



# Hoop Pine

**Botanical name:** *Araucaria cunninghamii*

**Local names:** Queensland pine, Colonial pine

**Derivative:** Hoop refers to the tendency of the bark to remain as hoops on the forest floor after the timber has decayed; *cunninghamii* honours A. Cunningham, a botanist, who explored eastern Australia

**Interest:** Hoop Pine is the major rainforest species used in plantations in Queensland.

## Tree Description & Occurrence

A large tree attaining 50 metres in height and 1.8 metres stem diameter. It usually has a straight cylindrical trunk. The bark in mature trees is rough and dark brown to nearly black in colour, while in young trees it is smooth and reddish-brown with a tendency to peel off in horizontal strips. The hoops are apparent when bark is stripped from the trunk.

Occurs naturally in the drier rainforests from the Hastings River, New South Wales to for north Queensland and in some places as far inland as 300 kilometres. It is also grown in plantations, predominantly in south Queensland. Outside Australia it extends to Papua New Guinea.

Sawn timber of this species is readily available, predominantly from plantation grown trees.

## CRRP Significance

This native rainforest species is very suitable for agroforestry plantings, where commercial timber growing can be integrated into the farm for a multitude of benefits such as animal shelter and land protection. It has been found that animals benefit from this association particularly in the case of dairy animals where a positive effect on milk production has been noted. Thinnings of this timber can be harvested as good-sized poles at approx 20-25 years.

## Wood Appearance

**Colour:** The heartwood ranges from pale cream to light yellow-brown with little difference between heartwood and sapwood.

**Grain:** Very fine and even textured. Growth rings usually visible but indistinct.

## Wood Properties

**Density:** 560 kilograms per cubic metre at 12 percent moisture content; approximately 1.7 cubic metres of seasoned sawn timber per tonne.

**Durability:** Class 4 - Suitable for use in continuously dry situations under cover, well ventilated, clear of the ground and fully protected from the weather and other dampness.

**Lyctid Susceptibility:** Sapwood is not susceptible to lyctid borer attack. However, in south-east Queensland, untreated sapwood of this species requires protection from the Queensland Pine Beetle (*Calymnaderus incisus*) by painting or film finishing, by enclosure within construction (eg. as fully enclosed framing), or by preservative treatment.

**Preservation:** Immature plantation grown stems are almost entirely sapwood, which typically comprises more than 50 percent of the stem radius even in mature plantations. Sapwood readily accepts commercial preservation impregnation but the heartwood cannot be adequately treated using currently available commercial processes.

**Seasoning:** To avoid distortion, framing sizes should be high temperature dried. Boards may be air dried or kiln dried at conventional or high temperatures.

**Hardness:** Soft (rated 5 on a 6 class scale) in relation to indentation and ease of working with hand tools.

**Machining:** Machines and turns well to a smooth surface.

**Fixing:** No difficulty has been experienced with the use of standard fittings and fastenings.

**Gluing:** Can be satisfactorily bonded using standard procedures.

**Finishing:** Will readily accept stain, polish and paint.

## Uses

**Construction:-** General purpose softwood used as seasoned dressed timber in general house framing, flooring, lining, mouldings, laminated beams. Preservative impregnated for external cladding, decking, fascia and barge boards. Used preservative impregnated in seasoned, sawn or round form in fencing, pergolas, landscaping, retaining walls, playground equipment. Also used as structural plywood and particle board.

**Decorative:-** Furniture, plywood, joinery, turnery, carving.

**Others:-** Boat building (masts, planking, deck beams, frames, marine plywood), aircraft construction, wood wool, paper products, arrow shafts, broom handles, cooperage, beehives, brushware, dowelling, blind rollers, draughtsman's implements, boat oars, musical instruments (violin and guitar bellies), scaffold planks, match splints.

## Identification Features

### GENERAL CHARACTERISTICS

**Sapwood:** Indistinguishable from heartwood.

**Heartwood:** Pale cream to light yellow-brown in colour.

**Texture:** Smooth, very uniform, grain straight except around knots.

### WOOD STRUCTURE

**Vessels:** Absent.

**Parenchyma:** Not visible with lens.

**Rays:** Fine, indistinct without a lens.

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.



# Spotted Gum

**Botanical name:** *Eucalyptus citriodora*, *Eucalyptus maculata*, *Eucalyptus henryi*

**Local names:** Lemon-scented gum (*Eucalyptus citriodora* only), Spotted Iron Gum

**Derivative:** *citriodora* for the strong lemon scent of the leaves

## Tree Description & Occurrence

On favourable sites, these species grow to 45 metres total height and 1.3 metres stem diameter, but they attain only half these dimensions on poorer sites. They have straight slender trunks with smooth bark. This is shed in patches leaving slight depressions in the surface which give a characteristic spotted appearance. Colour tonings range from pink to grey-blue.

Mainly distributed in the coastal areas of New South Wales and Queensland, but extending to western areas in Queensland: *Eucalyptus citriodora* - Rockhampton to Windsor Tableland, north Queensland; *Eucalyptus maculata* - Bega (New South Wales) to Rockhampton; *Eucalyptus henryi* - northern New South Wales and southern Queensland.

Sawn timber from these species is readily available.

## CRRP Significance

Relatively pest resistant and fast growing species occurring naturally around Atherton and Herberton. *Eucalyptus citriodora* is tolerant of a variety of soils, will tolerate light frosts when young and is generally more suited to dry or poorer soils.

## Wood Appearance

**Colour:** The heartwood ranges from a light-brown through to dark brown. Sapwood is usually white in colour and up to 50mm wide.

**Grain:** Moderately coarse textured and variable. Gum veins common. The presence of wavy grain can produce an attractive fiddle back figure.

## Wood Properties

**Density:** 1010 kilograms per cubic metre at 12 percent moisture content; approximately 1.0 cubic metre of seasoned sawn timber per tonne.

**Durability:** Class 2 - Highly resistant to decay when fully exposed to the weather, clear of the ground and well drained with free air circulation. Moderately decay resistant in the ground.

**Lyctid Susceptibility:** Untreated sapwood susceptible to lyctid borer attack.

**Preservation:** Sapwood readily accepts preservation impregnation but penetration of heartwood is negligible using currently available commercial processes.

**Seasoning:** Can satisfactorily dried using conventional air and kiln seasoning methods.

**Hardness:** Very hard (rated 1 on a 6 class scale) in relation to resistance to indentation and ease of working with hand tools.

**Machining:** Machines well due to its natural greasiness.

**Fixing:** No difficulty has been experienced with the use of standard fitting and fastening.

**Gluing:** As with most high density species, machining and surface preparation should be done immediately before gluing.

**Finishing:** Will readily accept stain, polish and paint. Has lower tannin content than most other eucalypts, therefore staining of paintwork, brickwork etc., as a result of water running over unpainted timber surfaces, is unlikely to occur.

## Uses

**Construction:-** As unseasoned timber in general house framing, and as seasoned dressed timber in cladding, internal and external flooring, linings and joinery. Also in fencing, landscaping, retaining walls and as structural plywood and hardboard.

**Decorative:-** Internal quality furniture, outdoor furniture, turnery, joinery, parquetry.

**Others:** Tool handles, boat building ( keel and framing components, planking, decking), coach, vehicle and carriage building, agricultural machinery, sporting goods (baseball bats, croquet mallets, spring and diving boards, parallel bars), bent work. Has been used for butcher's blocks, meat skewers, mallet heads, ladder rungs, wheel spokes , wine casks, broom handles. Spotted gum is the main Australian species for tool handles subject to high impact forces eg. axe handles.

