea*, *P. cotinifolia*) or light grey (*P. laurifolia*), hard and close-grained. Excellent timbers for carving, turnery and engraving. Although this family produces edible fruits in the tropics, only *Amorphospermum* and *P. australis* are recorded as having been eaten by Aborigines. The flesh of the latter is rather astringent; but the seeds were also eaten.

KEY TO RAINFOREST TREE SPECIES OF SAPOTACEAE IN N.S.W.

A. USING LEAVES AND BRANCHLETS ONLY

1. Mature leaves hairy beneath..... 2
 2. Hairs silvery, silky under a lens, net veins obscure above..... *Amorphospermum antilogum* F. Muell.
 2. Hairs rusty, dull seen without a lens; net veins visible above..... *Niemeyera prunifera* (F. Muell.) F. Muell.
1. Mature leaves nor hairy beneath..... 3
 3. Leaves rounded and 1-3 cm long *Planchonella cotinifolia* (A. DC) Dubard
 3. Leaves tapering at the tip and over 3 cm long 4
 4. Leaves 3-8 cm long *Planchonella myrsinoides* (A. Cunn. ex Benth.) S. T. Blake ex Francis
 4. Leaves over 8 cm long 5
 5. Leaf tapering to a point *Planchonella chartacea*, (F. Muell. ex Benth.) H. Lam
 5. Leaf tip rounded or blunt 6
 6. Net veins not visible on the upper surface *Planchonella laurifolia* (A. Rich.) Pierre
 6. Net veins visible on the upper surface 7
 7. Leaves not bunched at the ends of the branchlets, comparatively broad (2-3 times as long as broad) *Planchonella australis* (R. Br.) Pierre
 7. Leaves bunched at the ends of the branchlets, comparatively narrow (4-7 times as long as broad) *Planchonella pohlmaniana* (F. Muell.) Pierre ex Dubard

B. USING BARK ONLY

1. Blaze white, yellow or brown 2
 2. Blaze creamy white with a thin red-brown outer margin *Planchonella myrsinoides* (A. Cunn. ex Benth.) S. T. Blake ex Francis
2. Blaze yellow to brown 3

3. Dead underbark cream *Planchonella chartacea*
(F. Muell. ex Benth.) H. Lam
3. Dead underbark pale orange-brown to brown 4
4. Bark scaly leaving depressions when
shed..... *Planchonella pohlmaniana* (F. Muell.) Pierre
4. Bark smooth except at the
base..... *Planchonella cotinifolia* (A. DC) Dubard
1. Blaze pink to red..... 5
5. Outer bark creamy-grey; craterous..... *Niemeyera prunifera*
(F. Muell.) F. Muell.
5. Outer bark grey-brown to brown; smooth, wrinkled
or fissured 6
6. Dead underbark fawn *Planchonella australis*
(R. Br.) Pierre
6. Dead underbark brown to dark-brown 7
7. Bark surface grey-brown, dead underbark
brown *Amorphospermum antilogum* F. Muell.
7. Bark surface brown, dead underbark dark
brown *Planchonella laurifolia* (A. Rich.) Pierre

ADDENDUM

Niemeyera prunifera (F. Muell.) F. Muell. is, according to G. P. Guymer of the Queensland Herbarium (A.S.B.S. Newsletter, June 1982, pp. 11-12) restricted to central coastal Queensland. The species so recognised in N.S.W. should be known as *Amorphospermum whitei* Aubr. Its range is Tallebudgera Creek (S.E. Qld.) to Macleay River.

Pages 40-43, 46 and 47 should be altered accordingly.

AMORPHOSPERMUM ANTILOGUM F. Muell.

Synonym—*Chrysophyllum antilogum* (F. Muell.) Vink

Reference—Fragm. Phyt. Aust VII, 113, 1869; *Adansonia* 5:21–23, 1965.

Derivation—*Amorphospermum* from Greek “a” without, “morphe” shape and “sperma” a seed, referring to the absence of distinct cotyledons in the seed which consists of only a globular mass; *antilogum* from Greek “anti” against and “logus” study, perhaps in reference to the difficulty experienced by Mueller in determining the relationships of this species from the embryo in the seed.

Common Name—Brown Pearwood, Silky Hornbean, Milky Plum, Plum Boxwood.

Standard Trade Name—Plum Boxwood.

A tree of about 20 m in height and about 50 cm stem diameter.

Trunk—Not buttressed, but slightly flanged at the base. The *crown* has a characteristic *silver-brown colour from beneath*.

Outer Bark—Greyish-brown, smooth to finely fissured, marked by rounded depressions but not scaly. Underbark brown. Outer surface of live bark red brown.

Inner Bark—Blaze on a tree 50 cm diameter, bright red, paler towards the sapwood. In smaller trees it is orange-brown shading to pink-brown and to pale pink near the sapwood. *Copious white milk exudes from the inner layer* only. No change in colour on exposure. Astringent with a slightly biscuity smell. 10 mm thick.

Branchlets—Thick, felty pale fawn to white, *young shoots with a rusty brown felt*, exuding a milky sap when cut.

Leaves—Alternate, simple, margins not toothed, lanceolate, or lanceolate-ovate, 4-10 cm long, acuminate, rounded or bluntly pointed at the tip, green and at maturity smooth on the upper surface, *appressed silky hairy or rusty hairy beneath* under a lens. Leaf stalks 5-20 mm long with silky appressed hairs.

Venation—Midrib, lateral and net veins visible on both surfaces but more distinct on the underside. Lateral veins fifteen to twenty, almost at right angles to the midrib.

Flowers—Creamy-green, crowded in the axils of the leaves or on the leafless branchlets, small, without stalks, individual flowers 4-6 mm long. Sepals five, triangular, densely rusty-hairy, 1-2 mm long. Petals five, lanceolate, not hairy, 2 mm long. Stamens five, protruding. Style thick, protruding, 5 mm long. Ovary densely rusty-hairy. Flowering period February to October.

Fruit—A drupe, fleshy, purple or blue-black, globular, 3-5 cm diameter. Seed single, fawn, globular, 25-40 mm diameter, smooth. Fruit ripe September to January.

Habitat—Lowland subtropical rainforest on stony slopes on red basaltic loam.

Distribution—From Tweed River, N.S.W., to Olive River, Queensland. Recorded in N.S.W. from Terranora and Bilambil.

Timber and Uses—Wood yellow, close-grained and firm. Suitable for wood carving and turnery. Fruit eaten by Aborigines.



0 1 2 cm.

E.G.

Plate No. 11
Amorphospermum antilogum F. Muell.

NIEMEYERA PRUNIFERA (F. Muell.) F. Muell.

Synonym—*Chrysophyllum pruniferum* F. Muell.

Reference—Fragm. Phyt. Aust VII, 114, 1870.

Derivation—Niemeyera after F. de Niemeyer who first illustrated this species; pruniferum from Latin "Prunus" the plum tree and "fero" I bear, because of its crop of plum-like fruit.

Common Name—Rusty Plum, Plum Boxwood.

Standard Trade Name—Plum Boxwood.

A small to medium sized tree attaining a height of 20 m and a stem diameter of 50 cm. The crown has a rusty appearance beneath.

Trunk—Usually very fluted or irregular.

Outer Bark—Creamy-grey, fine corky layer roughened by pits and depressions. The bark sheds in rounded flakes leaving the depressions. Underbark brown. Outer surface of live bark biscuit brown.

Inner Bark—Blaze on a tree 50 cm diameter, deep pink with faint paler fine vertical lines, becoming paler towards the sapwood. Darkening only slightly on exposure. *Exudes a milky-white sap*. Initially astringent, then bitter. No smell. 10 mm thick.

Branchlets—Thick, clothed in *fine rusty-brown hairs*. Young shoots hairy, exuding a *milky sap* when cut.

Leaves—Alternate, simple, margins not toothed, elliptic-obovate, 8-14 cm long, slightly broader in the upper half, shortly tapering to a point at the tip. Smooth and green on the upper surface, *under surface paler and clothed in rusty hairs*. Leaf stalks 8-12 mm long, rusty hairy.

Venation—Midrib, lateral and net veins prominently raised beneath, distinct but less so on the upper surface. Lateral veins curved, twelve to fifteen at 45°-60° to the midrib.

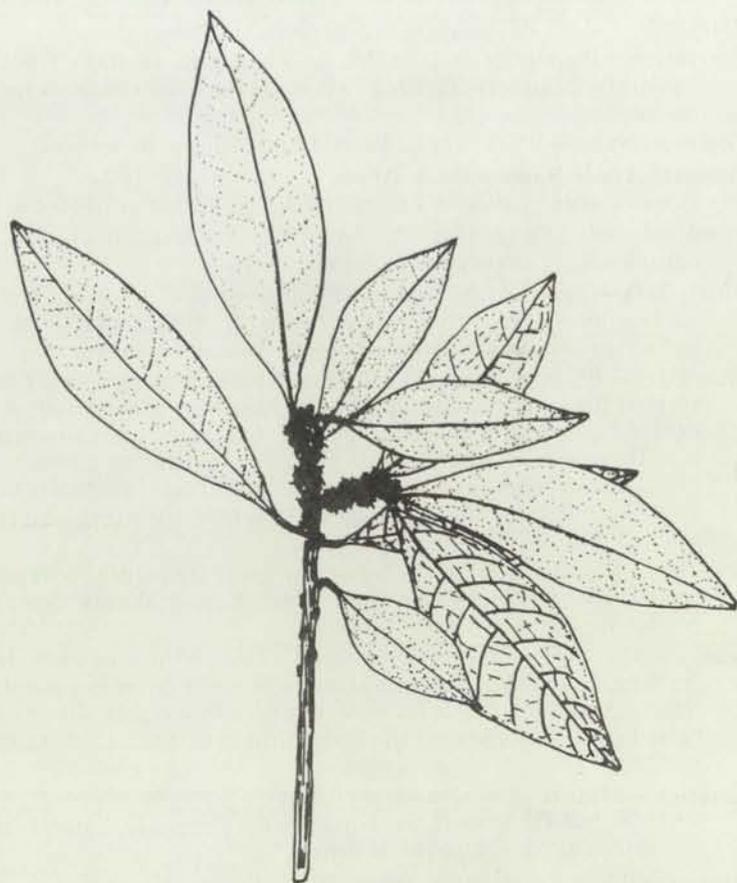
Flowers—Rusty brown with creamy-green petals, not stalked, in dense clusters in the leaf axils. Calyx rusty hairy, lobes five, oblong, about 2 mm long, the inner ones with smooth membranous margins. Corolla tube shorter than the calyx, lobes five, longer than the tube, smooth, reflexed, overlapping in the bud. Stamens five, filaments very slender, longer than the corolla-lobes, anthers ovate-triangular. Style as long as the corolla. Ovary very hairy, five-celled. Flowering period September and October.

Fruit—Drupe, *red turning purple-black*, 2-5 cm diameter, the outer layer thick and succulent, the inner layer crusty and elegantly veined. Seeds one or rarely two, shiny globular with a *very glossy elliptical scar* 1-2 cm long *on one side*, 2-3 cm diameter. Fruit ripe October and November.

Habitat—In gully, littoral or warm temperate rainforests generally below 600 m altitude on the less fertile soils derived from rhyolite or metasediments.

Distribution—From Macleay River, N.S.W., to Bloomfield River, North Queensland. Recorded in N.S.W. from Nulla Nulla Creek, Warrell Creek, Oakes S.F., Bellinger River S.F., Bellingen, Pine Creek S.F., Bundagen F.R., Tuckers Nob, Orara West S.F., Bruxner Park F.R., Coramba, Mt Coramba, Orara East S.F., Lower Bucca S.F., Woolgoolga Creek F.R., Waihou F.R., Sherwood N.R., Copmanhurst, Whian Whian S.F., Minyon Falls F.R., Broken Head N.R., Couchy Creek and Mt Cougal.

Timber and Uses—Light yellow, hard, close-grained and tough. Could be used for bent work.



0 2 4 cm.
E.S.

Plate No. 12
Niemeyera prunifera (F. Muell.) F. Muell.

PLANCHONELLA AUSTRALIS (R. Br.) Pierre

Synonym—*Achras australis* R. Br., *Sideroxylon australe* F. Muell.

Reference—Notes Botaniques, Sepotacées, 35, 1890.

Derivation—Planchonella after M. L. Planchon; australis from Latin "australis" southern, relating to it being the most southern species in the genus.

Common Name—Black Apple, Black Plum, Yellow Bulletwood.

Standard Trade Name—Black Apple.

A tree attaining 30 m in height and a stem diameter of 60 cm.

Trunk—Usually flanged at the base; and in large trees it is often conspicuously channelled or fluted.

Outer Bark—Brown, wrinkled, with short vertical fissures. The outer surface may have a thin soft corky layer. Underbark fawn. Outer surface of live bark mottled orange-brown and cream.

Inner Bark—Blaze on a tree 45 cm diameter pinkish-brown, with fine paler vertical lines on the outer half, paler towards the sapwood. A milky sap exudes from the surface of the inner half of the blaze soon after it is cut. There seems to be a variation in the rapidity and quantity of the exudation depending on the time of the year. After four to five minutes exposure the blaze darkens slightly to a reddish-brown. No taste or smell. 5 mm thick.

Branchlets—Moderately thick, brown or grey, frequently covered with small brown or whitish raised dots. Young shoots downy and producing white milky sap when cut.

Leaves—Alternate, simple, margins not toothed, elliptic or obovate, 6-13 cm long, rounded or protracted into a blunt or fairly fine point at the tip, gradually tapering at the base. Green both surfaces, shining above, paler beneath. Somewhat thick and firm in texture. Leaf stalks 3-12 mm long.

Venation—Midrib, lateral and net veins raised and distinct on both surfaces, but a little more prominent on the underside. Lateral veins ten to thirteen at 55°-75° to the midrib.

Flowers—White, in axillary clusters of two to six, or sometimes solitary. Flower stalk 4-12 mm long, hairy or sometimes smooth. Flowers somewhat bell-shaped about 5 mm long, surrounded by five broad triangular and often white or rusty hairy calyx lobes. Petals five, suborbicular to broadly elliptic, 3-5 mm long. Stamens five, 2-3 mm long, inserted at the base of the petals. Flowering period October to January.

Fruit—Drupe, Black, plum-like, succulent, up to 5 cm diameter containing three to five flattened elliptic, hard, glossy, brown seeds, about 2 cm long and 1 cm diameter with a scar extending the full length of the inner edge. Fruit ripe September to November.

Habitat—Rainforest of various types from semi-dry scrubs to the luxuriant rain forest on the red basalt soil of the McPherson Range where the species attains a large size.