## Identification Features

### GENERAL CHARACTERISTICS

**Sapwood:** White in colour and distinct from heartwood.

**Heartwood:** colour variable for, light brown to dark brown often with lighter shades.

**Texture:** Open, often with interlocked grain; greasy to touch.

### WOOD STRUCTURE

**Vessels:** Small to moderately large, generally arranged in short radial multiples with few solitary. Vessel lines very prominent on dress longitudinal surfaces. Tyloses abundant.

**Parenchyma:** Abundant, paratracheal (surrounding pores) and diffuse with a tendency to zonate arrangement.

**Rays:** Fine, visible in tangential section.

### OTHER FEATURES

**Burning Splinter Test:** Splinter burns to complete white ash.

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.



# Gympie Messmate

**Botanical name:** *Eucalyptus cloeziana*

**Local names:** Queensland Messmate, Dead Finish, Yellow Messmate

**Interest:** Cloeziana honours the French chemist F.S. Cloez (1817 - 83) who had an interest in the essential oils distilled from eucalyptus leaves; in the Mareeba area this species was once used for charcoal

## Tree Description & Occurrence

A large hardwood tree up to 50 metres in height and 2 metres diameter. Noted in the Gympie region for excellent stem form and vigour. Bark is brown or yellow-brown, flaky-fibrous, often distinctly tessellated on the trunk. Small branches usually smooth, grey-white in colour.

Gympie messmate occurs in scattered areas from near Gympie in the south to near Cooktown in the north.

Sawn timber of this species would be readily available from the area of its distribution.

## CRRP Significance

This native rainforest species is very suitable for agroforestry plantings, where commercial timber growing can be integrated into the farm for a multitude of benefits such as animal shelter and land protection. It has been found that animals benefit from this association particularly in the case of dairy animals where a positive effect on milk production has been noted. Thinnings of this timber can be harvested as good-sized poles at approx 20-25 years.

## Wood Appearance

**Colour:** Heartwood yellowish-brown and the sapwood distinctly paler in colour.

**Grain:** Unfigured, medium textured, generally uniform in grain. Can be slightly interlocked.

## Wood Properties

**Density:** 1010 kilograms per cubic metre at 12 percent moisture content; approximately 1.0 cubic metre of seasoned sawn timber per tonne.

**Durability:** Class 1 - Highly resistant to decay when in ground contact or in persistently damp or poorly ventilated situations.

**Lyctid Susceptibility:** Sapwood not susceptible to lyctid borer attack.

**Preservation:** Sapwood readily accepts preservation impregnation.

**Seasoning:** Can satisfactorily be dried using conventional air and kiln seasoning methods.

**Hardness:** Very hard (rated 1 on a 6 class scale) in relation to indentation and ease of working with hand tools.

**Machining:** Machines, turns and dresses well.

**Fixing:** No difficulty has been experienced with the use of standard fittings and fastening.

**Gluing:** As with most high density species, machining and surface preparation should be done immediately before gluing.

**Finishing:** Will readily accept stain, polish and paint.

## Uses

**Construction:** As unseasoned sawn timber in general house framing and as seasoned dressed timber in cladding, internal and external flooring, lining and joinery. Also in fencing, landscaping and retaining walls.

**Decorative:-** Outdoor furniture, turnery, joinery.

**Others:** Coach, vehicle and carriage building, boat building (keel and framing components, planking)

## Identification Features

### GENERAL CHARACTERISTICS

**Sapwood:** White to greyish white, with distinct change to heartwood

**Heartwood:** Yellowish brown

**Texture:** medium textured, straight to shallowly interlocked grain

### WOOD STRUCTURE

**Vessels:** Solitary, indistinct without magnification, occasionally in radial or oblique chains. Vessel lines evident on longitudinal surfaces. Vessels tylosed.

**Parenchyma:** Indistinct without high magnification.

**Rays:** Fine, visible only with lens.

### OTHER FEATURES

**Burning Splinter Test:** A match size splinter burns to a charcoal.

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.

Wood properties and timber utilisation information compiled by DPI Timber Research



# Silver Quandong

**Botanical name:** *Elaeocarpus angustifolius*

**Local names:** *Blue fig, blueberry ash, blue quandong, white quandong.*

**Derivative:** *Elaia* meaning olive and *karpos* meaning fruit. *Elaeakarpos* meaning that the fruit is live like in appearance.

## Tree Description & Occurrence

A tall tree attaining a height of 35 metres and a stem diameter up to 2 metres. The stem is prominently buttressed at the base and covered with a grey, smooth, slightly wrinkled bark. The older leaves turn bright red before being shed and this is a distinctive species recognition feature in the forest.

This species occurs along the eastern coast of Australia, most commonly between Taree, New South Wales and Maryborough, Queensland. Small populations also occur on the Eungella Range and between Ingham and Cooktown. An unusual isolated stand occurs beside the mouth of the Daly Rover, Northern Territory.

Timber of this species is now of limited commercial availability.

## Wood Appearance

**Colour:** The heartwood is generally white to cream white. In some cases it can have greyish or light brownish tones. There is no noticeable colour difference between sapwood and heartwood.

**Grain:** Porous and open grained. There is no pronounced figure but a characteristic of the species is its long straight vessel lines on dressed longitudinal surfaces.

## Wood Properties

**Density:** 495 kg/cubic metre at 12% moisture content; approximately 2 cubic metres of seasoned sawn timber per tonne.

**Durability:** Class 4 - Suitable for use only in continuously dry situations under cover, well ventilated, clear of the ground and fully protected from the weather and other dampness.

**Lyctid Susceptibility:** Untreated sapwood susceptible to lyctid borer attack.

**Preservation:** Sapwood readily accepts preservative impregnation but penetration of heartwood is negligible using currently available commercial processes.

**Seasoning:** Can be satisfactorily dried using conventional air and kiln seasoning methods.

**Hardness:** Soft (rated 5 on a 6 class scale) in relation to indentation and ease of working with hand tools.

**Machining:** Machines and turns well to a smooth surface.

**Fixing:** No difficulty has been experienced with the use of standard fittings and fastenings.

**Gluing:** Can be satisfactorily bonded using standard procedures.

**Finishing:** Seasoned timber will readily accept stain, polish and paint.

## Uses

**Construction:-** Once commonly used in joinery, mouldings and linings and also occasionally in general house framing, but it is rarely used for these applications now.

**Decorative:-** Plywood, furniture, shop and office fixtures, turnery, carving, inlay work, picture frames.

**Others:-** Boat building (light), aircraft components. Has been used for achery equipment, billiard cues, beehives, venetian blinds, broom handles, templates, pattern making, boat oars, pencils, piano parts, tennis racquets, vaulting poles.

## Identification Features

### GENERAL CHARACTERISTICS

**Sapwood:** Indistinguishable from heartwood.

**Heartwood:** Almost white to cream-white.

**Texture:** Medium to coarse; grain straight with little or no figure.

### WOOD STRUCTURE

**Vessels:** Medium in size, in short radial rows of 2 to 6, sometimes more. Solitary vessels and pairs tending to be oval in shape. Vessel lines distinct.

**Parenchyma:** Indistinguishable under a lens.

**Rays:** Of two sizes (i) fairly large and distinct under a lens (ii) fine and small, barely visible even under a 10 x lens.

### OTHER FEATURES

**Burning Splinter Test:** Burns to a thin white or greyish partial ash.

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.

Wood properties and timber utilisation information compiled by DPI Timber Research

## SPECIES NOTES



# Forest Red Gum

**Botanical name:** *Eucalyptus tereticornis*

**Local names:** Blue gum, red gum, red iron gum.

**Derivative:** *Eucalyptus* Eu meaning well and kalyptos meaning covered, Eu-kalyptos: well covered, refers to the cap or lid that covers the flowering bud. *Teretus* meaning tapering or narrowly conical shaped buds and cornea meaning horn shaped caps covering the buds.