Distribution—From Illawarra, N.S.W., to Gympie, Queensland. Recorded in N.S.W. from Gerringong, Kiama, Minnamurra Falls, Whispering Gallery, Shellharbour, Royal N.P., Ourimbah, Gap Creek F.P., Sandgate, Ash Island, Kars Springs, Morpeth, Gresford, Upper Allyn, Williams and Chichester Rivers, Coneac, Woko, Snapper Island, John Gould Island N.R., Myall Lakes N.P., Bulahdelah, Seal Rocks, Cape Hawke, Yalou Island, Elizabeth Bay, Nابیac, Black Head, Saltwater, Harrington, Crowdy Bay N.P., Coocumbac Island, Wingham Brush, Weelah N.R., Boorganna N.R.,

Comboyne Plateau, Middlebrother S.F., Sea Acres, Point Plomer, Big Hill, Racecourse Headland, Pappinbarra, Mt Seaview N.R., Mt Boss S.F., Cockerawombeeba F.P., Bellangry S.F., Toorumbec Creek, Kunderang Brook, Carrai S.F., Willi Willi, Mt Sebastapol, Chandler Gorge, Smoky Cape, Shark Island, Yarrahapinni, Way Way S.F., Roses Creek S.F., Ringwood F.P., New England N.P., Bellingier River S.F., Dorrigo N.P., Dome Mtn, Tuckers Nob, Bellingen, Pine Creek S.F., Bundagen F.R., Boambee S.F., Orara West S.F., Coffs Harbour, McCauleys Headland, Bruxner Park F.R., Coramba Mt, Woolgoolga Creek F.R., Madman's Creek F.P., Waihou F.R., Twelve Sixty F.P., Bagawa S.F., Kangaroo River S.F., Wild Cattle Creek S.F., Red Cedar F.R., Moonpar S.F., Clouds Creek S.F., Chapman's Plain F.R., Hortons Creek, Chaelundi S.F., Blandford Creek, Carnham, Iluka N.R., Woodburn, Casino, Mummulgum, Cherry Tree S.F., Richmond Range S.F., Toonumbar S.F., Unungar S.F., Beaury S.F., Legume Road F.P., Acacia Plateau, Mt Clunie F.P., Mt Nothofagus F.R., Mt Lindesay, Roseberry S.F., Lever's Plateau, Gradys Creek F.R., Wiangaree S.F., Blue Knob, Goonimbar S.F., Mt Nardi, Terania Creek, Whian Whian S.F., Big Scrub F.R., Minyon Falls F.R., Boomerang Falls, Wilson Park, Boatharbour, Johnstons Scrub, Booyong, Nashua, Victoria Park N.R., Broken Head N.R., Hayter's Hill, Brunswick Heads N.R., Mebbin S.F., Mt Warning N.P., Upper Pumpenbil Creek, Limpinwood N.R., Couchy Creek, Mt Cougal, Murwillumbah, Stotts Island N.R. and Hogans Scrub.

Timber and Uses—Wood prettily marked in shades of yellow, hard, one of the best hard carving woods in Australia. Suitable for rules, T-squares, turnery, engravings. 1 000 kg per cubic metre.

The seeds were eaten by aborigines in the Gosford area. The flesh also is edible but is somewhat astringent and often infested by maggots.



0 1 2 cm.
E.S.

Plate No. 13
Planchonella australis (R. Br.) Pierre

PLANCHONELLA CHARTACEA (F. Muell. ex Benth.)

H. Lam

Synonym—*Sideroxylum chartaceum* F. Muell. ex Benth.

Reference—Bull. Bot. J. Buit. 217, 1925.

Derivation—Chartacea from Latin "chartaceus" papery, because of its thin leaves.

Common Name—Thin-leaved Plum, Thin-leaved Coondoo.

Standard Trade Name—Planchonella.

A tree up to 12 m tall and 27 cm diameter.

Trunk—Cylindrical or sometimes slightly angular or even flanged near the base in large trees.

Outer Bark—A mixture of brown and dull white giving the surface a flat grey appearance, rough but not scaly, vertically fissured. Underbark cream. Outer surface of live bark a mixture of green, biscuit and orange-brown blotches.

Inner Bark—Blaze on a tree 27 cm diameter orange-yellow, minutely mottled with a few paler vertical stripes and fine lines. White at the inner margin with a white fibrous lining on the inner surface of the bark. A *small quantity of milky sap* may exude from the inner part of the blaze soon after cutting. Does not change colour and no distinct taste or smell. 5 mm thick.

Branchlets—Slender, brown, becoming green and angular towards the ends. Some small protuberances at the nodes and scattered pimples. Leaf scars small and pale. Young shoots minutely pubescent, *exuding a milky sap when cut*.

Leaves—Alternate, simple margins not toothed, reverse lance-shaped or ovate-oblong, 6-20 cm long, drawn out into a moderately long and blunt point at the tip, tapering gradually and *merging into a flat stalk*. Moderately glossy and green both surfaces, paler beneath. Leaf stalks 3-10 mm long.

Venation—Midrib, lateral and net veins fine and distinct on both surfaces. Midrib usually raised on both surfaces. Lateral veins seven to fifteen at 55°-60° to the midrib. The intramarginal vein on both sides extends right to the leaf stalk.

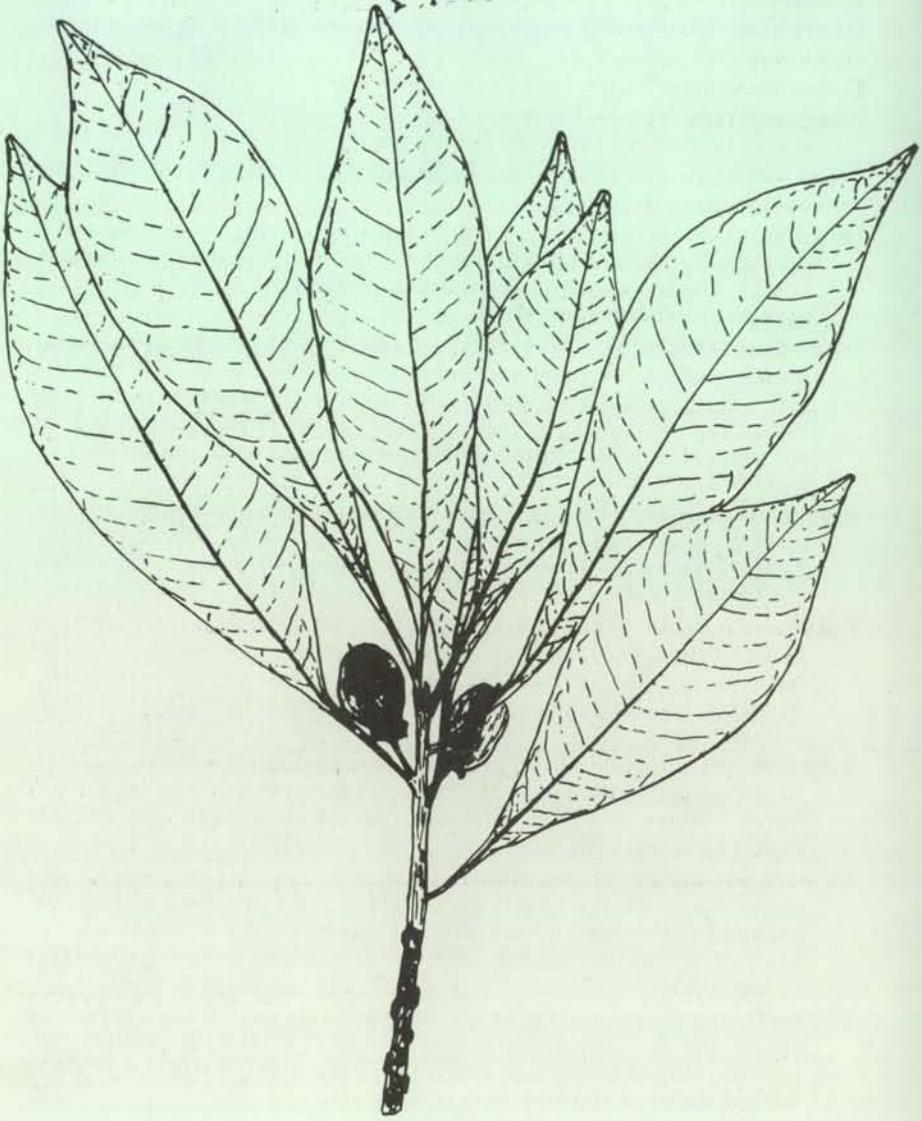
Flowers—White in axillary clusters of three to seven flowers on slender stalks 5-8 mm long. Sepals five, ovate, 3.5-4.5 mm long with yellow silky hairs. Petals with five quadrangular lobes, 3.5-4.5 mm long, tips blunt. Stamens five, 1.5 mm long. Flowering period March to August or irregular.

Fruit—Drupe with thin pulp, green turning black, oval or egg-shaped, up to 20 mm long. Seed brown, elliptical and laterally compressed, pointed at both ends, 9-15 mm long, shiny with a narrow scar along half its length. Fruit ripe May to October.

Habitat—Riverine and Littoral rainforest.

Distribution—From the Richmond River, N.S.W., to Bamaga, North Queensland. Also in western New Guinea. Recorded in N.S.W. from Byron Bay, Brunswick Heads N.R., Cabarita, Stotts Island N.R., Terranora and Tweed Heads.

Timber and Uses—Wood yellowish-brown, close grained and hard, similar to *Planchonella australis* and could be used for the same purposes. 975-1 000 kg per cubic metre.



0 1 2 cm.
ES.

Plate No. 14
Planchonella chartacea (F. Muell. ex Benth.) H. Lam

PLANCHONELLA COTINIFOLIA (A.DC.) Dubard

Synonym—*Hormogyne cotinifolia* A.DC.

Reference—Ann. Mus. Col. Mars 20, 56, 1912.

Derivation—*Cotinifolia* from *Cotinus* the wig tree of southern Europe and Latin "folia" a leaf, because of the resemblance of their small leaves.

Common Name—Small-leaved Plum, Yellow Lemon, Small-leaved Coondoo.

Standard Trade Name—None.

A tree up to 15 m tall and about 40 cm diameter.

Trunk—Usually buttressed and flanged or fluted in large trees.

Outer Bark—Greyish-brown, smooth or slightly rough and scaly at the base in larger trees. Underbark pale orange-brown. Outer surface of live bark green.

Inner Bark—Blaze on a tree 38 cm diameter *yellowish-brown*, marked by numerous vertical, straight, paler streaks. There is an *exudation of milky sap* soon after cutting. No rapid change in colour and no distinct taste or smell. 3 mm thick.

Branchlets—Slender, grey or brown, or a mixture of both, finely scaly or wrinkled, often dotted with minute lenticels. *Exuding a milky sap when cut.*

Leaves—Alternate, simple, margins not toothed, *mostly obovate, 1-3 cm long, rounded at the tip*, tapering at the base, green both surfaces, smooth, paler beneath. Leaf stalks 1 mm long with close hairs.

Venation—Midrib and lateral veins visible on both surfaces, slightly raised above, midrib raised and pale green on the under side. Main lateral veins three to six at 40°-55° to the midrib. Net veins less conspicuous.

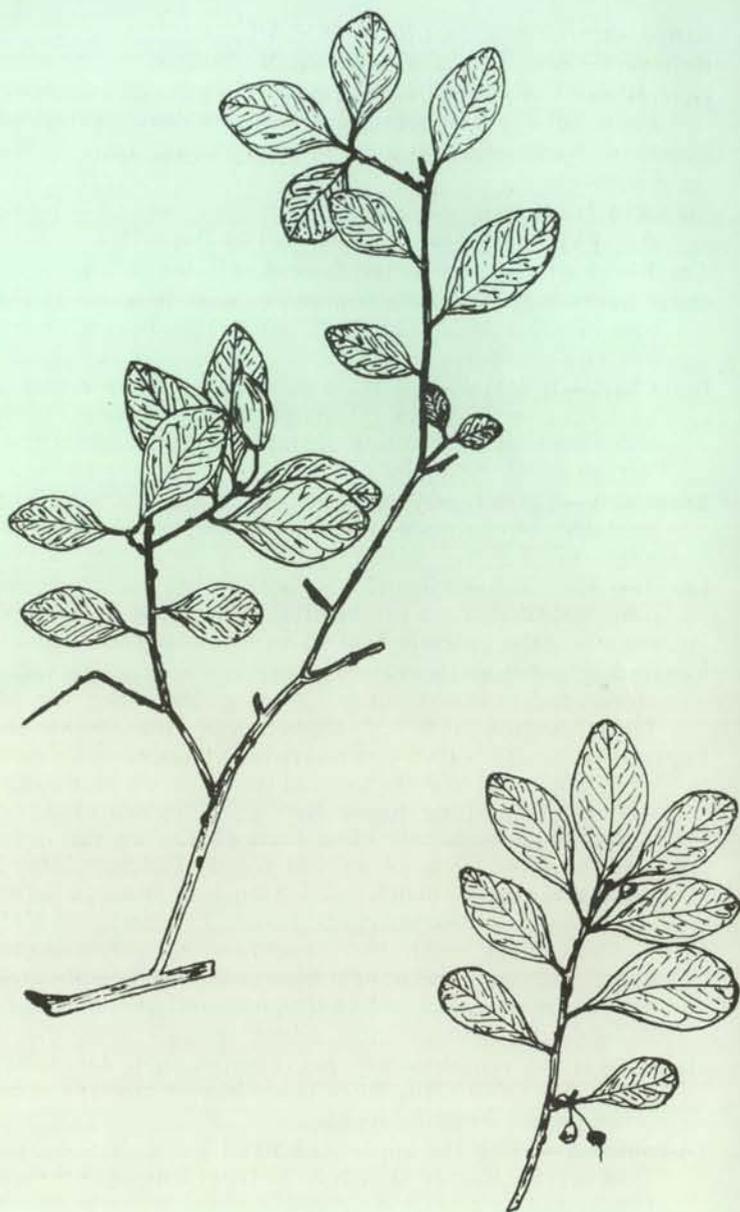
Flowers—Greenish-yellow with a very faint jasmine scent, mostly solitary or in twos to fives in the forks of the leaves on pendulous grey hairy stalks, 2-5 mm long. Sepals five, green, in two rows, broad ovate, 1.5-2.5 mm long, with close brown hairs on the outside. Petals greenish white 7-8 mm long, with five darker green lobes 2 mm long, blunt at the tip. Stamen five, 2-2.5 mm long attached to the upper half of the petals. Flowering period mainly February and March.

Fruit—Shiny black, oval, 10-15 mm long, scarcely succulent, usually containing one smooth, light brown, shining seed about 10 mm long with a narrow scar extending almost the full length. Fruit ripe January to June.

Habitat—In dry rainforest where it is preferable to var. *cotinifolia*. Var. *pubescens* has a softly furry lower leaf surface and occurs in open forest on the Western Slopes.

Distribution—From the upper Richmond River, N.S.W., to Chillagoe, Queensland. Recorded in N.S.W. from Unumgar S.F., and Acacia Creek.

Timber and Uses—Wood yellowish-brown. Close-grained and firm, closely resembling the wood of *Planchonella australis*. Could be used for carving, rules, turnery.



0 1 2 cm.
E.S.

Plate No. 15
Planchonella cotinifolia (A.DC.) Dubard

PLANCHONELLA LAURIFOLIA (A. Rich.) Pierre

Synonym—*Sersalisia laurifolia* A. Rich., *Sideroxylon richardii* F. Muell.

Reference—Notes Botaniques Sapotacées, 36, 1891.

Derivation—Laurifolia from Latin "Laurus" the laurel tree and "folia" a leaf, in reference to the resemblance of the leaves to that of the laurel.

Common Name—Blush Coondoo, Coondoo Boxwood.

Standard Trade Name—Blush Coondoo.

A large tree attaining a height of about 40 m and a stem diameter of 90 cm with a thick bright green crown of leaves crowded at the ends of the branchlets.

Trunk—Usually fairly cylindrical, but often flanged at the base and slightly buttressed.

Outer Bark—Brown, smooth on young trees up to 30 cm diameter, often with vertical rows of very small lenticels, but becoming rough and scaly on large trees, the scales shedding in large irregular pieces. Underbark dark brown. Outer surface of live bark dark red-brown with paler vertical stripes.

Inner Bark—Blaze on a tree 30 cm diameter *dark rosy-red* with some very fine paler vertical lines. Paler at the inner margin. A *milky sap exudes* from the inner half of the cut surface *immediately after cutting*. No rapid change in colour and no distinctive smell but with a sweet taste. 12 mm thick.

Branchlets—Thick, grey to brown, smooth, with fawn down on the leafy section. Young shoots also *downy, exuding a milky sap when cut*.

Leaves—Alternate, simple, margins not toothed, oval elliptic or oblong-elliptic, 6-16 cm long, rounded obtuse or drawn out into a short blunt point at the tip *and abruptly tapering at the base*. Dark green and often shining above, yellow-green and glossy on the underside. Thinly coriaceous. Crowded towards the ends of the branchlets. Leaf stalk 8-25 mm long.

Venation—*Only the midrib and lateral veins are visible on the upper surface*, but the venation is always raised and more distinct on the under side. Lateral veins six to sixteen at angles of 60°-75° to the midrib.

Flowers—Creamy-green, strongly caramel-scented, hairy, in clusters of up to seven in the forks of the leaves on stalks 6-12 mm long. Individual flowers about 6 mm long, cylindrical or cup-shaped. Sepals five, broadly egg-shaped, 4 mm long, the inner ones with fringed margins. Petals five united into a tube 3-4.5 mm long, lobes rounded, 1.5-2 mm diameter. Stamens five, 2 mm long, attached near the base of the petals. Flowering period May to November.

Fruit—Drupe, black when ripe, narrowly ovoid with short style, about 2 cm long. Fleshy, enclosing one or two brown, smooth and shining seeds, narrowly oval, about 12 mm long, with a narrow scar over half the length of the seed. Fruit ripe August to December.

Habitat—Littoral and dry rainforest.

Distribution—From Brunswick River, N.S.W., to the McIlwraith range, North Queensland and west to Melville Island. Recorded in N.S.W. from Broken Head N.R., Brunswick Heads N.R., Mooball S.F., Round Mtn, Stotts Island N.R., Bilambil and Terranora.

Timber and Uses—Light grey to brown in the centre, close-grained and fairly hard. Suitable for turnery, T-squares, rulers, carving, flooring and scantling.

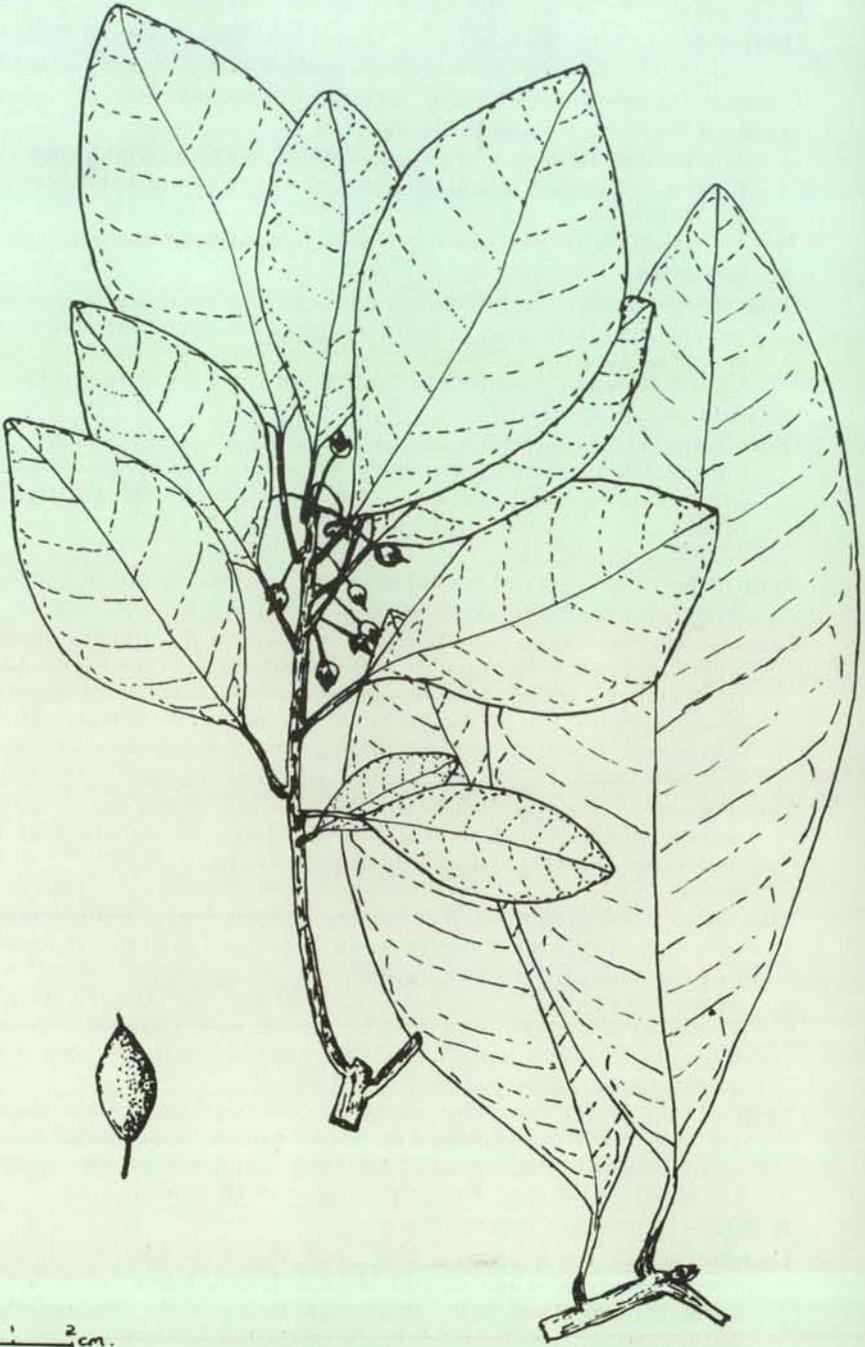


Plate No. 16
Planchonella laurifolia (A. Rich.) Pierre

PLANCHONELLA MYRSINOIDES (A. Cunn. ex Benth.)

S. T. Blake ex Francis

Synonym—*Achras myrsinoides* A. Cunn., *Sideroxylon myrsinoides* F. Muell.

Reference—Aust. Rainf. Trees ed. 2, 358, 1951.

Derivation—Myrsinoides from *Myrsine* a shrub with rather thick rounded leaves and Greek "eidos" resembling, because of the similarity in foliage to a *Myrsine*.

Common Name—Yellow Plumwood, Axe-handle Wood, Blunt-leaved Coondoo.

Standard Trade Name—None.

A small tree about 12 m tall and 25 cm diameter. Crown often sparsely foliated.

Trunk—Usually short, sometimes slightly fluted and flanged at the base.

Outer Bark—Brown to very dark brown, wrinkled, minutely scaly with closely spaced fine vertical fissures. Underbark chocolate to dark brown. Outer surface of live bark red-brown.

Inner Bark—Blaze on a tree 25 cm diameter creamy-white bordered round the outer margin by a thin reddish-brown line. Paler at the inner margin. A small quantity of milky sap exudes from the surface a few minutes after cutting. No change in colour. A delayed slightly bitter taste, but no distinct smell. 3 mm thick.

Branchlets—Slender grey to greenish-brown. Young shoots finely downy with yellow, grey, rusty or red hairs. Showing small leaf scars. Only the most southern Cape Hawke occurrence has red hairs. A milky sap appears when the shoot is cut and squeezed.

Leaves—Alternate, simple, margins not toothed, obovate to broadly elliptical, 5-8 cm long, bluntly pointed or rounded at the tip, quickly tapering at the base. Upper surface glossy dark green, but paler and usually hairy beneath. Leaf stalks 3-6 mm long, hairy at first.

Venation—Midrib and lateral veins distinct and slightly raised on both surface. Lateral veins six to ten, at 55°-75° to the midrib, joining to form an intramarginal vein.

Flowers—Greenish-white, densely hairy, singly or in clusters of up to three in the forks of the leaves, black, rusty, white hairy stalks 4-14 mm long. Sepals four or five, in two rows with yellow to dark hairs, 3-6 mm long. Petals five, tube 4-5 mm long with five truncate smooth lobes, 1.5-4 mm long. Stamens five, shortly stalked, attached to the centre of the petals and shorter than them, 1-4 mm long. Ovary hairy. Flowering period May to November, but occasionally as early as February.

Fruit—Drupe with thin flesh, black, ovate pointed with a persistent curved style 5-10 mm long, 1.5-3 cm long. Seeds one to three, brown, shiny, elliptical, 1.2-2.2 cm long. Fruit ripe August to November. Occasionally as early as April.

Habitat—Dry and littoral rainforest.

Distribution—From Forster, N.S.W., to Windsor Tablelands, North Queensland. Also on Lord Howe Island. Recorded in N.S.W. from Cape Hawke, Yahou Island, Sawtell, Boambee Headland, Mt Pikapene S.F., Cherry Tree S.F., Richmond Range S.F., Toonumbar S.F., Unumgar S.F., Yabbra S.F., Mt Lindesay, Roseberry S.F., Levers Plateau, Goonimbar S.F., Wilson Park, Hayter's Hill, Brunswick Heads N.R., Mebbin S.F., Mt Warning N.P. and Limpinwood N.R.

Timber and Uses—Wood pale yellow, close-grained and fairly hard. Very similar to the wood of the other members of the genus. Suitable for carvings, turnery, printers blocks, chess pieces and rules.



0 1 2 cm.
E.S.



Plate No. 17
Planchonella myrsinoides (A. Cunn. ex Benth.) S. T. Blake ex Francis

PLANCHONELLA POHLMANIANA (F. Muell.) Pierre
ex Dubard

Synonym—*Achras pohlmaniana* F. Muell., *Sideroxylon pohlmanianum* F. Muell.

Reference—Ann. Mus. Col. Marseilles, 2^eme ser, X, 47, 1912.

Derivation—Pohlmaniana after R. W. Pohlman, a Melbourne judge respected by the author, F. von Mueller.

Common Name—Yellow Boxwood, Engraver's Wood, Black Apple.

Standard Trade Name—Yellow Boxwood.

A medium sized tree up to 20 m tall and 55 cm diameter. There are three varieties of this species in Northern Australia; but only var. *pohlmaniana* extends into N.S.W.

Trunk—Often straight and flanged at the base when large.

Outer Bark—Greyish-brown, generally *scaly* on older trees showing irregular shallow depressions left by the fallen scales. Underbark pitted, brown with vertical lines of cream lenticels. Outer surface of live bark blotched cream and brown.

Inner Bark—Blaze on a tree 40 cm diameter pale to medium brown, often showing short vertical lines towards the outer margin. Inner margin almost white. A *milky juice exudes from the surface* of the blaze immediately after being cut. The rapidity and quantity of the flow depending on the time of the year. No change in colour on exposure. Slightly bitter taste, and a faint but distinctive smell. 5 mm thick.

Branchlets—Thick, grey to almost greyish-black, often wrinkled and rough due to the numerous small raised leaf scars and other small protuberances. Young shoots brownish and densely hairy, *exuding a milky sap when cut*.

Leaves—Alternate, simple, margins not toothed, obovate-oblong, 8-15 cm long, rounded, bluntly pointed and notched at the tip, *gradually tapering* into the stalk at the base, glossy above, sometimes below; green both surfaces, but paler beneath. *Leaves crowded at the ends of the branchlets*. Leaf stalks 5-20 mm long, clothed in fine brown hairs.

Venation—Midrib, lateral and net veins fine and distinct on both surfaces, midrib a little more prominent on the underside. Main lateral veins six to eleven, at 30°-85° to the midrib, forming an intramarginal vein.

Flowers—Creamy-white, in clusters on short, yellowish, hairy stalks 2-4 mm long in the axils of the leaves or sometimes on the old wood below the leaves. Individual flowers up to 3 mm long. Sepals five to six, egg-shaped, 3-4 mm long, covered with silky cream hairs. Petals similar to the sepals but truncated at the tips and only hairy on the outside. Stamens five to six, 1-1.5 mm long, attached to the base of the petals. Ovary conical with brownish-yellow hairs. Flowering period December.

Fruit—Drupe, green or black, globular, about 2 cm diameter. Contains five seeds or sometimes three. Seeds glossy brown, hard, compressed, 1 cm long with a scar about 8 mm long on the inner edge. Fruit ripe mainly April to July.

Habitat—Dry rainforest.

Distribution—From the Richmond River, N.S.W., to Weipa, North Queensland. Recorded in N.S.W. from Toonumbar S.F., Unumgar S.F., Roseberry S.F., Whian Whian S.F., Mooball and Tumbulgum.

Timber and Uses—Wood yellow, close-grained and firm. Suitable for "boxwood" rules, T-squares, chessmen, engraving blocks, turnery and carving. Sapwood liable to attack by borers. 950 kg per cubic metre.



Plate No. 18
Planchonella pohlmaniana (F. Muell.) Pierre ex Dubard

FAMILY EBENACEAE

CHARACTERISTICS OF THE FAMILY IN N.S.W.

It is represented by three genera and about 500 species throughout the tropics and subtropics of the world. However, two of these genera contain few species and are geographically restricted, namely *Euclea* in North Africa and Arabia and also *Lissocarpa* in tropical South America. *Diospyros* consists of about 500 species in all continents with six species in tropical and eastern Australia. There are five species in N.S.W. and all are restricted to Australia. The sixth species in Australia extends into new Guinea and Indonesia.

Usually medium-sized trees 20-30 m tall and 25-40 cm diameter; but *D. pentamera* may reach 40 m high and 60 cm diameter whilst *D. major* var. *ebenus* is normally only a tall shrub 3-6 m high. The trunk may exhibit flanges or irregular channels in *D. fasciculosa* and *D. pentamera*.

Outer Bark—Dark grey to black, scaly to fissured (*D. mabacea*, *D. major*, *D. pentamera*) or smooth to wrinkled (*D. australis*, *D. fasciculosa*). Underbark black.

Inner Bark—Pinkish often with paler vertical lines, or cream turning yellow-brown (*D. mabacea*). Sapwood surface oxidising to yellow or orange.

Branchlets—Slender (*D. major*, *D. pentamera*), yellow-green on the leafy portion (*D. australis*). Young branchlets hairy (*D. mabacea*, *D. major*) or slightly furry to smooth. Leaf buds fawn downy (*D. australis*, *D. pentamera*), silvery hairy (*D. fasciculosa*), pale brown silky hairy (*D. mabacea*) or rusty hairy (*D. major*).

Leaves—Alternate, simple, not toothed, without stipules, elliptical, 4-15 cm long, rounded at the tip (*D. australis*, *D. fasciculosa*) or pointed. Yellow-green beneath (*D. australis*), grey-green (*D. pentamera*) or lighter green. Stalk of mature leaves up to 2 mm long (*D. major*) or 2-12 mm long, hairy (*D. mabacea*, *D. major*) or smooth.

Venation—Lateral veins eight to twelve (*D. australis*, *D. fasciculosa*, *D. pentamera*) or twelve to twenty, 30°-45° to the midrib (*D. australis*), 45° (*D. pentamera*), 60°-70° (*D. major*, *D. fasciculosa*) or 90° (*D. mabacea*), hairy (*D. mabacea*, *D. major*).