## Tree Description & Occurrence

A medium to tall forest tree attaining 20 to 50 metres in height and up to two metres in stem diameter. The trunk is usually straight and clear for more than half its height. The major limbs are more steeply inclined than in other eucalypt species. The bark surface is smooth with white, grey and bluish patches where bark pieces have been shed. Rough dark grey to black dead bark is retained at the base of the stem.

This species has the most extensive latitudinal distribution of the *Eucalyptus* genus, extending from coastal south eastern Victoria to north west of Laura in north Queensland. It is also found in southern Papua New Guinea.

Sawn timber of this species is readily available.

## CRRP Significance

Forest Red Gum is planted in the shires of Herberton, Cook, Johnstone, Hinchinbrook, Mareeba and the Mackay region. Plantings are in pure stands and mixed species configurations on wet sites. Early growth rates are fast compared to other eucalypts with diameter increments of greater than 3.0cm and height increments of greater than 3.0m per year. This species is sensitive to extreme dry conditions and frost. Performs best on most soil types with adequate moisture but not waterlogging with a rainfall in excess of 1000mm per year. This species is prone to severe insect attack.

## Wood Appearance

**Colour:** Heartwood ranges in colour from red to dark red. The sapwood is distinctly paler in colour.

**Grain:** Moderately coarse, uniform textured, usually interlocked.

## Wood Properties

**Density:** 1010 kilograms per cubic metre at 12 percent moisture content; approximately 1.0 cubic metres of seasoned sawn timber per tonne.

**Durability:** Class 1 - Highly resistant to decay in ground contact or in persistently or badly ventilated situations.

**Lyctid Susceptibility:** Sapwood not susceptible to lyctid borer attack.

**Preservation:** Sapwood readily accepts preservative impregnation but penetration of heartwood is negligible using currently available commercial processes.

**Seasoning:** Can be satisfactorily dried using conventional air and kiln seasoning methods.

**Hardness:** Very hard ( rated 1 on a 6 class scale) in relation to indentation and ease of working with hand tools.

**Machining:** The interlocked grain often makes it difficult to dress leanly on the radial surface.

**Fixing:** No difficulty has been experienced with the use of standard fittings and fastenings.

**Gluing:** As with most high density species, machining and surface preparation should be done immediately before gluing.

**Finishing:** Will readily accept stain, polish and paint.

## Uses

**Construction:-** As sawn timber for general house framing, cladding, fascia and barge boards, internal and external flooring, linings, joinery, fencing, landscaping and retaining walls.

**Decorative:-** Joinery, turnery, outdoor furniture.

**Others:-** Structural plywood, boat building (keel and framing components, planking), coach, vehicle and carriage building.

## Identification Features

### GENERAL CHARACTERISTICS

**Sapwood:** Grey or cream-red, distinct from heartwood.

**Heartwood:** Ranging from light to dark red.

**Texture:** Uniform with interlocked grain.

### WOOD STRUCTURE

**Vessels:** Small to medium in size, uniformly distributed. Seasonal growth zones often evident. Tyloses present. Vessels appear to adopt a pink yellow colour due to associated parenchyma and deposits when viewed by lens in cross section.

**Parenchyma:** Abundant and diffuse, containing deposits and some resin.

**Rays:** Fine, visible only with a lens.

### OTHER FEATURES

**Burning Splinter Test:** A match size splinter burns slowly to charcoal with no ash.

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.



# Teak

**Botanical name:** *Tectona grandis*

**Local names:** *Djati, jati (Indonesia), kyun (Burma), sagwan (India), teck, mai sak, (Thailand), giati (Vietnam), teca (Brazil).*

**Interest:** *Teak is one of the best known species in the world.*

## Tree Description & Occurrence

A medium to tall hardwood attaining 45m on favourable sites but more usually producing a 15m bole. The stem is irregularly shaped and grooved and the characteristic leaves are very large. Stem diameter averages 1.0m but can attain up to 2.4m according to locality and conditions of growth.

Teak, one of the most famous and well known of world timbers, occurs naturally in the monsoon forests of India, Burma, Thailand and Vietnam. Plantations of the species have been established in Indonesia, Papua New Guinea, Africa, Solomon Islands, Fiji and the West Indies.

## CRRP Significance

Teak is planted in small numbers in most Shires. Plantings are in a mixed species configuration. Early growth rates are average with diameter increments of up to 0.5cm and height increments of up to 1.0m per year. This species is sensitive to dry conditions and frost. Performs best on protected sites with volcanic or alluvial soils and a rainfall in excess of 1500mm per year. Has not proved successful on the Atherton Tablelands but is suitable to the coastal lowlands.

## Wood Appearance

**Colour:** The heartwood is generally golden brown but varies from grey-brown to red brown. Longitudinal streaks are often present due to the ring-porous structure of teak. Sapwood is well demarcated, being pale yellow in colour.

**Grain:** The grain is straight or occasionally interlocked. Texture is uneven varying from smooth to coarse due to its ring-porosity.

## Wood Properties

**Density:** 670 kg/cubic metre at 12% moisture content; approx. 1.5 cubic metres of seasoned sawn timber per tonne. Plantation material may be lower in density.

**Durability:** Class 2 - Highly resistant to decay when fully exposed to the weather, clear of the ground and well drained with free air circulation. Moderately decay resistant in the ground.

**Lyctid Susceptibility:** Untreated sapwood susceptible to lyctid borer attack.

**Preservation:** Sapwood can be impregnated with preservatives.

**Seasoning:** Teak is a slow drying timber with variation in drying rates between individual pieces. However it seasons with little degrade. Some collapse may occur if high temperatures are used.

**Hardness:** Firm (rated 4 on a 6 class scale) in relation to resistance to indentation and ease of working with hand tools.

**Machining:** The timber is variable but generally works with moderate ease. Presence of silica in some stock causes severe blunting of cutting edges. It is recommended that planing angle be reduced to 20° and that tungsten-carbide tipped saws be used.

**Fixing:** Pre-boring is recommended when nailing. Holds nails and screws well.

**Gluing:** As with most timbers with an oily nature, machining and surface preparation should be done immediately prior to gluing.

**Finishing:** Varnishes, polishes and waxes well. Will readily accept paint and stains.

## Uses

**Construction:-** Flooring, decking, framing, boards, cladding, fascias and barge boards.

**Decorative:-** Lining, panelling, turnery, carving, furniture (both indoor and garden), parquetry.

**Others:-** Teak is perhaps best known for its long established use in the boat building industry. It has been extensively used for decking, deck houses, rails, bulwarks, hatches, weather doors, and planking. Also used for cooperage, pipes, chemical vats.

## Identification Features

### GENERAL CHARACTERISTICS

**Sapwood:** Pale yellow, readily distinguished from heartwood.

**Heartwood:** Brown to golden brown. Sometimes streaky.

**Texture:** Non-uniform, moderately coarse, straight grain and greasy feel.

### WOOD STRUCTURE

**Vessels:** Ring porous, size ranging from small to large. Tyloses. Coloured deposits frequent. Vessel lines prominent, particularly on dressed longitudinal surfaces.

**Parenchyma:** Terminal bands prominent.

**Rays:** Medium to fine.

### OTHER FEATURES

**Burning Splinter Test:** Match size splinter burns to grey ash.

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.



# Queensland Maple

**Botanical name:** *Flindersia brayleyana*

**Local names:** *Maple*

**Derivative:** *Flindersia* was named after Captain Matthew Flinders. *Brayleyana* was named after Edward Brayley a topographer and archaeologist.