Flowers—White (*D. pentamera*), creamy-green (*D. australis*), yellow (*D. fasciculosa*) or silvery-brown (*D. mabacea*, *D. major*). Flowers of different sexes on the same plant in axillary clusters where male or singly if female (except *D. fasciculosa* which is also clustered). Sepals and petals mostly three (*D. fasciculosa*, *D. major*) and formerly placed in a separate genus *Maba*, four (*D. australis*, *D. mabacea*) or five (*D. pentamera*). Stamens attached to the base of the petals, 10-20 in male flowers but fewer and sterile in female flowers.

Fruit—A berry with one to five seeds, black (*D. australis*, *D. fasciculosa*) or red, clustered (*D. fasciculosa*) or singly in the leaf axils, oval to globular, 3 cm (*D. mabacea*) or 10-20 mm diameter.

Habitat—*D. fasciculosa*, *D. mabacea* and *D. major* are restricted to lowland subtropical rainforests including littoral rainforests. *D. australis* is characteristic of dry rainforest and the drier phases of both subtropical and warm temperate rainforests. *D. pentamera* may be found in all rainforests except cool temperate.

Distribution—This family is an ancient one which possibly had its centre of origin in Africa at least 65 million years ago, from whence *Diospyros* migrated across Europe and Asia and into North America 55-65 million years ago. Another migration route appears to have been via

South Africa to the other parts of Gondwana such as Australia and South America. Well preserved fossil flowers of *Diospyros* have recently been found in south-eastern Australia which are about 50 million years old. The long history of *Diospyros* in Australia may explain why five of the six species are not found elsewhere. Possibly only *D. maritima* on Cape York which extends into New Guines and Indonesia is of Asian origin. Ready dispersal of the seeds of *Diospyros* by pigeons, other native birds and flying foxes has been observed; and could explain its distribution.

Of the N.S.W. species, *D. australis* and *D. pentamera* range from Batemans bay on the N.S.W. south coast to North Queensland. *D. fasciculosa* is found from the Clarence River to North Queensland, whilst *D. major* var *ebenus* is restricted to the Tweed River to Gympie, Queensland. The rare and endangered *D. mabacea* has only been recorded from the Tweed River.

Timber and Uses—White to grey, close-grained, tough and moderately heavy. Could be used for turnery, carving, golf club heads. *D. fasciculosa* has black streaks resembling the true African ebony to which of course it is related.

Whereas the fruits of some species of *Diospyros* in Europe and Asia have been esteemed as food (e.g. the persimmon), the Australian species have received little attention although the Aborigines did eat several species.

KEY TO RAINFOREST TREE SPECIES OF EBENACEAE IN N.S.W.

A. USING LEAVES AND BRANCHLETS ONLY

1. Lateral veins of mature leaves hairy under lens 2
 2. Leaf stalk up to 2 mm long..... *Diospyros major* (Forst.f.)
Bakh. var. *ebenus* (Spreng.) Bakh.
 2. Leaf stalk 3-9 mm long..... *Diospyros mabacea* (F. Muell.)
F. Muell.
1. Lateral veins of mature leaves smooth under lens 3
 3. Leaf buds silvery hairy *Diospyros fasciculosa* (F. Muell.)
F. Muell.
 3. Leaf buds fawn downy 4
 4. Leaves blunt or rounded
at the tip..... *Diospyros australis* (R. Br.) Hiern
 4. Leaves pointed, sometimes bluntly
at the tip..... *Diospyros pentamera* (Woolfs & F. Muell.)
Woolfs & F. Muell.

B. USING BARK ONLY

1. Blaze cream, turning yellow-brown *Diospyros mabacea*
(F. Muell.) F. Muell.
1. Blaze pink..... 2
 2. Outerbark scaly or fissured *Diospyros pentamera*
(Woolfs & F. Muell.) Woolfs & F. Muell.
 2. Outerbark smooth or wrinkled 3
 3. Blaze darkening on exposure *Diospyros australis*
(R. Br.) Hiern
 3. Blaze not changing colour on
exposure *Diospyros fasciculosa* (F. Muell.) F. Muell.

Diospyros major (Forst.f.) Bakh. var. *ebenus* (Spreng.) Bakh. has not been included in the above key because of lack of information.

DIOSPYROS AUSTRALIS (R. Br.) Hiern

Synonym—*Cargillia australis* R. Br., *Diospyros cargillia* F.v.M., *Maba cargillia* F.v.M.

Reference—Prodr. 526, 1810.

Derivation—*Diospyros* from Greek “Dios” divine and “pyros” a grain of wheat, it being imagined that the fruit of a European species produced oblivion when eaten; *australis* from Latin “australis” southern, because of its most southern distribution in the genus.

Common Name—Yellow Persimmon, Black Plum, Grey Plum.

Standard Trade Name—None.

A shrub or small tree sometimes attaining a height of 20 m and a stem diameter of 25 cm. Crown sometimes pyramidal in shape.

Trunk—Cylindrical not flanged or buttressed.

Outer Bark—Grey on small trees, almost black on larger trees, wrinkled and marked by numerous soft pimples and fine vertical lines. *Under bark brownish-black*. Outer surface of live bark deep pinkish-brown or yellow-brown.

Inner Bark—Blaze on a tree 25 cm diameter pinkish-brown with paler vertical stripes and fine lines, paler towards the white sapwood. *Inner margin rapidly changes to yellow or orange* on exposure, gradually extending towards the outer margin, but deepening to a brownish shade towards the outer edge; a narrow band of the outer margin of the blaze next to the under bark remaining pink. Bitter taste, cane smell. 5 mm thick.

Branchlets—Medium thickness, yellow-green on leafy stems later becoming black, dull, slightly furry on new stems. Leaf buds fawn, finely downy.

Leaves—Alternate, simple, not toothed, elliptical or oblong, 4-10 cm long, *blunt or tapering to a rounded tip*, tapering at the base. Upper surface dark green, *underside yellow or yellowish-green*. Satiny above, dull below and smooth on both sides. Leaf stalks 2-5 mm long, not hairy.

Venation—Midrib and lateral veins visible on the upper surface. Midrib raised and distinct on the underside but lateral and net veins obscure. Lateral veins eight to twelve, ascending at 30°-45° to the midrib.

Flowers—Creamy-green. Male flowers in little clusters in the axils of the leaves; female flowers usually solitary and somewhat larger. *Calyx* of male flowers 2 mm long, *four-lobed*. Petals, four, about 5 mm long with the tube as long as the calyx, twisted in bud. Stamens about 12, attached to the base of the petal tube. Flowering period October to December.

Fruit—A berry, shiny black, elliptic, 12-20 mm diameter, enclosed at the base by the *four or rarely five-lobed calyx*. Each fruit contains a single seed surrounded by a purple palatable flesh. Seeds oblong, but pointed at one end, grooved down one side, 8-10 mm long, shiny brown. Sometimes splitting into two. Fruit ripe March to July.

Habitat—Subtropical, dry and warm temperate rainforests.

Distribution—From Durras Lake, N.S.W., to Atherton, North Queensland. Recorded in N.S.W. from Pebbly Beach and Durras Mtn, Murramarang N.P., Milton, Conjola, Beecroft Peninsula, Comerong Island, Kangaroo Valley, Minnamurra Falls, Whispering Gallery, Shellharbour, Bulli, Otford, Kurrajong Heights, Calga, Gap Creek F.P., Newcastle, Cedar Brush N.R., Kelaher Brush, Allyn and Williams Rivers, John Gould Island N.R., Myall Lakes N.P., Seal Rocks, Cape Hawke, Yahoo Island, Woko, Black Head, Saltwater, Harrington, Weelah N.R., Comboyne, Sea Acres, Racecourse

Headland, Doyles River S.F., Mt Seaview N.R., Werrikimbe N.P., Mt Boss S.F., Banda Beech F.P., Wilson River F.P., Toorumbec Creek, Kunderang Brook, Carrai S.F., Willi Willi, Mt Sebastopol, Wollomombi and Chandler Gorges, Way Way S.F., Oakes S.F., New England N.P., Bellinger S.F., Tuckers Nob, Mt Coramba, Waihou F.R., Bagawa S.F., Kangaroo River S.F., Wild Cattle Creek S.F., Moonpar S.F., Hortons Creek, Mt Hyland, Marengo S.F., Guy Fawkes River N.P., Chaelundi S.F., Blandford Creek F.P., Glenugie F.R., Munningyundo Mtn, Gibraltar Range N.P., Washpool S.F., Carnham, Forestland S.F., Spirabo S.F., Girard S.F., Boonoo Boonoo Falls, Rivertree, Toonumbar S.F., Yabbra S.F., Beaury S.F., Legume Road F.P., Acacia Plateau, Mt Clunie, Mt Lindesay, Roseberry S.F., Levers Plateau, Wiangaree S.F., Goonimbar S.F., Whian Whian S.F., Wilson park, Boatharbour, Mebbin S.F. and Stotts Island N.R.

Timber and Uses—Wood resembles *Diospyros pentamera* and could possibly be used for small turnery.

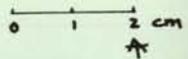
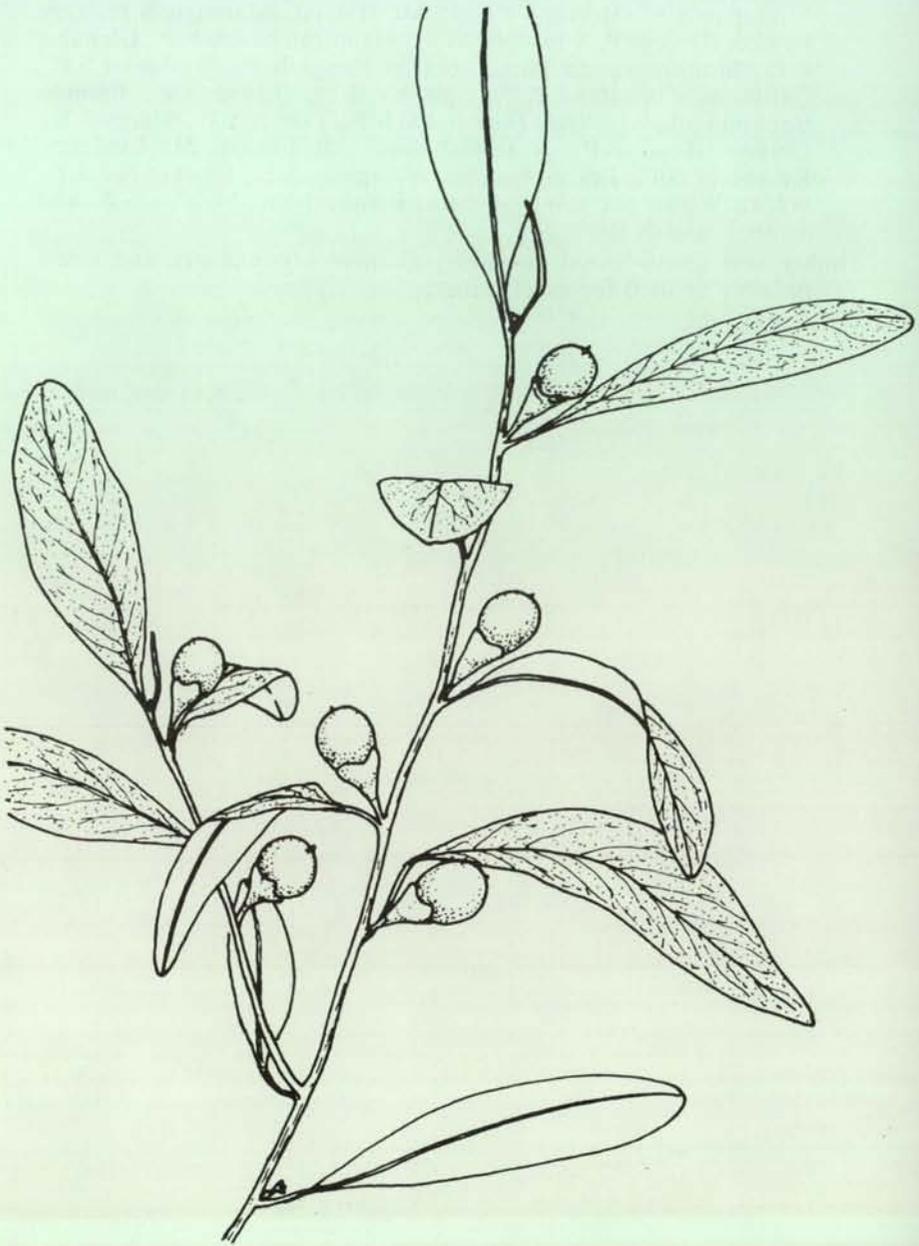


Plate No. 19
Diospyros australis (R. Br.) Hiern

DIOSPYROS FASCICULOSA (F. Muell.) F. Muell.

Synonym—*Maba fasciculosa* F. Muell.

Reference—F.v.M. Fragm. V, 163 (1866).

Derivation—Fasciculosa from Latin "fasciculus" a little bundle, referring to the flowers and fruits being in clusters.

Common Name—Clustered Persimmon, Ebony, Long Tom, Grey Ebony.

Standard Trade Name—Grey Ebony.

A tree attaining a height of 30 m and a stem diameter of 40 cm.

Trunk—Sometimes flanged at the base of large trees.

Outer Bark—Slate coloured, or greyish-brown, smooth, somewhat firm and often marked by small hard lenticels. *Underbark brownish-black.* Outer surface of live bark creamy-brown with cream vertical streaks.

Inner Bark—Blaze on a tree 30 cm diameter, pinkish-brown or dull purplish-brown. The outer margin of dead bark showing as a fine black line with one or two inner pinkish parallel lines. Numerous fine, pale pink vertical lines are visible on the outer half, extending from the outer marginal lines to the centre. Inner half of blaze darker in colour, with one or two undulating horizontal black bands. Bark somewhat brittle. Sapwood surface yellow. Sapwood white. No change in colour on exposure. Astringent. No smell. 7 mm thick.

Branchlets—Moderately thick, grey and smooth, shiny. Buds with silvery hairs.

Leaves—Alternate, simple, not toothed, elliptical, 6-13 cm long, rounded or drawn out into a blunt point at the tip and quickly tapering at the base. Upper surface dark green and glossy, *underside paler with black dots.* Leaf stalks 4-8 mm long, yellow green, smooth.

Venation—Midrib and lateral veins visible on both surfaces, the midrib more raised on the underside, but very conspicuous on the top side because of its yellow-green colour. Net veins not conspicuous. Lateral veins eight to twelve ascending at 70° to the midrib.

Flowers—Yellow, *in clusters or short cymes* in the forks of the leaves. *Calyx* about 4 mm long with *three or occasionally four* broad, deep, obtuse lobes, very sparsely fawn-hairy. Petals usually three, round, 5 mm long with pale margins. Stamens usually three. Flowering period September to November.

Fruit—Berry, yellowish-green turning orange red to black when ripe, *in clusters of two to five.* Individual fruits oval to globular, about 12 mm diameter, seated in the enlarged *three-four lobed* cup-shaped *calyx*, on short stalks about 3 mm long. Fruit ripe May to July.

Habitat—Riverine and littoral rainforests.

Distribution—Clarence River, N.S.W., to Bamaga, North Queensland. Recorded in N.S.W. from Iluka N.R., Broken Head N.R., Brunswick Heads N.R., Cudgen Lake, Stotts Island N.R., Terranora and Tweed Heads.