## Tree Description & Occurrence

A medium sized tree attaining a height of 40 metres and 2.5 metres in stem diameter. The trunk is usually well formed, circular in cross-section and not buttressed. The bark, which is approximately 12mm thick is grey to brown in colour. It has fairly distinct longitudinal fissures. In older trees these fissures are not so marked owing to a tendency to scaliness.

Restricted in its distribution to northern Queensland rainforests between Townsville and the Windsor Tableland.

Timber of this species is now of very limited commercial availability as the main areas in which it occurs have received World Heritage listing.

## CRRP Significance

Queensland Maple is planted in the Shires of Douglas, Eacham, Mulgrave, Hinchinbrook and Johnstone. Plantings are in a mixed species configuration and has potential in pure plantations. Early growth rates are high with diameter increments of up to 1.0cm and height increments of up to 2.0m per year. This species is sensitive to dry conditions and frost. Performs best on protected sites, volcanic soils with a rainfall in excess of 2000mm per year. It is the most commonly planted rainforest species in the CRRP program.

## Wood Appearance

**Colour:** The heartwood is pink to brownish pink while the narrow sapwood band is coloured white to pale grey.

**Grain:** The grain is somewhat interlocked, often wavy or curly, and the texture medium and uniform. Some quarter sawn boards show various types of figure such as waterwave, rib and birdseye.

## Wood Properties

**Density:** 575 kg/cubic metre at 12% moisture content; approx. 1.7 cubic metres of seasoned sawn timber per tonne.

**Durability:** Class 4 - Suitable for use only in continuously dry situations under cover, well ventilated, clear of the ground and fully protected from the weather and other dampness.

**Lyctid Susceptibility:** Sapwood is not susceptible to lyctid borer attack.

**Preservation:** Sapwood readily accepts preservative impregnation but penetration of heartwood is negligible using currently available commercial processes.

**Seasoning:** Can be satisfactorily dried using conventional air and kiln seasoning methods.

**Hardness:** Firm (rated 4 on a 6 class scale) in relation to indentation and ease of working with hand tools.

**Machining:** Machines and turns well to a smooth surface.

**Fixing:** No difficulty has been experienced with the use of standard fittings and fastenings.

**Gluing:** Can be satisfactorily bonded using standard procedures.

**Finishing:** Will readily accept stain, polish and paint.

## Uses

**Decorative:-** Furniture, plywood, shop and office fixtures, joinery, turnery, carving, inlay work, picture frames.

**Others:-** Light boat building (planking, decking, sawn frames, stringers, chines, gunwales), Marine plywood. Has been used for aeroplane propellers, coach, vehicle and carriage building, draughtsman's implements, gun stocks, musical instruments (piano parts), walking sticks. Was used to some extent in generally building framing in the early 1900's, and more commonly in flooring, lining, mouldings and joinery, but use in such applications has been very infrequent for some decades.

## Identification Features

### GENERAL CHARACTERISTICS

**Sapwood:** White to pale grey.

**Heartwood:** Pink to brownish-pink in colour with a lustrous sheen.

**Texture:** Medium and uniform, grain very variable, sometimes with interlocked fibres, wavy or curly and occasionally more disturbed producing fiddleback or birdseye.

### WOOD STRUCTURE

**Growth Rings:** Absent.

**Vessels:** Small to medium in size, uniformly distributed, mainly solitary but with some in short radial rows of up to four. Simple perforation plates can be seen with a lens. Deposits of extraneous material present in some vessels.

**Wood Parenchyma:** Not visible under a lens.

**Rays:** Visible without a lens and prominent on radial surfaces.

**Ripple Marks:** Absent

**Intercellular Canals:** Present in some samples.

### OTHER FEATURES

**Burning Splinter Test:** Burns to a full ash white-buff in colour.

**"Birdseye":** Areas of dark coloured soft tissue, giving dressed surfaces a dimpled appearance, caused by attack to the living tree by an insect restricted to this species. This feature, though not particularly common in wood marketed for furniture or high value decorative uses, is a feature for distinguishing wood of *F. Brayleyana* from the otherwise very similar wood of *F. pimenteliana* (maple silkwood).

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.



# Blackbutt

**Botanical name:** *Eucalyptus pilularis*

**Local names:** Pink blackbutt

**Derivative:** *Eucalyptus* Eu meaning well and *kalyptos* meaning covered, *Eu-kalyptos* well-covered, refers to the cap or lid that covers the flowering bud. *Pilula* meaning small pit or rounded knob and referring to the shape of the fruit.

## Tree Description & Occurrence

A moderate to large tree attaining 40 to 60 metres in height and 1 to 2 metres in stem diameter. It has a straight slender trunk, circular in cross-section. The bark on the lower part of the trunk is dark grey-brown in colour, fibrous and fissured. Typical smooth gum type bark occurs on branches and the uppermost part of the trunk.

Found in coastal regions from southern New South Wales to Maryborough, Queensland.

Sawn timber of this species is readily available.

## CRRP Significance

Blackbutt is planted in the Shires of Atherton and Herberton. Plantings are in pure stands. Early growth rates are average compared to other eucalypts with diameter increments of up to 2.0cm and height increments of greater than 2.0m per year. This species is sensitive to extreme dry conditions and frost. Performs best on well drained, deep loam soils with a rainfall in excess of 1300mm per year. It is one of the most important hardwoods in Australia.

## Wood Appearance

**Colour:** The heartwood is pale brown with a faint tinge of pink when freshly cut. Sometimes the sapwood is indistinguishable from the heartwood but usually it is slightly paler in colour.

**Grain:** Moderately coarse textured and variable. Gum veins are common. The presence of wavy interlocking grain can produce attractive figure in some pieces.

## Wood Properties

**Density:** 930 kg/cubic metre at 12% moisture content; approx. 1.1 cubic metres of seasoned sawn timber per tonne.

**Durability:** Class 2 - Highly resistant to decay when fully exposed to weather clear of the ground and well drained with free air circulation. Moderately decay resistant in the ground.

**Lyctid Susceptibility:** Sapwood is not susceptible to lyctid borer attack.

**Preservation:** Sapwood readily accepts preservative impregnation but penetration of heartwood is negligible using current commercial processes.

**Seasoning:** Can be satisfactorily dried using conventional air and kiln seasoning methods. Slight tendency to collapse in juvenile wood (near pith).

**Hardness:** Hard (rated 2 on a 6 class scale) in relation to indentation and ease of working with hand tools.

**Machining:** Machines well.

**Fixing:** No difficulty has been experienced with the use of standard fittings and fastenings.

**Gluing:** As with most high density species machining and surface preparation should be done immediately before gluing.

**Finishing:** Will readily accept stain, polish and paint.

## Uses

**Engineering:-** As sawn or round timber in wharf and bridge construction, railway sleepers, cross-arms, poles, piles, mining timbers.

**Construction:-** As unseasoned sawn timber in general house framing, fascia and barge boards and as seasoned dressed cladding, internal and external flooring, lining and joinery. Also in fencing, landscaping and retaining walls.

**Decorative:-** Internal quality furniture, outdoor furniture, turnery, parquetry.

**Others:-** Boat building (keel and framing components planking, decking), coach, vehicle and carriage building, agricultural machinery, structural plywood, hardboard.

## Identification Features

### GENERAL CHARACTERISTICS

**Sapwood:** Slightly paler than heartwood.

**Heartwood:** Light brown with occasional pink colouration in some samples.

**Texture:** Open and uniform. Grain straight but occasionally slightly interlocked. In some cases it has a greasy appearance and feel, similar to, but not as pronounced as in tallowwood.