Timber and Uses—Wood pale with black streaks or specks. Close grained, strong and elastic. Said to be suitable for carvings, mallets, flooring and turnery. Wood that has turned black closely resembles ebony.



0 1 2 cm.

E.S.

Plate No. 20
Diospyros fasciculosa (F. Muell.) F. Muell.

DIOSPYROS MABACEA (F. Muell.) F. Muell.

Synonym—*Cargillia mabacea* F. Muell., *Maba quadridentata* F. Muell.

Reference—F. Muell. Fragm. V, 162, 1866.

Derivation—Mabacea from Latin "mabacea" like a Maba, because of its similarity to this closely related genus.

Common Name—Silky Persimmon, Ebony, Red-fruited Ebony.

Standard Trade Name—None.

A tree up to 25 m tall and 25 cm diameter.

Trunk—Often crooked, fairly cylindrical, not buttressed.

Outer Bark—Black, very scaly or fissured, shedding in narrow vertical flakes or strips. The dead bark comprises more than three-quarters of the total bark thickness. Under bark black. Outer surface of live bark creamy yellow becoming yellow-brown after a few minutes exposure.

Inner Bark—Blaze on a tree 25 cm diameter cream changing to yellow-brown. No distinct taste or smell. 10 mm thick. Sapwood white.

Branchlets—Moderately thick, brown, smooth, with fine pale streaks, becoming dark green and *densely hairy* within about 20 cm of the tip, drying black. Young shoots and branchlets *pale brown and silky-hairy*.

Leaves—Alternate, simple, not toothed, elliptic or elliptic-oblong, 8-15 cm long, protracted into a blunt point at the tip, tapering into the leaf stalk at the base. *Dull green above, paler beneath and slightly glossy*. Drying black. Leaf stalks 3-9 mm long, brown hairy.

Venation—Midrib and lateral veins visible both surfaces, raised and more distinct beneath where clothed in *soft fawn hairs*. Net veins visible on the lower side only. Lateral veins twelve to fourteen diverging at right angles to the midrib but eventually curving until parallel to the margin.

Flowers—Silvery fawn, solitary or in clusters of up to four in the leaf axils on rusty-hairy stalks about 4 mm long. Calyx tube smooth, drying black, almost 5 mm long, calyx lobes four about 2-3 mm long. Petals on male flowers four, silvery brown silky outside, up to 6 mm long, broad lanceolate. Stamens 16, 4-5 mm long. Styles four, about 5 mm long with long fawn silky hairs. Flowering period September.

Fruit—Berry, *scarlet*, globular, up to 3 cm diameter, four-celled, each containing two seeds of which generally only one develops. Seeds triangular with flat sides, brown and shiny. Fruit ripe November to March.

Habitat—Lowland subtropical and riverine rainforest.

Distribution—Tweed River, New South Wales. Recorded from Oxley River N.W. of Tyalgum, North Arm Road Murwillumbah and Stotts Island N.R.

Timber and Uses—Wood white, close grained and tough. Very similar to grey persimmon but perhaps a little softer and lighter. A rare tree now known only from Oxley River and Stotts Island N.R.



0 1 2 cm.
E.S.

Plate No. 21
Diospyros Mabacea (F. Muell.) F. Muell.

DIOSPYROS MAJOR (Forst. f.) Bakh. var. **EBENUS**
(Spreng.) Bakh. forma *australiensis* Bakh.

Synonym—*Diospyros ellipticifolia* (Stokes) Bakh. var. *major* Bakh.,
Maba sericocarpa F. Muell.

Reference—Bull. Jard. Bot. Buitenzorg III, XV, 429, 1941.

Derivation—Major from latin "major" greater, but the significance is not clear as this is only a small tree with small flowers and fruits.

Common Name—Ebony.

Standard Trade Name—None.

Small tree up to 6 m tall, but usually only a tall shrub to 3 m.
Resembles *Hedraianthera porphyropetala* from a distance.

Trunk—Straight, sometimes with several stems from the base, not buttressed.

Outer Bark—Black, slightly fissured. *Underbark black*.

Inner Bark—Not recorded.

Branchlets—Slender, *brownish-black, warty, young shoots and branchlets rusty-hairy*.

Leaves—Alternate, simple, not toothed, papery, elliptical, 4-7 cm long, tapering to a blunt point at the tip, more abruptly tapering at the base. *Shiny on both sides, dark green, but with scattered appressed silky brown hairs on the lower surface. Leaf stalk short, 2 mm, black or dark brown, rusty-hairy*.

Venation—Midrib and lateral veins hairy, prominent on both sides on dried specimens, net veins obscure. Major lateral veins 15-20 at 60° to the midrib.

Flowers—Silvery-brown, hairy, singly in the leaf axils on stalks only up to 1 mm long. *Calyx 2-3 mm long, rusty brown hairy outside with three pointed lobes. Petals silvery-fawn, hairy, 5 mm long. Stamens three. Flowering period January*.

Fruit—Berry, red, solitary with a *very short stalk 1-2 mm long, globular-pointed, glaucous, 1-1.5 cm long. Seated in a persistent three-lobed calyx. Fruit ripe August to January*.

Habitat—In lowland subtropical rainforest.

Distribution—From the lower Tweed River, N.S.W., to Gympie, Queensland. Recorded in N.S.W. from Tumbulgum, Tweed River (1897 and 1898 only).

Timber and Uses—Too small to be used.

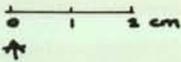


Plate No. 22
Diospyros Major (Forst. f.) Bakh. var. *ebenus* (Spreng.) Bakh.

DIOSPYROS PENTAMERA (Woolfs & F. Muell.) Woolfs & F. Muell.

Synonym—*Cargillia pentamera* Woolfs F. Muell.

Reference—F. Muell. Fragm. IV, 82.

Derivation—Pentamera from Greek “pente” five and “meros” a part, referring to the five-lobed calyx.

Common Name—Grey Persimmon, Black Myrtle, Myrtle Ebony, Grey Plum.

Standard Trade Name—Grey Persimmon.

A tree attaining a height of 40 m and a stem diameter of 60 cm with a *small dense dark crown* often pyramidal in shape.

Trunk—Usually straight, tall and cylindrical in small trees, but almost invariably channelled and irregular in large trees.

Outer Bark—*Dark grey to almost black*, rough and scaly on large trees, particularly towards the base. Underbark brownish-black. Outer surface of live bark pinkish-red with vertical dark brown streaks.

Inner Bark—Blaze on a tree 30 cm diameter *pink*, with numerous short, vertical, pale-brown lines. Outer margin black. *Sapwood margin yellow*, changing to orange after about six minutes exposure. Bark somewhat brittle. Bitter, no smell. 4 mm thick.

Branchlets—Slender, grey, often finely wrinkled but becoming smooth and green towards the ends. Young shoots fawn downy.

Leaves—Alternate, simple, not toothed, elliptical, 5-9 cm long, *tip drawn out into a blunt or fairly fine point*, tapering at the base. Upper surface satiny, green. *Underside dull, greyish-green*, at first with silky appressed hairs but becoming smooth. Leaf stalks 3-12 mm long with sparse fawn hairs, later smooth.

Venation—Midrib sunken on the upper surface, lateral and net veins just visible. Venation indistinct on the underside except for the raised midrib. Lateral veins ten to twelve at 45° to the midrib.

Flowers—White. Male flowers in clusters of three to five. Female flowers usually solitary on stalklets 1 mm or less long. *Sepals five*, triangular, 2 mm long. Corolla about 3 mm long, bell-shaped, white, with five egg-shaped lobes. Stamens 15-20, anthers silky hairy. Flowering period November.

Fruit—Berry, *dull red*, ovate, solitary, 12-16 mm long, enclosed at the base in the enlarged, *five-lobed calyx*. Seeds two to five, light brown, ovate angular, of a peculiar tough and leathery consistency, 7-10 mm long, surrounded by an edible red pulp. Fruit ripe August to December.

Habitat—Found in all types of rain forest and soils. In N.S.W. the tree attains its greatest size on the volcanic soils of the McPherson Range.

Distribution—From Durras Mtn, Kioloa S.F., N.S.W., to the Atherton Tableland, North Queensland. Recorded in N.S.W. from Durras Mtn, Milton, Beecroft Peninsula, Minnamurra Falls, Kiama, Whispering Gallery, Strickland S.F., Gap Creek F.P., Ash Island, Muswellbrook, Allyn and Williams Rivers, Snapper Island, John Gould Island N.R., Myall Lakes N.P., Seal Rocks, Cape Hawke, Yahou Island, Woko, Manning Point, Harrington, Coocumbac Island, Wingham Brush, Bulga S.F., Weelah N.R., Boorganna N.R., Middlebrother S.F., Black Creek F.R., Sea Acres, Racecourse Headland, Doyles River, Mt Seaview N.R., Mt Boss S.F., Wilson River F.P., Toorumbec Creek, Carrai S.F., Mt Sebastopol, Smoky Cape, Yarrahappinni, Way Way S.F., Warrell Creek, Oakes S.F., New England N.P., Bellinger River S.F., Dorrigo N.P., Never Never S.F., Bellingen Island, Pine Creek S.F., Bundagen F.R., Boambee

S.F., Orara West S.F., Bruxner Park F.R., Coramba Reserve, Woolgoolga Creek F.R., Madman's Creek F.P., Waihou F.R., Kangaroo River S.F., Wild Cattle Creek S.F., Mobong Creek F.R., Red Cedar F.R., Moonpar S.F., Clouds Creek S.F., Chapmans Plain F.R., Hortons Creek, Mt Hyland, Marengo S.F., Guy Fawkes River N.P., Chaelundi S.F., Blandford F.P., Glenugie F.R., Susan Island, Gibraltar Range N.P., Washpool S.F., Carnham, Forestland S.F., Ewingar S.F., Girard S.F., Rivertree, Iluka N.R., Mt Belmore S.F., Mt Pikapene S.F., Cherry Tree S.F., Cambridge Plateau, Richmond Range S.F., Murray Scrub, Toonumbar S.F., Unumgar S.F., Yabbra S.F., Beaury S.F., Legume Road F.P., Acacia Plateau, Mt Wilson F.P., Mt Clunie F.P., Mt Nothofagus F.R., Mt Lindesay, Roseberry S.F., Moore Park, Levers Plateau, Gradys Creek F.R., Wiangaree S.F., Blue Knob, Goonimbar S.F., Terania Creek, Big Scrub F.R., Whian Whian S.F., Minyon Falls F.R., Boomerang Falls, Wilson Park, Johnston's Scrub, Booyong, Nashua, Davis Scrub N.R., Victoria Park N.R., Hayter's Hill, Brunswick Heads N.R., Round Mountain, Mooball S.F., Mebbin S.F., Mt Warning N.P., Upper Pumpenbil Creek, Limpinwood N.R., Couchy Creek, Mt Cougal, Murwillumbah and Stotts Island N.R.

Timber and Uses—White when newly felled, but seasons to a grey colour. Close grained and tough. Suitable for golf heads, hard turnery, inlays, flooring and cases. 700 kg per cubic metre.



0 1 2 cm.

E. S.

Plate No. 23
Diospyros pentamera (Woolfs & F. Muell.) Woolfs & F. Muell.

FAMILY SYMPLOCACEAE

CHARACTERISTICS OF THE FAMILY IN N.S.W.

Represented by two genera and about 350 species in the tropics and subtropics, although absent in Africa. Apart from seven species in the genus *Cordyloblaste* from southern India and China to West Malaysia, all are in the genus *Symplocos*. According to Dr H. Nooteboom there are six species in Australia, five restricted to this country, whilst the other so qualifies at the subspecies level. In N.S.W. there are two species, the more widespread having two varieties which have been treated separately in this publication (*Symplocos cochinchinensis* vars *stawellii* and *thwaitesii*). The other species, although quite distinctive in the field appears to have caused some confusion as dried material, resulting in conflicting determinations. *S. baeuerlenii* will therefore continue to be used for this species.

Although *S. baeuerlenii* is usually only a tall shrub or small tree, *S. cochinchinensis* vars *stawellii* and *thwaitesii* are medium-sized trees up to 20 m tall with straight cylindrical trunks.

Outer Bark—Brown, smooth on small trees but becoming fissured and scaly on larger trees. Underbark fawn (*S. var. stawellii*) or dark brown.

Inner Bark—Blaze biscuit brown with wavy pink lines and darker yellow-brown nearer the sapwood (*S. var. stawellii*) or cream with brown flecks. No change in colour.

Branchlets—Very slender (*S. baeuerlenii*) or thick, grey to grey-brown, with pale lenticels (*S. var. thwaitesii*), not hairy, leaf buds smooth (*S. var. thwaitesii*), shortly downy (*S. var. stawellii*) or silky hairy (*S. baeuerlenii*).

Leaves—Alternate, simple, toothed. Four to eight irregular teeth per side in *S. baeuerlenii* or one to four per cm. 4-9 cm long and tapering to a fine point (*S. baeuerlenii*) or 8-18 cm abruptly tapering or rounded. Light green and thin (*S. baeuerlenii*) or dark green drying yellow-green and thick.

Flowers—Cream, in axillary clusters of one to four (*S. baeuerlenii*), greenish-white in a terminal smooth raceme (*S. var. thwaitesii*) or white in an axillary downy panicle (*S. var. thwaitesii*). Flowers 3 mm diameter (*S. baeuerlenii*), 5-8 mm diameter without stalks (*S. var. stawellii*) or 9-15 mm diameter on short stalks (*S. var. thwaitesii*). Sepals and petals five, the latter joined at the base only. Stamens attached to the petals, numerous.

Fruit—Drupe deep red (*S. baeuerlenii*) or blue-black, oval or egg-shaped, 8-12 mm long, crowned by the sepals.

Habitat—On poorer rhyolite soils in warm temperate rainforest (*S. baeuerlenii*) or in gully and subtropical rainforests on more fertile soils.

Distribution—*Symplocos* comprises about 350 species throughout Asia, South East Asia, New Guinea, Australia, Polynesia, North America and particularly South America where it is well represented. It is absent in Africa; and appears to have had a northern hemisphere origin probably entering Australia from South East Asia within the last 20 million years. The fruits are well distributed by birds.

S. baeuerlenii is confined to the poorer rhyolite soils on the slopes of the Tweed Valley, *S. var. thwaitesii* from Bega, N.S.W., to North Queensland and *S. var. stawellii* from Orbost, Victoria, to west New Guinea and Lord Howe Island.

Timber and Uses—Wood white or pale yellowish brown on older trees, moderately hard with an oak-like figure. Could be used for turnery, furniture, panelling, toys and flooring.

KEY TO RAINFOREST TREE SPECIES OF SYMPLOCACEAE IN N.S.W.

A. USING LEAVES AND BRANCHLETS ONLY

1. Leaves 4-9 cm long, leaf stalk 2-4 mm long *Symplocos baeuerlenii* R. T. Baker
1. Leaves 8-18 cm long, leaf stalk 9-20 mm long 2
 2. Branchlets with scattered pale lenticels, leaf buds smooth *Symplocos cochinchinensis* (Lour.) Moore var. *thwaitesii* (F. Muell.) Noot.
 2. Branchlets without scattered pale lenticels, leaf buds downy *Symplocos cochinchinensis* (Lour.) Moore var. *stowellii* (F. Muell.) Noot.