### WOOD STRUCTURE

**Growth Rings:** Absent.

**Vessels:** Medium to large in size, often arranged in oblique chains. Vessel lines prominent on dressed longitudinal surfaces. Tyloses frequently present.

**Wood Parenchyma:** Not visible without a lens.

**Rays:** Fine.

### OTHER FEATURES

**Burning Splinter Test:** Match size splinter burns to charcoal without ash.

**Gum Veins:** Some pieces may contain gum veins.

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.

## SPECIES NOTES



# Rose Gum

**Botanical name:** *Eucalyptus grandis*

**Local names:** *Flooded gum, scrub gum.*

**Derivative:** *Eucalyptus* Eu meaning well and kalyptos meaning covered, Eu-kalyptos: well-covered, refers to the cap or lid that covers the flowering bud. *Grandis* is latin for large and refers to the large size that this species commonly grows to.

## Tree Description & Occurrence

A very tall forest tree reaching 45 to 55 metres in height and 1 to 2 metres in stem diameter. Form is generally good with a clear straight bole to three-quarters of the total tree height. The bark is smooth with colour ranging between greyish white to bluish grey. There is generally a basal "stocking" of greyish flaky rough bark to a height of 1 to 4 metres.

The major area of natural occurrence is from Newcastle in New South Wales to Bundaberg in Queensland. Smaller stands occur to the west of Mackay in central Queensland and in the ranges from north west of Townsville to west of Bloomfield in northern Queensland. It has also been grown in plantations in Queensland and New South Wales.

Sawn timber of this species is readily available.

## CRRP Significance

Rose Gum is planted in the Shires of Herberton and the Mackay region. Plantings are in pure stands. Early growth rates are very fast compared to other eucalypts with diameter increments of greater than 4.0cm and height increments of greater than 3.5m per year. This species is sensitive to extreme dry conditions and waterlogging. Performs best on well drained volcanic, granite and alluvial soils with a rainfall in excess of 1000mm per year. Unthinned plantings have suffered from fungal attacks.

## Wood Appearance

**Colour:** The heartwood ranges from pale pink to red brown. Sapwood is usually paler in colour but it is not always clearly differentiated.

**Grain:** Moderately coarse textured but uniform. Predominantly straight grained with no pronounced figure.

## Wood Properties

**Density:** Can vary with maturity of the wood, with an average of about 800 kg/cubic metre at 12% moisture content; approx. 1.2 cubic metres of seasoned sawn timber per tonne.

**Durability:** Class 3 Moderately resistant to decay when fully exposed to weather, clear of the ground and well drained with free air circulation. Not recommended for in-ground applications.

**Lyctid Susceptibility:** Sapwood not susceptible to lyctid borer attack.

**Preservation:** Sapwood readily accepts preservative impregnation but penetration of heartwood is negligible using current commercial processes.

**Seasoning:** Can be satisfactorily dried using conventional air and kiln seasoning methods.

**Hardness:** Moderate (rated 3 on a 6 class scale) in relation to indentation and ease of working with hand tools.

**Machining:** Machines and turns well to a smooth surface.

**Fixing:** No difficulty has been experienced with the use of standard fittings and fastenings.

**Gluing:** Can be satisfactorily bonded using standard procedures.

**Finishing:** Will readily accept stain, polish and paint.

## Uses

**Construction:-** As sawn timber in general house framing, cladding, internal and external flooring, mouldings, linings, joinery, fascia and barge boards.

**Decorative:-** Internal quality furniture, outdoor furniture, joinery, carving, turnery.

**Others:-** Structural plywood, boat building (framing components, planking, decking). Has been used for boat oars, dowel rods, broom handles, brushware, fruit cases.

## Identification Features

### GENERAL CHARACTERISTICS

**Sapwood:** Light-brown; usually paler than heartwood.

**Heartwood:** Pink to red-brown in colour.

**Texture:** Open, uniform texture; grain usually straight or slightly interlocked.

### WOOD STRUCTURE

**Vessels:** Large in size, visible without a lens. Variable in number, diffusely distributed. Diagonal chains common. Vessel lines prominent. Cells mostly open but tyloses common in more mature wood.

**Parenchyma:** Scarce.

**Rays:** Fine, visible only with a lens.

### OTHER FEATURES

**Burning Splinter Test:** Match size splinter burns with difficulty to charcoal with a little dark grey or black ash, or with no ash at all.

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.

## SPECIES NOTES



# Grey Ironbark

**Botanical name:** *Eucalyptus drepanophylla*

**Local names:** *White ironbark, narrow-leaved ironbark.*

**Derivative:** *Eucalyptus* *Eu* meaning well and *kalyptos* meaning covered, *Eu-kalyptos*: well-covered, refers to the cap or lid that covers the flowering bud.

## Tree Description & Occurrence

A medium sized tree attaining a height of 30 to 50 metres and a stem diameter of 1.5 metres. The stem is usually straight and free of branches for a considerable length. The bark is hard, coarse, deeply furrowed and ridged. It ranged from dark brown to black in colour and is persistent to the small branches.

Occurs from northern New South Wales to Bundaberg, Queensland. It is also found in scattered patches as far north as the Atherton Tableland.

Sawn timber is fairly readily available.

## CRRP Significance

Grey Ironbark is planted in the Hinchinbrook Shire and the Mackay region. Plantings are in pure stands. Early growth rates are average compared to other eucalypts with diameter increments of greater than 1.5cm and height increments of greater than 1.5m per year. This species is sensitive to waterlogging. Performs best on most well drained granite and alluvial soils in excess of 750mm per year. This species is planted on harsh sites in lower rainfall areas.

## Wood Appearance

**Colour:** The heartwood ranges from reddish-brown to dark brown. The sapwood is lighter in colour and averages about 20mm in width.

**Grain:** Tight and usually straight grained.

## Wood Properties

**Density:** 1105 kg/cubic metre at 12% moisture content; approx. 0.9 cubic metres of seasoned sawn timber per tonne.

**Durability:** Class 1 - Highly resistant to decay when in ground contact or in persistently damp or poorly ventilated situations.

**Lyctid Susceptibility:** Sapwood is not susceptible to lyctid borer attack.

**Preservation:** Sapwood readily accepts preservative impregnation but penetration of heartwood is negligible using current commercial processes.

**Seasoning:** Can be satisfactorily dried using conventional air and kiln seasoning methods.

**Hardness:** Very hard (rated 1 on a 6 class scale) in relation to indentation and ease of working with hand tools.

**Machining:** Not easily worked because of its high density; dressed surfaces have a steely sheen.

**Fixing:** No difficulty has been experienced with the use of standard fittings and fastenings.

**Gluing:** As with most high density species machining and surface preparation should be done immediately before gluing.

**Finishing:** Will readily accept stain, polish and paint.

## Uses

**Engineering:-** As sawn and round timber in wharf and bridge construction, railway sleepers, cross arms, poles, piles, mining timbers.

**Construction:-** As unseasoned timber in general house framing and as seasoned dressed timber in cladding, internal and external flooring, linings and joinery. Also in fencing, landscaping and retaining walls.

**Decorative:-** Outdoor furniture, turnery, joinery.

**Others:-** Boat building, (keel and framing components, planking), coach, vehicle and carriage building, agricultural machinery, mallet heads, mauls, bearings, sporting goods (croquet mallets, parallel bars). Has been used for wheel spokes and bowling nine pins. Was reputedly the timber of choice for wooden hulled vessels used in Antarctic exploration because its high strength and toughness gave the hulls high resistance against pack ice damage and crushing.

## Identification Features

### GENERAL CHARACTERISTICS

**Sapwood:** Almost white, distinct from heartwood.

**Heartwood:** Varies from reddish-brown to dark brown.

**Texture:** Uniform, grain usually straight, sometimes interlocked.

### WOOD STRUCTURE

**Growth Rings:** Absent.

**Vessels:** Small to medium, solitary and diffuse, often containing tyloses.

**Parenchyma:** Sparse, not visible with a lens.

**Rays:** Fine, visible with a lens.

### OTHER FEATURES

**Burning Splinter Test:** Produces a complete ash, grey to buff in colour.

**Splinter Shape:** Fine needle like splinters produced when cutting across the grain are characteristic of these species and can be used to separate them from similar species.

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.



# White Stringybark

**Botanical name:** *Eucalyptus reducta*

**Local names:** *Small leaved stringybark, thin-leaved stringybark, Wilkinson's stringybark, pink blackbutt*

**Derivative:** *Eucalyptus* Eu meaning well and *kalyptos* meaning covered, *Eu-kalyptos*: well-covered, refers to the cap or lid that covers the flowering bud.

## Tree Description & Occurrence

A medium sized forest tree attaining a height of 25 to 35 metres and 0.7 to 1.0 metre in stem diameter. The trunk is generally straight, of good form and the crown well branched and moderately dense. The bark is typically thick, "stringy" and persistent to the small branches. It is longitudinally fissured and grey to brown in colour.

A common eucalypt of the coast and some adjacent tablelands of New South Wales, extending to Yarraman, Queensland, with isolated stands in the Carnarvon Range area and the Blackdown Tableland. Also found on elevated sites in north Queensland from Mt Spec to the Windsor Tableland and north to Cooktown.

Sawn timber of this species is available.

## CRRP Significance

White Stringybark is planted in small numbers in the drier shires. Plantings are in pure stands. Early growth rates are average compared to other eucalypts with diameter increments of greater than 1.5cm and height increments of greater than 1.5m per year. This species is sensitive to waterlogging, heavy frost and dry conditions. Performs best on well drained granite derived soils in excess of 1000mm per year. This species has potential to be more widely planted.

## Wood Appearance

**Colour:** Heartwood is predominately light brown and occasionally pale pink. The sapwood is paler in colour but not sharply differentiated.

**Grain:** Generally medium textured and uniform, but sometimes interlocked. The presence of interlocked grain can produce attractive figure in some samples.

## Wood Properties

**Density:** 1010 kg/cubic metre at 12% moisture content; approx. 1.0 cubic metres of seasoned sawn timber per tonne.

**Durability:** Class 2 - Highly resistant to decay when fully exposed to the weather, clear of the ground and well drained with free air circulation. Only moderately decay resistant in the ground.

**Lyctid Susceptibility:** Sapwood not susceptible to lyctid borer attack.

**Preservation:** Sapwood readily accepts preservative impregnation but penetration of heartwood is negligible using current commercial processes.

**Seasoning:** Can be satisfactorily dried using conventional air and kiln seasoning methods.

**Hardness:** Very hard (rated 1 on a 6 class scale) in relation to indentation and ease of working with hand tools.

**Machining:** Machines and turns well.

**Fixing:** No difficulty has been experienced with the use of standard fittings and fastenings.

**Gluing:** As with most high density species machining and surface preparation should be done immediately before gluing.

**Finishing:** Will readily accept stain, polish and paint.

## Uses

**Engineering:-** As sawn timber in wharf and bridge construction, railway sleepers, cross-arms, poles, piles and mining timbers.

**Construction:-** As sawn timber in general house framing, cladding, internal and external flooring, lining, joinery, fencing, landscaping, retaining walls.

**Decorative:-** Outdoor furniture, turnery.

**Others:-** Boat building (keel and framing components) coach, vehicle and carriage building, structural plywood, handles.

## Identification Features

### GENERAL CHARACTERISTICS

**Sapwood:** Very pale brown; lighter in colour than heartwood.

**Heartwood:** Light brown in colour, occasionally pale pink.

**Texture:** Medium textured and uniform, grain sometimes interlocked.

### WOOD STRUCTURE

**Vessels:** Solitary, small to medium in size and numerous; evenly distributed. Tyloses abundant. Vessel lines conspicuous on longitudinal surfaces.

**Parenchyma:** None visible.

**Rays:** Very fine, barely visible under a lens.

### OTHER FEATURES

**Burning Splinter Test:** Match size splinter burns to charcoal leaving no ash.

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.



# Red Mahogany

**Botanical name:** *Eucalyptus resinifera*

**Local names:** Red messmate, red stringybark.

**Derivative:** *Eucalyptus* Eu meaning well and *kalyptos* meaning covered, *Eu-kalyptos*: well-covered, refers to the cap or lid that covers the flowering bud.

## Tree Description & Occurrence

A medium sized tree attaining a height of 40 to 45 metres and 1.0 to 1.5 metres in stem diameter. The bark is rough and persistent to the small branches, fibrous, shallowly to coarsely fissured. It is coloured greyish to reddish-brown.

Occurs from Jervis Bay in New South Wales to Coen in Queensland.

Sawn timber of these species is available from sources within their areas of distribution.

## CRRP Significance

Red Mahogany is planted in the Herbert Shire and the Mackay region. Plantings are in pure stands. Early growth rates are average compared to other eucalypts with diameter increments of greater than 2.0cm and height increments of greater than 2.0m per year. This species is sensitive to waterlogging, heavy frost and dry conditions. Performs best on light fertile sandy podzols and deep volcanic soils with a rainfall in excess of 1000mm per year.

## Wood Appearance

**Colour:** The heartwood ranges from red to dark red. Sapwood is distinctively paler.

**Grain:** Generally medium textured with even grain. At times the grain can be interlocked producing an attractive figure.

## Wood Properties

**Density:** 995 kg/cubic metre at 12% moisture content; approx. 1.0 cubic metres of seasoned sawn timber per tonne.

**Durability:** Class 2 - Highly resistant to decay when fully exposed to the weather, clear of the ground and well drained with free air circulation. Only moderately resistant to decay when used in the ground.

**Lyctid Susceptibility:** Untreated sapwood susceptible to lyctid borer attack.

**Preservation:** Sapwood readily accepts preservative impregnation but penetration of heartwood is negligible using current commercial processes.

**Seasoning:** Can be satisfactorily dried using conventional air and kiln seasoning methods.

**Hardness:** Very hard (rated 1 on a 6 class scale) in relation to indentation and ease of working with hand tools.

**Machining:** Machines well.

**Fixing:** No difficulty has been experienced with the use of standard fittings and fastenings.

**Gluing:** As with most high density species machining and surface preparation should be done immediately before gluing.

**Finishing:** Will readily accept stain, polish and paint.

## Uses

**Engineering:-** As sawn or round timber in wharf and bridge construction, railway sleepers, cross-arms, poles, piles and mining timbers.

**Construction:-** As sawn timber in general house framing, cladding, internal and external flooring, lining, joinery, fencing, landscaping, retaining walls.

**Decorative:-** Internal quality furniture, outdoor furniture, turnery.

**Others:-** Boat building (keel and framing components) coach, vehicle and carriage building, agricultural machinery, structural plywood.

## Identification Features

### GENERAL CHARACTERISTICS

**Sapwood:** Paler and distinct from heartwood.

**Heartwood:** Generally deep red in colour but may be lighter in younger material

**Texture:** Uniform, coarse grain, often interlocked. An occasional tight gum vein.

### WOOD STRUCTURE

**Growth Rings:** Generally absent, but some specimens may tend to show vessels arranged in zones.

**Vessels:** Medium in size, solitary, distributed in a diffuse pattern. Vessel lines conspicuous on longitudinal surfaces. Contains frequent tyloses and dark-red gum deposits.