B. USING BARK ONLY

1. Live bark biscuit brown with wavy pink lines *Symplocos cochinchinensis* (Lour.) Moore var. *stowellii* (F. Muell.) Noot.
1. Live bark cream with brown flecks 2
 2. Outer surface of live bark green and cream *Symplocos baeuerlenii* R. T. Baker
 2. Outer surface of live bark orange-brown *Symplocos cochinchinensis* (Lour.) Moore var. *thwaitesii* (F. Muell.) Noot.

SYMPLOCOS BAEUERLENII R. T. Baker

Reference—Proc. Linn. Soc. N.S.W. XXVII, 594, 1902.

Derivation—Symlocos from Greek "sym" joined and "ploce" woven in reference to the petals and stamens joined at their bases; baeuerlenii after Mr W. Baeuerlen, a 19th century plant collector in N.E. N.S.W. for the Technological Museum, Sydney.

Common Name—Shrubby Hazelwood, Small-leaved Hazelwood.

Standard Trade Name—None.

A tall shrub or rarely a small tree up to 7 m tall and 15 cm diameter.

Trunk—Not buttressed or fluted.

Outer Bark—*Dark Brown*, smooth with shallow vertical fissures. Underbark dark brown. Outer surface of live bark green and cream.

Inner Bark—Blaze on a tree 15 cm diameter cream with dark brown flecks on the outer half only. No change in colour on exposure. No taste but a green bean smell. 2 mm thick.

Branchlets—*Very slender*, dark grey-brown, dull with protuberances at the axils of the fallen leaves. Longitudinally ribbed when dry. Hairy only at the growing tip. Leaf buds with fawn silky hairs.

Leaves—Alternate, simple, with *four to eight irregular teeth* on each side but restricted to the *middle half*, lanceolate, 4-9 cm long, tapering to a fine point at the tip and also tapered at the base. More or less shiny on both sides, not hairy, *light green and thin*. Leaf stalks short, 2-4 mm long, smooth.

Venation—Midrib and lateral veins visible on both sides, but more conspicuous beneath. Lateral veins six to nine on either side. Sunken above, raised beneath. Net veins widely spaced, indistinct unless held to the light.

Flowers—Cream, *one to four in axillary clusters* or on a very short raceme up to 3 mm long. Flower stalks 1-2 mm long with greenish-brown hairs. Calyx lobes five, free, triangular, less 1 mm long. Petals cream, five, round, free, 2 mm long, forming a cup. Stamens numerous. Flowering period June to September.

Fruit—*A shiny succulent drupe, deep red, oval*, 8-10 mm long, borne singly or on axillary racemes. Stalks 2 mm long. Seed single, spindle-shaped with four or five longitudinal grooves extending into the embryo, 6 mm long. Fruit ripe February.

Habitat—Restricted to the less fertile soils derived from rhyolite in warm temperate rainforest.

Distribution—Only recorded from Mt Matheson, Terania Creek, Gibbergunyah Range and Lost Valley on Whian Whian S.F., Boomerang Falls, Tumbulgum and Upper Crystal Creek in N.S.W.

Timber and Uses—Too small and rare to be used.



Plate No. 24
Symplocos bauerlenii R. T. Baker

SYMPLOCOS COCHINCHINENSIS (Lour.) Moore var.

STAWELLII (F. Muell.) Noot.

Synonym—*Symplocos stawellii* F. Muell., *Symplocos spicata* Roxb. var. *australis* Benth.

Reference—F. v. M. Fragm. V, p 60. 1865.

Derivation—*Stawellii* after Guilielmi Stawell, a Supreme Court judge of Victoria who promoted Australian exploration.

Common Name—White Hazelwood.

Standard Trade Name—White Hazelwood.

A small rather ornamental tree, with a wide spreading crown of dark green foliage. May attain a height of 20 m and a stem diameter of 80 cm.

Trunk—Not prominently buttressed, straight.

Outer Bark—Grey-brown to brown, smooth, pimply to wrinkled and scaly at the base. Underbark very thin, fawn. Outer surface of live bark green with pink-brown vertical streaks.

Inner Bark—Blaze on a tree 80 cm diameter *biscuit brown with wavy pink* vertical lines. Uniform darker yellow-brown towards centre. Gritty texture. No change in colour on exposure. Slightly sweet at first, but becoming astringent. Sugar cane smell. 1 cm thick.

Branchlets—*Thick*, greyish-brown, paler or green towards the ends, smooth. Leaf scars pale and distinct. Lenticels absent. Buds dark brown, shortly *downy*.

Leaves—Alternate, simple, firm to almost rigid, toothed except towards the leaf base. *Teeth shorter and closer, 1.6-3.8 per cm*, than in var. *thwaitesii*. In young trees the leaves are more rigid and distinctly toothed. Elliptic or elliptic-lanceolate, 8-16 cm long, tapering to a *rounded point* at the tip but somewhat more abruptly at the base, slightly glossy above, hairless, dark green. Leaf stalk 9-20 mm long, smooth.

Venation—Midrib and lateral veins distinct on both surfaces, but a little more conspicuous and raised on the underside. Midrib sunken on the upper surface. Lateral veins eight to fourteen on either side. Net veins rather open, visible on the underside.

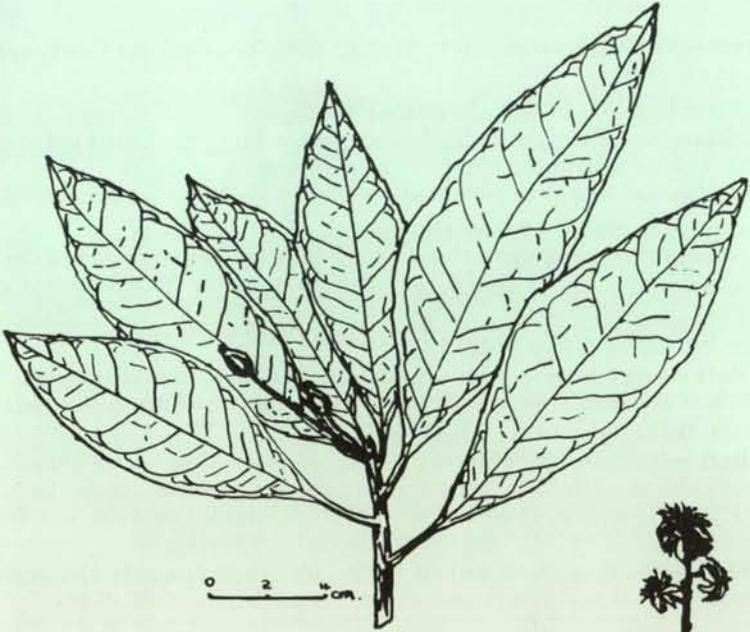
Flowers—White, very fragrant, in short *downy panicles* up to 6 cm long in the axils of the leaves. Flowers *without stalks, 5-8 mm diameter* with two or three fringed bracts at the base. Calyx lobes five, broad and blunt, forming a tube about 1 mm long at the base. Petals white, five, 3 mm long forming a very short tube. Stamens numerous, white. Flowering period April to July.

Fruit—A succulent drupe, shiny blue-black, egg-shaped, about 12 mm long, crowned by the five persistent calyx lobes. *Bracts persisting at the base of the fruit*. Seeds brown, pear-shaped, 8 mm long. Fruit ripe October to April.

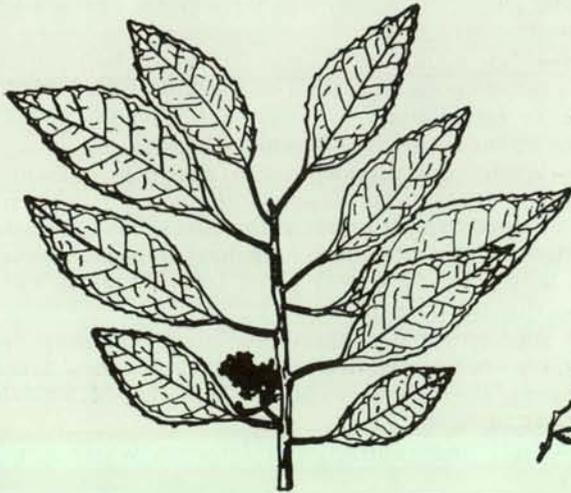
Habitat—Gully and subtropical rainforests where it is usually along creeks.

Distribution—Scattered from Orbost, Victoria, to the Atherton Tableland, North Queensland. Also in New Guinea and on Lord Howe Island. Recorded in N.S.W. from Cattai Creek, Lisarow, Dungog, Cape Hawke, Elands, Kew, Hastings River, Urunga, Pine Creek S.F., Washpool S.F., Davis Scrub, Alstonville, Wooyung and Murwillumbah.

Timber and Uses—Wood white but pale yellowish-brown in large trees, medium hard, with an oaklike figure on the quarter. Apt to warp and split. Suitable for cabinet work, joinery, piano keys, flooring, panelling, brush stocks and toys. 600 kg per cubic metre.



0 1 2 cm.



0 2 4 cm.
E.S.

Plate No. 25

Symplocos cochinchinensis (Lour.) Moore var. *stawellii* (F. Muell.) Noot.

SYMPLOCOS COCHINCHINENSIS (Lour.) Moore var.
THWAITESII (F. Muell.) Noot.

Synonym—*Symplocos thwaitesii* F. Muell.

Reference—F. v. M. Fragm. III, p 22, 1862.

Derivation—Thwaitesii after G. H. K. Thwaites a botanical friend of Mueller who forwarded specimens to him.

Common Name—Buff Hazelwood, Large-flowered Hazelwood.

Standard Trade Name—Buff Hazelwood.

A small often crooked tree up to 17 m tall and 45 cm diameter in N.S.W., but up to 30 m tall in Queensland. The dull dark green foliage is clustered at the ends of the branchlets resembling a mango.

Trunk—Cylindrical without fluting or buttressing.

Outer Bark—Dark brown, smooth with horizontally elongated raised lenticels, or on large trees with occasional small plates and irregular vertical fissures. Underbark dark brown. Outer surface of live bark orange-brown.

Inner Bark—Blaze on a tree 15 cm diameter *cream with occasional orange-brown vertical flecks or red-brown streaks* on larger trees. No change in colour on exposure. No taste or smell. 6 mm thick.

Branchlets—Thick, grey on the leafy portion but later becoming brown, smooth, with prominent paler triangular leaf scars and *scattered pale round lenticels*. Buds dark, smooth, *not downy*.

Leaves—Alternate, simple, thick and leathery, toothed except towards the leaf base. *Teeth more pronounced widely spaced, 1.0-2.0 per cm* than in var *stawellii*. Elliptic to broadly oblanceolate, 12-18 cm long, tapering abruptly to a *short point at the tip* and tapering gradually into the leaf stalk at the base. Dull, smooth and dark green above, paler green below. Leaf stalk 10-15 mm long, smooth, flattened on the top surface but rounded below.

Venation—Midrib and lateral veins paler than the leaf blade, equally conspicuous on both surfaces. Midrib sunken above, raised below. Main lateral veins ten to fourteen. Net veins indistinct above, more clearly visible below.

Flowers—Greenish-white, sometimes turning blue-black, on a terminal *smooth* raceme, 1.5-6 cm long. *Flowers 9-15 mm diameter, on stalks up to 2 mm long*. Sepals, white tipped with purple, five, rounded, 3 mm long, recurved. Petals white, five, narrower than the sepals, up to 6 mm long. Stamens white, numerous as long as the petals. *Flowering period September to December*.

Fruit—Drupe, purple to black, egg-shaped and crowned by the five persistent sepals, about 12 mm long. *Floral bracts not persisting*. Fruit ripe January to March.

Habitat—Gully and subtropical rainforest, usually along creeks.

Distribution—Occurs as scattered trees only from Bega, N.S.W., to the Atherton Tablelands, North Queensland. Recorded in N.S.W. from Wapego Creek, Bega, Tilba Tilba, Narooma, Yadboro S.F., Milton, Mt Keira, Royal N.P., Gap Creek F.P., Cedar Brush N.R., Kelaher Brush, Patterson, Upper Williams River, Cape Hawke, Black Head, Weelah N.R., Boorganna N.R., Black Creek F.R., Sea Acres, Point Plomer, Big Hill, Racecourse, Bellangry S.F., Toorumbree Creek, Shark Island, Yarrahapinni, Way Way S.F., Bellinger River S.F., Dorrigo, Pine Creek S.F., Gibraltar Range N.P., Washpool S.F., Toonambar S.F., Beauray S.F., Acacia Plateau, Mt Wilson, Mt Nothofagus, Wiangaree S.F., Blue Knob, Goonimbar S.F., Terania Creek, Big Scrub F.R., Wilson Park, Boatharbour, Booyong,

Nashua, Alstonville, Broken Head N.R., Hayter's Hill, Bangalow, Brunswick Heads N.R., Round Mountain, Mebbin S.F., Chillingham, Murwillumbah, Mt Cougal and Stotts Island N.R.

Timber and Uses— White but pale yellowish-brown on old trees when first cut, medium hard, silver grain and an oak-like figure on the quarter. Suitable for furniture, joinery, turnery, inlays, flooring and lining.



Plate No. 26
Symplocos cochinchinensis (Lour.) Moore var. *thwaitesii* (F. Muell.) Noot.

FAMILY OLEACEAE

CHARACTERISTICS OF THE FAMILY IN N.S.W.

A small family of only 29 genera and 600 species distributed throughout the warmer or temperate zones of both hemispheres. In Australia there are six genera and twenty-five species of which the genera *Notelaea* (four species) and *Olea* (one species) are in N.S.W. rainforests as trees. All are small trees or shrubs except *Olea paniculata* which may reach 30 m tall and alone exhibit short buttresses. Trunks often crooked and irregular.

Outer Bark—Grey to brown, smooth to platy or fissured. Underbark brown to red-brown (creamy fawn in *N. microcarpa* var. *velutina*).

Inner Bark—Cream to orange-brown with numerous darker flecks. Changing to orange-brown or red-brown on exposure (deep salmon pink in *O. paniculata*). Bitter and gritty (*Notelaea*) to taste.

Branchlets—Slender with paler round lenticels.

Leaves—Opposite, simple, not toothed, smooth to hairy.

Venation—Midrib and lateral veins distinct in *N. longifolia* and *N. venosa*, otherwise obscure on at least one surface.

Flowers—Pale green to yellow or bluish-black (*N. johnsonii*) in short axillary racemes (*Notelaea*) or panicles (*Olea*). Sepals four, triangular, small. Petals four, joined in two pairs at the base (*Notelaea*) or free (*Olea*). Stamens two.

Fruit—Fleshy drupe, blue-black, 10-20 mm long (except *N. microcarpa* which is 5-10 mm), egg-shaped, elliptical or globular. Containing a single hard seed.

Habitat—Mostly in dry rainforest, but *N. johnsonii* is in lowland subtropical rainforest whilst *N. venosa* is in temperate rainforest.

Distribution—*Notelaea* consists of nine species, all endemic to eastern Australia from N.E. Queensland to Victoria. All four rainforest tree species occur in N.S.W. and southern Queensland with only *N. longifolia* extending north of Brisbane to North Queensland. Only *N. venosa* occurs in rainforest south of Bega, reaching east Gippsland, Victoria. *N. johnsonii* is now restricted to the Richmond River to the Queensland border. *Notelaea* has been regarded as of Australian origin, whilst the closely related genus *Nestegis* from South-east Australia, New Zealand, Norfolk Island and Hawaii has an Australasian origin with effective long distance dispersal by birds. *Olea*, *Ligustrum* and *Jasminum* have probably originated in the northern hemisphere and moved down through South East Asia to Australasia.