**Parenchyma:** Variable in amount, not abundant; diffuse and paratracheal.

**Rays:** Fine, visible only with a lens.

### OTHER FEATURES

**Burning Splinter Test:** Match size splinter burns to charcoal without ash.

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.

## SPECIES NOTES



# Large Fruited Red Mahogany

**Botanical name:** *Eucalyptus pellita*

**Local names:** *Daintree stringybark, red mahogany, red stringybark.*

**Derivative:** *Eucalyptus* Eu meaning well and *kalyptos* meaning covered, *Eu-kalyptos*: well-covered, refers to the cap or lid that covers the flowering bud.

## Tree Description & Occurrence

A medium sized tree attaining a height of 40 to 45 metres and 1.0 to 1.5 metres in stem diameter. The bark is rough and persistent to the small branches, fibrous, shallowly to coarsely fissured. It is coloured reddish-brown to brown.

Occurs from just north of Townsville to Iron Range on Cape York Peninsula and in scattered areas from Gladstone in Queensland to southern coastal New South Wales.

Sawn timber of these species is available from sources within their areas of distribution.

## CRRP Significance

Large Fruited Red Mahogany is planted in all of the CRRP shires. Plantings are in pure stands and as protection for rainforest species in mixed plantings. Early growth rates are fast compared to other eucalyptus with diameter increments of greater than 3.0cm and height increments of greater than 3.0m per year. This species is sensitive to frost and dry conditions. This species is sensitive to frost and dry conditions. Performs best on coastal metamorphic and volcanic soils with a rainfall in excess of 2000mm per year. This species is the most widely planted species in the program.

## Wood Appearance

**Colour:** The heartwood ranges from red to dark red. Sapwood is distinctively paler.

**Grain:** Generally medium textured with even grain. At times the grain can be interlocked producing an attractive figure.

## Wood Properties

**Density:** 995 kg/cubic metre at 12% moisture content; approx. 1.0 cubic metres of seasoned sawn timber per tonne.

**Durability:** Class 2 - Highly resistant to decay when fully exposed to the weather, clear of the ground and well drained with free air circulation. Only moderately resistant to decay when used in the ground.

**Lyctid Susceptibility:** Untreated sapwood susceptible to lyctid borer attack.

**Preservation:** Sapwood readily accepts preservative impregnation but penetration of heartwood is negligible using current commercial processes.

**Seasoning:** Can be satisfactorily dried using conventional air and kiln seasoning methods.

**Hardness:** Very hard (rated 1 on a 6 class scale) in relation to indentation and ease of working with hand tools.

**Machining:** Machines well.

**Fixing:** No difficulty has been experienced with the use of standard fittings and fastenings.

**Gluing:** As with most high density species machining and surface preparation should be done immediately before gluing.

**Finishing:** Will readily accept stain, polish and paint.

## Uses

**Engineering:-** As sawn or round timber in wharf and bridge construction, railway sleepers, cross-arms, poles, piles and mining timbers.

**Construction:-** As sawn timber in general house framing, cladding, internal and external flooring, lining, joinery, fencing, landscaping, retaining walls.

**Decorative:-** Internal quality furniture, outdoor furniture, turnery.

**Others:-** Boat building (keel and framing components) coach, vehicle and carriage building, agricultural machinery, structural plywood.

## Identification Features

### GENERAL CHARACTERISTICS

**Sapwood:** Paler and distinct from heartwood.

**Heartwood:** Generally deep red in colour but may be lighter in younger material

**Texture:** Uniform, coarse grain, often interlocked. An occasional tight gum vein.

### WOOD STRUCTURE

**Growth Rings:** Generally absent, but some specimens may tend to show vessels arranged in zones.

**Vessels:** Medium in size, solitary, distributed in a diffuse pattern. Vessel lines conspicuous on longitudinal surfaces. Contains frequent tyloses and dark-red gum deposits.

**Parenchyma:** Variable in amount, not abundant; diffuse and paratracheal.

**Rays:** Fine, visible only with a lens.

### OTHER FEATURES

**Burning Splinter Test:** Match size splinter burns to charcoal without ash.

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.

## SPECIES NOTES



# Northern Silver Ash

**Botanical name:** *Flindersia schottiana*

**Local names:** *Southern Silver Ash, Bumpy Ash*

**Derivative:** *The genus Flindersia was named after Captain Mathew Flinders and Flindersia schottiana after Heinrich Schotti - an Austrian botanist who described a number of Australian plants.*

## Tree Description & Occurrence

A medium sized, slim boled tree up to 35m in height and 1m in stem diameter.

The trunk is usually well formed and circular in cross section. The bark, which is approximately 15mm thick is fairly smooth or finely warted. The tree can usually be recognised by bumps (swellings) on the tree bole covering overgrown circles of broken off limbs, hence the local name of "bumpy ash".

Distributed mainly in the rainforest areas of northern New South Wales to Gladstone and areas of the Atherton Tableland.

Timber is now of limited commercial availability as the main areas in which it occurs have received World Heritage Listing.

## CRRP Significance

Queensland Silver Ash is planted in the Shires of Douglas, Eacham, Mareeba and Mulgrave. Plantings are in a mixed species configuration. Early growth rates are average with diameter increments of up to 0.5cm and height increments of up to 1.0m per year. This species is sensitive to dry conditions and frost. Performs best on protected well drained sites on volcanic or metamorphic soils with a rainfall in excess of 2000mm per year.

## Wood Appearance

**Colour:** The heartwood ranges from silver white to pale yellow shades. There is no noticeable colour difference between sapwood and heartwood.

**Grain:** Open and predominantly straight. Slight grain deviation may occur associated with bumps on the log surface.

## Wood Properties

**Density:** 640-675 kg/cubic metre at 12% moisture content; approx. 1.5 cubic metres of seasoned sawn timber per tonne.

**Durability:** Class 3 Moderately resistant to decay when fully exposed to weather. Not recommended for in-ground applications.

**Lyctid Susceptibility:** Untreated sapwood susceptible to borer attack.

**Preservation:** Sapwood readily accepts preservative impregnation but penetration of heartwood is negligible using current commercial processes.

**Seasoning:** Can be satisfactorily dried using conventional air and kiln seasoning methods.

**Hardness:** Firm (4) in relation to indentation and ease of working with hand tools.

**Machining:** Machines and turns well to a smooth surface.

**Fixing:** No difficulty has been experienced with the use of standard fittings and fastenings.

**Gluing:** Can be satisfactorily bonded using standard procedures.

**Finishing:** Will readily accept stain, polish and paint.

## Uses

**Decorative:-** Furniture, plywood, laminated beams and bench tops, shop and office fixtures, flooring, lining, turnery and carving, picture frames, joinery.

**Others:-** Boat building, marine plywood, structural plywood, coach, vehicle and carriage building, aircraft construction. Has been used for tool handles (axe, adze, pick), sporting goods, gun stocks, drum sticks, dowelling, fishing rods boat oars, walking sticks, broom handles.

## Identification Features

### GENERAL CHARACTERISTICS

**Sapwood:** Creamy-white to pale yellow, indistinguishable from the heartwood.

**Heartwood:** Creamy-white to pale yellow.

**Texture:** Medium and uniform, without figure but possessing a sheen.

### WOOD STRUCTURE

**Growth Rings:** Absent.

**Vessels:** Medium to small in size, arranged in short radial multiples, sometimes containing yellowish deposits. Vessel lines visible on longitudinal surfaces.

**Parenchyma:** Mostly in irregularly spaced apotracheal bands.

**Rays:** Visible without a lens.

### OTHER FEATURES

**Burning Splinter Test:** Match size splinter burns to a full white ash.

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.