Olea consists of 20 species from Mediterranean, Africa, S.E. Asia, Polynesia and New Zealand. A single species *O. paniculata* occurs from the Hunter River, N.S.W., to North Queensland and Lord Howe Island.

Timber and Uses—Most species are too small to be used as timber, but where large enough as in *N. longifolia* (yellow timber) and *Olea* (red-brown) possess a hard, close-grained tough wood which is useful for turnery, carving, inlays and tool handles.

KEY TO RAINFOREST TREE SPECIES OF OLEACEAE IN N.S.W.

A. USING LEAVES AND BRANCHLETS ONLY

1. Net veins not visible on the top surface..... 2
 2. Leaves drawn out to a narrow point, usually with small hollow swellings along the midrib beneath..... *Olea paniculata* R.Br.
 2. Leaves gradually tapering to a point, no swellings along the midrib..... *Notelaea johnsonii* P. S. Green
1. Net veins visible on the top surface..... 3
 3. Lateral veins obscure below, 15°-30° to the midrib *Notelaea microcarpa* R. Br. var. *velutina* (F. M. Bail.) P. S. Green
 3. Lateral veins distinct below, 40°-70° to the midrib 4
 4. Net veins close together and of uniform thickness *Notelaea venosa* F. Muell.
 4. Net veins irregularly spaced and of varying thickness..... *Notelaea longifolia* Vent.

B. USING BARK ONLY

1. Blaze turning deep salmon pink *Olea paniculata* R. Br.
1. Blaze turning orange- to red-brown 2
 2. Underbark creamy-fawn *Notelaea microcarpa* R. Br. var. *velutina* (F. M. Bail.) P. S. Green
 2. Underbark brown to red-brown..... 3
 3. Blaze uniformly orange-fawn *Notelaea johnsonii* P. S. Green
 3. Blaze cream to light brown with brown speckles 4
 4. Blaze light brown with dark brown flecks..... *Notelaea longifolia* Vent.
 4. Blaze cream with orange-brown flecks..... *Notelaea venosa* F. Muell.

NOTELAEA JOHNSONII P. S. Green

Reference—Journ. Arn. Arb. 49, 3, 366 (1968).

Derivation—"Notelaea" from Greek "notos" the south and "elaia" an olive, referring to its southern hemisphere occurrence in Australasia only; "johnsonii" after L. A. S. Johnson, N.S.W. Government Botanist and joint collector of the type material of this species.

Common Name—Veinless Mock-Olive.

Standard Trade Name—None.

A shrub or small tree up to 8 m high and 7 cm diameter.

Trunk—Often crooked.

Outer Bark—Brown, wrinkled or scaly with shallow vertical fissures. Underbark brown to reddish-brown. Outer surface of live bark green.

Inner Bark—Blaze on a tree 7 cm diameter orange-fawn with a green outer margin, changing to red-brown on exposure. Slightly bitter with a smell like molasses. 2 mm thick.

Branchlets—*Slender*, fawn to plum-coloured with paler lenticels, smooth or finely downy. Buds smooth, pointed.

Leaves—Opposite, simple, margin sometimes crinkled, entire, thick and leathery, narrow elliptic to lanceolate, 4-12 cm long, tapering to a short fine point at the tip, either tapering or blunt at the base. Glossy, smooth and dark green and sometimes spotted above; paler and dull beneath. Leaf stalks 2-12 mm long, smooth or slightly downy.

Venation—Midrib visible on both sides, but the lateral veins often only distinct on the lower side. Lateral veins seven to twelve at 60°-80° to the midrib. *Net veins* differing from *N. longifolia* in being *indistinct on both surfaces*.

Flowers—Bluish-black, in axillary racemes, 5-8 cm long, of five to eleven round flowers, flower stalks 3-15 mm long. Calyx lobes four, very small, triangular. Petals four, fleshy, joined into two pairs which envelope each stamen and are *borne on a definite stalk away from the ovary*. Stamens and the conical ovary purplish-pink. Flowering period May and June.

Fruit—Fleshy drupe, bluish-black, obliquely elliptical, 1.8-2 cm long, on a *stalk longer than the leaves*. Seed hard, elliptical, 10-12 mm long. Fruit ripe November and December.

Habitat—In subtropical rainforest at low altitude on basaltic red loam.

Distribution—Restricted to the Clarence River, N.S.W., to Lamington National Park, Queensland. Recorded in N.S.W. from Clarence River, Wangaree S.F., Goonimbar S.F., Whian Whian S.F., Rotary Park Lismore, Boatharbour, Booyong, Pearces Creek, Wollongbar, Davis Scrub N.R., Rous, Swan Bay, Bangalow, Hayter's Hill, Goonengerry, Brunswick Heads N.R. and Mt Warning N.P. The only record of this species south of the Big Scrub in the Richmond Valley was collected by Dr Beckler on the "Clarence River" in 1868.

Timber and Uses—Too small to be used.



0 1 2 cm.

Plate No. 27
Notelaea johnsonii P. S. Green

NOTELAEA LONGIFOLIA Vent.

Reference—Choix. t. 25.; Benth. Fl. Austr. IV 299.

Derivation—Longifolia from Latin "longa" long and "folia" a leaf, referring to its long leaves.

Common Name—Large Mock-Olive, Long-leaved Olive.

Standard Trade Name—Long-leaved Olive.

A tree attaining a height of 9 m and a stem diameter of 30 cm. Often with a dense and wide spreading crown. This species is worthy of a position in garden or park.

Trunk—Generally short and low-branching, irregular in shape.

Outer Bark—Grey or greyish-brown. Somewhat hard, fissured and scaly in large trees. Underbark mid-brown. Outer surface of live bark biscuit-brown.

Inner Bark—Blaze on a tree 30 cm diameter light brown with numerous small cavities. *Coarse, fibrous, brittle and granular, flecked with small darker brown hard particles.* The small cavities are not always present on the surface of the blaze. After a few minutes the blaze changes to a darker pinkish-brown or orange. Inner pale margin changes to yellow. No distinct taste or smell 12 mm thick.

Branchlets—Slender, grey or brown, smooth or hairy and dotted with paler coloured lenticels. Buds pointed, furry to smooth.

Leaves—Opposite, simple, entire, narrow lanceolate to broadly ovate-lanceolate. Extremely variable in size and shape from 5 cm long and 8 mm wide to 15 cm long and 8 cm wide. Generally drawn out into a fine or an acute point at the tip, but sometimes blunt, gradually tapering into the leaf stalk. Quite glabrous, densely pubescent or hairs scarcely visible. Forma *longifolia* has downy to velvety young stems, leaves, flower and fruit stalks. In forma *intermedia* they are shortly downy or almost smooth, whilst in forma *glabra* they are quite smooth. Dark green dull above, paler below. Leaf stalks 8 mm long to almost sessile, smooth to velvety.

Venation—Midrib, lateral and net veins pale, conspicuously and strongly veined, more prominently raised on the under side. Lateral veins six to eight at 40°-70° to the midrib. *Net veins irregularly spaced and of varying thickness* (not close and uniform as in *N. Venosa*, plate 30).

Flowers—Pale yellow, not fragrant, borne on short axillary racemes about 2 cm or under in length. Flower stalks 1-4 mm long but later lengthening. Sepals and petals four, not hairy, 0.5-1 and 1.5-2.5 mm long respectively. Petals partly joined into pairs. Stamens two, 1-2 mm long and partly enclosed within the concave petals. Flowering period May to October.

Fruit—Fleshy, drupe, bluish-black, egg-shaped, 10-16 mm long, containing one large egg-shaped seed 8-12 mm long. Fruit ripe November to February.

Habitat—A common tree in or on the fringes of all types of rainforest, particularly the drier scrubs.

Distribution—From Bega, N.S.W., to McIlwraith Range, North Queensland. Forma *longifolia* is from Mimosas Rocks N.P. to Gloucester, forma *intermedia* from Watagan S.F. to the Queensland border and forma *glabra* from Dunoon, N.S.W. to McIlwraith Range, North Queensland. Recorded in N.S.W. from Batemans Bay, Murrumbidgee N.P., Boyne S.F., Currowan S.F., Yadboro S.F., Lake Burrill, Milton, Conjola, Jervis Bay, Comerong Island, Cabbage Tree Creek, Minnamurra Falls, Cronulla, Middle Harbour, Hornsby, Cox's River, Kurrajong Heights, Lake Macquarie, Watagan S.F., Gap Creek F.P., Singleton, Clarencetown, Raymond Terrace, Dungog,

Allyn and Williams River, Woko, Gloucester, Bulahdelah, Snapper Island, John Gould Island N.R., Myall Lakes N.P., Seal Rocks, Cape Hawke, Yahou Island, Wallamba S.F., Black Head, Saltwater, Manning Point, Harrington, Crowdy Bay N.P., Boorganna N.R., Black Creek F.R., Middlebrother S.F., Sea Acres, Point Plomer, Big Hill, Racecourse Headland, Long Flat, Mt Seaview N.R., Toorumbec Creek, Kunderang Brook, Carrai S.F., Willi Willi, Chandlers Gorge, Smoky Cape, Shark Island, Way Way S.F., Yarrahapinni, Warrell Creek, Scotchman S.F., New England N.P., Bellinger River S.F., Dorrigo N.P., Bellingen, Pine Creek S.F., Bundagen F.R., Macaulays Headland, Bruxner F.R., Coramba Mtn, Moonee N.R., Woolgoolga Creek F.R., Madman's Creek F.P., Waihou F.R., Twelve Sixty F.P., Bagawa S.F., Kangaroo River S.F., Wild Cattle Creek S.F., Moonpar S.F., Clouds Creek S.F., Hortons Creek, Mt Hyland, Guy Fawkes River N.P., Chaelundi S.F., Blandford Creek F.P., Gibraltar Range N.P., Washpool S.F., Carnham, Forestland S.F., Girard S.F., Rivertree, Paddys Flat, Iluka N.R., Bundjalung N.P., Myrtle Creek, Booyong, Toonumbar S.F., Unumgar S.F., Yabbra S.F., Beaury S.F., Acacia S.F., Donaldson S.F., Mt Lindesay, Wiangaree S.F., Goonimbar S.F., Whian Whian S.F., Wilson Park, Brunswick Heads N.R., Cudgen Lake, Round Mountain, Mebbin S.F. and Terranora.

Timber and Uses—Wood yellow, hard, close-grained and tough. Suitable for turnery and small tool handles. An axe handle made from this wood was very durable and had much the same qualities as American hickory.

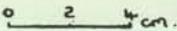
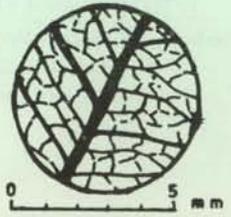


Plate No. 28
Notelaea longifolia Vent.

NOTELAEA MICROCARPA R. Br. var. VELUTINA

(F. M. Bail.) P. S. Green

Synonym—*N. longifolia* Vent. var. *velutina* F.M.B.

Reference—Comp. Cat. Qld. Pl 311, 319 and 839. fig. 293, 1913; Journ. Arn. Arb. 49, 3, 357, (1968).

Derivation—Microcarpa from Greek "micros" small and "carpos" fruit, referring to its small fruits; velutina from Latin "velutinus" velvety, because of the softly hairy leaves.

Common Name—Gorge Mock-Olive, Velvet Mock-Olive.

Standard Trade Name—None.

A crooked tree, 5-10 m high and 20 cm diameter.

Trunk—Not buttressed, often crooked, sometimes with several stems from the rootstock.

Outer Bark—Dark brown or grey, fissured, forming *hard brittle corky squares* about 12 mm wide. Often carrying epiphytic mosses, lichens. *Dendrobium cucumerinum* and *D. linguiforme*. Underbark and outer surface of live bark creamy fawn.

Inner Bark—Blaze on a tree 15 cm diameter *creamy orange-brown, speckled with darker orange-brown* grains resembling sago. The whole blaze rapidly turns a darker orange-brown. The sapwood surface changes to a dirty yellow-green. Sapwood white and finely corrugated. Sappy smell and bitter gritty taste. 10 mm thick.

Branchlets—Moderately slender, grey, somewhat downy, roughened by numerous raised rounded lenticels. Buds softly furry.

Leaves—Opposite, simple, entire, *narrow-lanceolate*, 3-8 cm long, thick, pointed at the tip, but narrower wedge-shaped at the base, dull on both sides, covered by *soft downy hairs below*, especially on the younger leaves. Dark green above, yellow-green beneath. Leaf stalk 2-5 mm long, downy or shortly furry.

Venation—Main, lateral and net veins raised and conspicuous above but *less obvious below*. Five to seven lateral veins at 15°-30° to the midrib and running almost parallel to the margin.

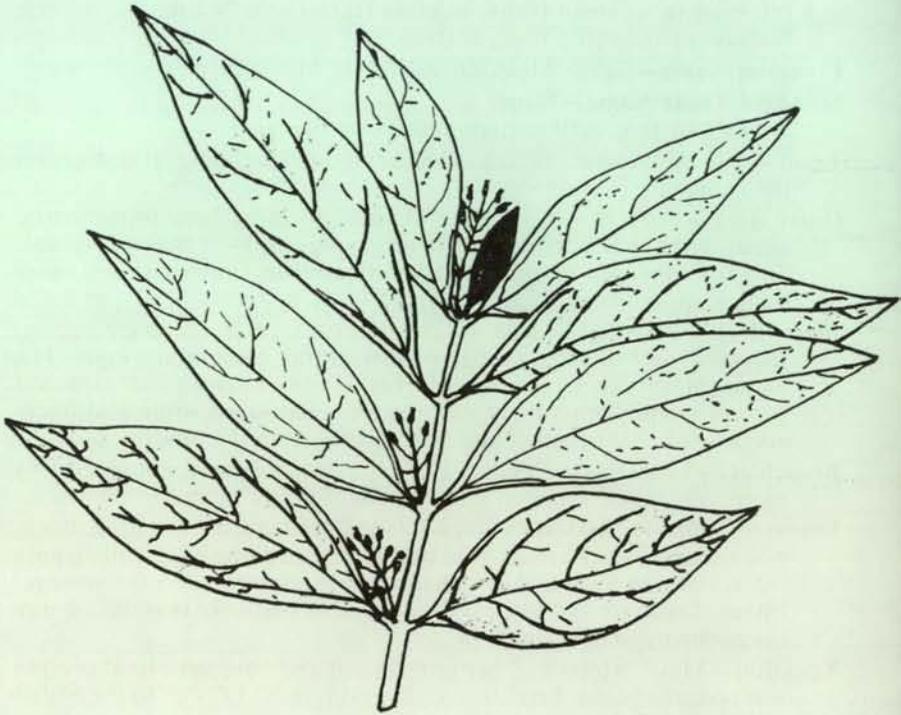
Flowers—Greenish-yellow to cream in racemes of nine to thirteen flowers, 0.5-2 cm long. Flower stalks 0.5-4 mm long. Calyx lobes very small, four, of which two are longer than the others. Petals four, 1.4-2 mm long, concave and joined in pairs so as to more or less enclose each of the two stamens. Ovary egg-shaped with two stigmatic lobes on a short style. Flowering period June to September.

Fruit—Fleshy drupe, dark blue to purple, globular to egg-shaped, 5-10 mm long, enclosing a hard seed. Seed globular to bone-coloured, 4-6 mm diameter. Fruit ripe September to May.

Habitat—*Common in gorges* on the coastal escarpment of the Northern Tablelands at about 500-700 m altitude. Growing on the side of gorges, rocky slopes or amongst boulders. Hybrids with *N. longifolia* occur.

Distribution—From Tia Falls near Walcha, N.S.W., to Darling Downs, Queensland. Recorded in N.S.W. from Tia and Apsley Falls, Dangar Falls, Baker's Creek Falls, Wollomombi Falls, Chandler Gorge, Castle Doyle, Kunderang Brook, Bald Knob, Nymboida River near Moonpar S.F., Guy Fawkes River N.P., Chaelundi S.F., Blandford Creek F.P., Wylie Gorge near Liston, Boonoo Boonoo Falls, Rivertree and Mt Wilson F.P.

Timber and Uses—Too small to be used.



0 1 2 cm.

E.S.

Plate No. 29
Notelaea microcarpa R. Br. var. *velutina* (F. M. Bail.) P. S. Green

NOTELAEA VENOSA F. Muell.

Synonym—*Notelaea longifolia* Vent. var. *pedicellaris* Domin.

Reference—Trans. Vic. Inst. 131, 1854-55.

Derivation—Venosa from Latin "venosus", conspicuously veined, referring to the prominent network of veins on the leaves of this species.

Common Name—Veined Mock-olive, Large Mock-olive, Smooth Mock-olive.

Standard Trade Name—None.

A small tree or bushy shrub up to 10 m tall, and 25 cm stem diameter.

Trunk—Often crooked, not buttressed or flanged.

Outer Bark—Grey-brown, smooth to slightly scaly or flaky. *Underbark dark chocolate brown*. Outer surface of live bark creamy brown to creamy orange.

Inner Bark—Blaze on a tree 15 cm diameter *cream with round or elongated orange brown spots* like sago. Sapwood surface white, but *turning orange*. The entire blaze *slowly turns orange-brown*. *Gritty*, with a slightly bitter taste and sugar cane smell, 8 mm thick.

Branchlets—Light brown, round and thin, with raised white lenticels. Leaf buds smooth, enclosed in numerous scales, rounded in the normal form but pointed in the more northern variety *A*. The fallen scales leave a circular scar on the stem.

Leaves—Opposite, simple, not toothed, lanceolate to ovate-lanceolate, 6-16 cm long, tapering to a point at the tip and also tapering at the base except for var. *A* which is rounded to *heart-shaped*. Thick, not hairy, dull, dark green but paler green below. Oil dots indistinct. Leaf stalk 5-15 mm long (0-5 mm in var. *A*), smooth.

Venation—Midrib, lateral and net veins raised and conspicuous on both sides. Seven to fifteen main lateral veins on each side of the midrib (15-30 in var. *A*) at 70° to the midrib, looping near the margin. *Net veins close and uniform*.

Flowers—Yellow or greenish-white, in axillary racemes 1-3 cm long of seven to seventeen flowers. Surrounded by quickly shedding ovate smooth bracts. Flower stalks 2-5 mm long, smooth. Calyx 0.5 mm long with four triangular lobes. Petals four, 1-2 mm long, joined at their bases, broad-lanceolate, smooth. Stamens two, one to each pair of petals, up to 2 mm long. Flowering period October to December or December to February for var. *A*.

Fruit—Drupe, thinly succulent, blue-black with a slight bluish bloom, elliprical, 10-20 mm long on a short stalk 2 mm long. Seed single, ovoid-pointed, 8-15 mm long. Fruit ripe throughout the year, but mainly April to September for var. *A*.

Habitat—In or around rainforest, often in mountain gullies but also in the rainforest understorey of wet sclerophyll forest. Var. *A*. occupies depauperate temperate rainforest or scrub at exposed high elevations on shallow soil.

Distribution—Lakes Entrance, Victoria, to Cunninghams Gap, South Queensland. The normal form extends only as far north as the Hastings River, whereas var. *A*. is from Barrington Tops to Mt Lindesay. Recorded in N.S.W. from Green Cape, Yambulla S.F., Eden, Brown Mtn, Tanja S.F., Bermagui S.F., Mt Dromedary F.R., Bodalla S.F., Mogo, Currowan S.F., Yabboro S.F., Milton, McDonald S.F., Jervis Bay, Robertson N.R., Mittagong, Kangaroo Valley, Wingello, Jamberoo, Minnamurra Falls, Whispering Gallerv. Shellharbour, Bulli, Royal N.P., Bilpin, Wondabyne, Springwood, Glenbrook, Kowmung, Oberon, Wentworth Falls, Mt Victoria, Mt Wilson, Rylestone, Mt Royal S.F., Chichester S.F., Williams River,

Bulahdelah, Seal Rocks. Bulga S.F., Doyles River S.F. and Bellangry S.F. Var. *A.* is recorded from Barrington Tops N.P., Gloucester River, Comboyne, Werrikimbe N.P., Mt Boss S.F., Bellangry S.F., Carrai S.F., Upper Georges River, New England N.P., Bishops Creek F.P., Dorrigo N.P., Tuckers Nob, Orara West S.F., Munningyundo Mountain, Cangi S.F., Gibraltar Range N.P., Washpool S.F., Mt Hyland, Marengo S.F., Spirabo S.F., Forestland S.F., Acacia Plateau, Mt Wilson F.P., Mt Nothofagus F.R., Mt Lindesay, Mt Glennie, Roseberry S.F. and Levers Plateau.

Timber and Uses—Too small to be used.

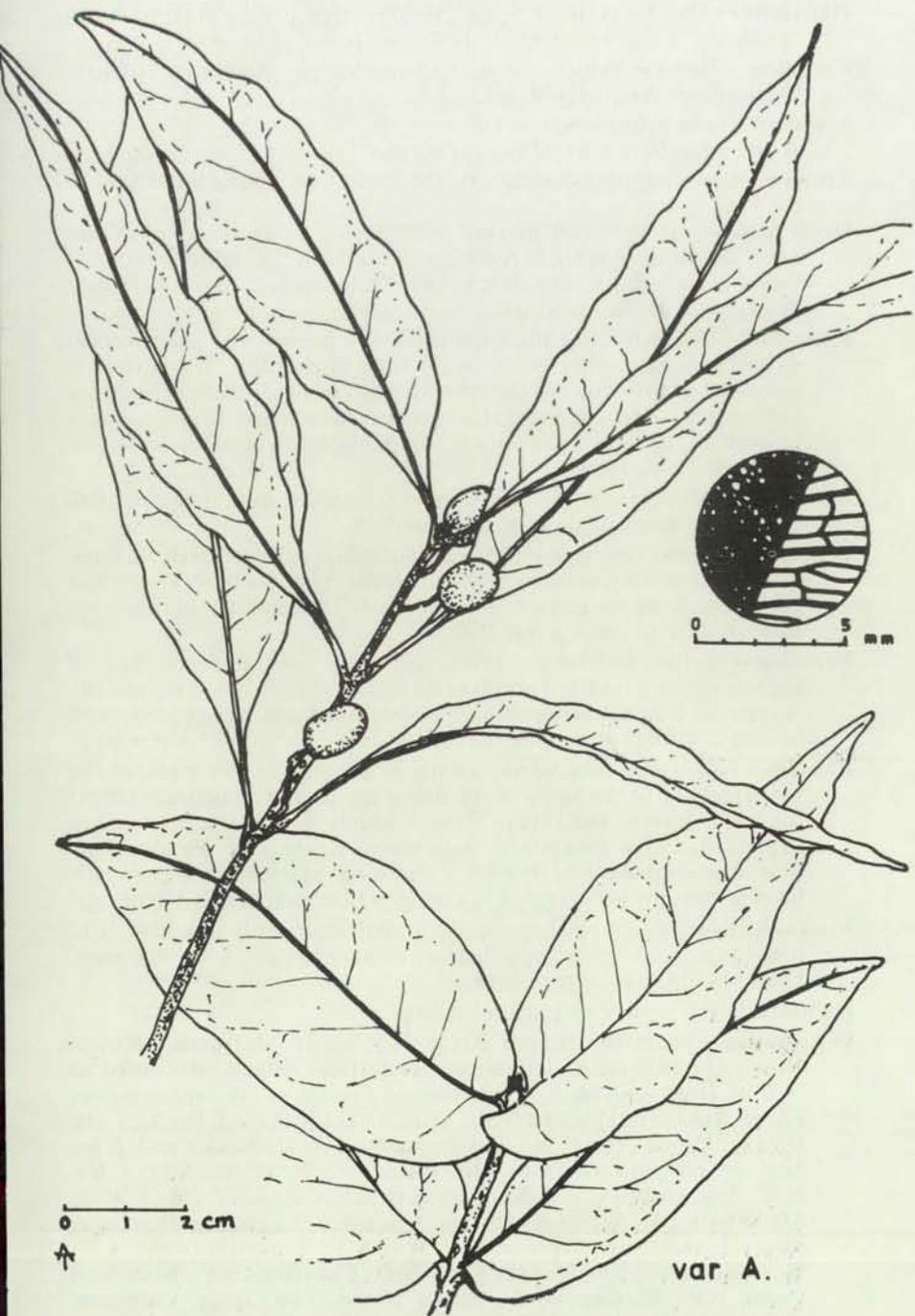


Plate No. 30
Notelaea venosa F. Muell.

OLEA PANICULATA R. Br.

Reference—Prod, 523.

Derivation—Olea from Greek "elaia", the olive tree, paniculata from Latin "panicula" a tuft referring to the loose cluster of flowers.

Common Name—Native olive, Clove-berry, Australian Olive, Pigeonberry Ash, Maulwood.

Standard Trade Name—Native Olive.

A tree up to 30 m tall and 60 cm diameter.

Trunk—Often flanged and irregular, the flanges becoming buttressed at the base.

Outer Bark—Grey to brown, marked by numerous pale *pustules* which are often arranged in vertical rows, particularly in the shallow wrinkled fissures. Underbark chocolate brown. Outer surface of live bark pale brown with green markings.

Inner Bark—Blaze on a tree 30 cm diameter light brown, with paler vertical stripes which are directly below the lines of pustules. The surface is also marked with numerous darker flecks. The blaze changes to a deep salmon-pink after a few minutes exposure, which then slowly changes to brown. The freshly cut bark is slightly bitter to taste and is faintly fragrant. 7 mm thick.

Branchlets—Moderately thin, grey, smooth, marked by numerous small pale raised lenticels. Leaf buds smooth.

Leaves—Opposite, simple, not toothed, lanceolate or ovate, 5-10 cm long, drawn out into a *fine point at the tip*, tapering at the base. Green and glossy on the upper surface, paler beneath. Leaf stalks 5-12 mm long, smooth or with small white flakes.

Venation—Midrib and lateral veins visible on both surfaces. Midrib slightly raised beneath. Lateral veins seven to ten at 70° to the midrib. Numerous fine net veins obscure on both surfaces. *Often with small hollow swellings at the junction of the lateral veins with the midrib.*

Flowers—Pale green and white, small, in panicles at the ends of the branchlets or in the forks of the upper leaves and sometimes longer than the leaves. Individual flowers about 5 mm diameter when expanded. Calyx four-lobed, pale green, 1 mm long. Petals white, four, broad lanceolate, smooth, 2 mm long. Stamens creamy to pale brown, two, anthers large. Flowering period October to December.

Fruit—A drupe, bluish-black, pointed egg-shaped, scarcely succulent, 8-12 mm long. Seed single, egg-shaped, creamy-brown, 8-10 mm long. Fruit ripe May to September.

Habitat—Riverine, dry and littoral rainforests.

Distribution—From the Hunter River, N.S.W., to Mellwraith Range, North Queensland and also on Lord Howe Island. Recorded in N.S.W. from Aberdeen, Muswellbrook, Singleton, Booral, Snapper Island, John Gould Island N.R., Myall Lakes N.P., Seal Rocks, Cape Hawke, Yahou Island, Woko, Coocumbac Island, Black Creek F.R., Sea Acres, Point Plomer, Big Hill, Racecourse Headland, Mt Seaview N.R., Toorumbec Creek, Kunderang Brook, Carrai S.F., Willi Willi, Mt Sebastopol, Wollomombi and Chandler Gorges, Smoky Cape, Shark Island, Yarrahapinni, Way Way S.F., Kangaroo River S.F., Hortons Creek, Guy Fawkes River N.P., Chaelundi S.F., Blandford Creek F.P., Glenugie F.R., Susan Island, The Gorge, Carnham, Ewingar S.F., Girard S.F., Iluka N.R., Cambridge Plateau, Toonumbar S.F., Unumgar S.F., Yabbra S.F., Beaury S.F., Moore Park, Roseberry S.F., Levers Plateau, Wiangaree S.F., Goonimbar S.F., Wilson Park, Nashua, Mt Warning N.P., Upper Pumpenbil Creek, Limpinwood N.R. and Couchy Creek.

Timber and Uses—Wood very hard and close-grained; when newly cut the white sapwood has a faint fragrance and turns pink. The heartwood is reddish-brown and often beautifully streaked and marked. Suitable for carving, hard turnery, inlays. Used on Lord Howe Island for wooden wedges and for fence posts. Sapwood not durable in the weather. 950 kg per cubic metre.

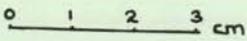
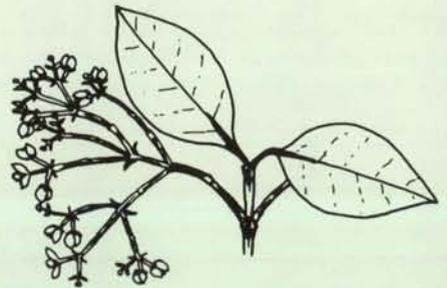


Plate No. 31
Olea paniculata R. Br.

APPENDIX

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

Bagawa S.F.	23 km N.W. of Coffs Harbour
Bald Rock N.P.	22 km N. of Tenterfield
Banda Banda F.P.	40 km W.S.W. of Kempsey
Barcoongere S.F.	35 km S.E. of Grafton
Barrington Tops N.P.	35 km N.W. of Dungog
Beaury 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
Bermagui S.F.	22 km S. of Narooma
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
Cockerawombeeba F.P.	60 km N.W. of Wauchope
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
Currowan S.F.	22 km N.W. of Batemans Bay
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
Forest Land 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
Kioloa S.F.	20 km N.E. of Batemans bay
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
Morton N.P.	35 km W. of Nowra
Mt Belmore S.F.	42 km S.W. of Casino
Mt Boss S.F.	48 km N.W. of Wauchope
Mt Clunie S.F.	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 Nothofagus F.R.	20 km N.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
Murramarang N.P.	18 km E.N.E. of Batemans Bay
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
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.	8 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
Ringwood F.P.	20 km S.W. of Bellingen
Riamukka S.F.	25 km S.S.E. of Walcha
Richmond Range S.F.	35 km N.W. of Casino
Robertson N.R.	34 km S.W. of Wollongong
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
Tanja S.F.	44 km N. of Eden
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 N.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
Willowie Scrub	70 km N.W. of Grafton
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
Yabboro S.F.	35 km N.N.W. of Batemans Bay
Yambulla S.F.	40 km S.W. of Eden
Yarrhapinni S.F.	5 km S.E. of Macksville



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