# Black Bean

**Botanical name:** *Castanospermum australe*

**Local names:** Moreton Bay bean, Moreton Bay chestnut, beantree.

**Derivative:** *Kastonos* meaning chestnut tree and *sperna* meaning seeds. *Kastonosperna* meaning that the Blackbean seeds resembled chestnuts.

## Tree Description & Occurrence

A tall tree up to 40 metres in height with a stem diameter to 1.2 metres. The trunk is not prominently buttressed. The crown is very dense, consisting of abundant dark green glossy foliage. The large pendant bean like fruit are conspicuous in the crown. The bark is slightly rough with very small pustules and is coloured grey to brown.

This species is scattered in rainforest regions from Lismore, New South Wales to Iron Range on Cape York Peninsula. It is also found in New Caledonia and Vanuatu.

Sawn timber of this species is available from timber merchants handling rainforest timbers.

## CRRP Significance

Blackbean is primarily planted in the shires of Douglas, Eacham and Johnstone. Plantings are in a mixed species configuration. Early growth rates are average compared to other rainforest species with diameter increments of less than 0.5cm and height increments of less than 1.0m per year. This species is sensitive to dry conditions, heavy frosts and poorly drained soils. Performs best on protected sites with alluvial soils and a rainfall in excess of 1500mm per year. A good species for rainforest plantings along creeks and gullies.

## Wood Appearance

**Colour:** The heartwood ranges from dark brown to chocolate shades deepening almost to black; sometimes streaked with lighter coloured bands. The sapwood is white to yellow in colour.

**Grain:** Porous and coarse grained, with striated vessel lines prominent on longitudinal surfaces. This effect is due to chalky grey soft tissue (parenchyma) surrounding the vessels.

## Wood Properties

**Density:** 755 kg/cubic metre at 12% moisture content; approx. 1.3 cubic metres of seasoned sawn timber per tonne.

**Durability:** Class 1 - Highly resistant to decay when in ground contact or in persistently damp or poorly ventilated situations.

**Lyctid Susceptibility:** Untreated sapwood susceptible to lyctid borer attack.

**Preservation:** Sapwood readily accepts preservative impregnation but penetration of heartwood is negligible using current commercial process

**Seasoning:** Care is needed in seasoning this species as it shrinks irregularly and is prone to collapse.

**Hardness:** Moderately hard (rated 3 on a 6 class scale) in relation to indentation and ease of working with hand tools.

**Machining:** Machines and turns well to a smooth surface.

**Fixing:** No difficulty has been experienced with the use of standard fittings and fastenings.

**Gluing:** Can be satisfactorily bonded using standard procedures.

**Finishing:** Staining is normally not necessary. It polishes well but because of the coarse texture, prior filling may be necessary.

## Uses

**Engineering:-** Once used as sawn and round timber in bridge construction and as mining timbers, but is rarely used in these applications now.

**Construction:-** Once had limited use in general house framing and more commonly as flooring, linings, mouldings and joinery, but is rarely used for these applications now.

**Decorative:-** Plywood, furniture, shop and office fixtures, joinery, turnery, carving, inlay work, walking sticks, umbrella sticks.

**Others:-** Gun stocks, knife handles, vehicle and carriage building. It was a popular timber for split fence posts during the early days of settlement in rainforest areas of the Atherton Tableland, where durable easily split timbers were scarce.

## Identification Features

### GENERAL CHARACTERISTICS

**Sapwood:** White to yellow, distinct from heartwood.

**Heartwood:** Dark brown to chocolate, sometimes with fine white streaks from vessel contents or more diffuse streaks due to soft tissue surrounding vessels.

**Texture:** Coarse, with some figure.

### WOOD STRUCTURE

**Growth Rings:** Absent.

**Vessels:** Medium to large, in radial rows but with some solitary. Chalky white deposits in some vessels.

**Parenchyma:** Abundant, aliform with some confluent.

**Rays:** Visible without a lens.

### OTHER FEATURES

**Burning Splinter Test:** Match size splinter produces a full white to buff coloured ash.

**Figure:** Prominent figure, caused mainly by the parenchyma associated with vessels.

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.



# White Beech

**Botanical name:** *Gmelina fasciculiflora*

**Local names:** Beech, grey teak

**Derivative:** *Gmelina* is after the German Naturalist S. Gmelin and *fasciculiflora* refers to clusters of flowers.

## Tree Description & Occurrence

A large tree attaining a height of 40 metres and a stem diameter of 1.5 metres. It has a straight slender trunk, usually circular in cross-section, often flanged at the base but not prominently buttressed. The bark is approximately 10mm thick, is coloured light grey to dark grey and is rough and scaly with the scales generally angular but occasionally rounded.

Found in rainforests along the east coast of Australia.

*G. fasciculiflora* - Rockingham Bay, Innisfail area, through to Cape York and Torres Strait Islands.

Sawn timber of these species is not readily available.

## CRRP Significance

White Beech is primarily planted in the shires of Douglas, Eacham and Mulgrave. Plantings are in a mixed species configuration. Early growth rates are average compared to other rainforest species with diameter increments of less than 0.5cm and height increments of less than 1.0m per year. This species is sensitive to extreme dry conditions and heavy frosts. Performs best on protected sites with alluvial soils and a rainfall in excess of 1500mm per year. This species is more tolerant of adverse conditions and exposure than most rainforest species.

## Wood Appearance

**Colour:** The heartwood ranges from pale straw to light grey-brown. There is no noticeable colour difference between sapwood and heartwood.

**Grain:** A firm, close grained, slightly greasy wood. At times it has interlocking grain. There is no pronounced figure or sheen except for a glistening effect on dressed surfaces due to tyloses in the vessel lines.

## Wood Properties

**Density:** 515-545 kg/cubic metre at 12% moisture content; approx. 1.8 cubic metres of seasoned sawn timber per tonne.

**Durability:** Class 1 - Highly resistant to decay-in-ground contact or in persistently damp or badly ventilated situations.

**Lyctid Susceptibility:** Untreated sapwood susceptible to lyctid borer attack.

**Preservation:** Sapwood readily accepts preservative impregnation but penetration of heartwood is negligible using current commercial processes.

**Seasoning:** Air seasons very slowly. Requires mild schedules for satisfactory kiln drying.

**Hardness:** Soft (rated 5 on a 6 class scale) in relation to indentation and ease of working with hand tools.

**Machining:** Machines well due to its slightly greasy nature.

**Fixing:** Because of the natural acidity of this species, non-corrosive fittings and fastenings should be used.

**Gluing:** Can be satisfactorily bonded using standard procedures.

**Finishing:** Will readily accept stain, polish and paint.

## Uses

**Decorative:-** Furniture, joinery, carving, turnery, picture frames.

**Others:-** Boat building (decking, planking). Has been used for draughtsman's implements, templates, pattern making, cask bungs, brush stock, venetian blinds slats, beehives. Was used to some extent in general building framing in the early to mid 1900's, and in flooring, lining, mouldings, joinery and cladding but use in such applications has been very infrequent for some decades.

## Identification Features

### GENERAL CHARACTERISTICS

**Sapwood:** Not distinctly different in colour from heartwood.

**Heartwood:** Pale straw to light grey-brown.

**Texture:** Medium to coarse, grain often interlocked.

### WOOD STRUCTURE

**Growth Rings:** Absent.

**Vessels:** Medium in size, barely visible without a lens; many solitary but some in short radial multiples or groups of 2 or 3. Vessel lines distinct. Tyloses common; whitish deposits also common in vessels and sometimes in rays; sometimes visible without a lens on longitudinal surfaces.

**Parenchyma:** Not visible under a lens.

**Rays:** Fine.

### OTHER FEATURES

**Burning Splinter Test:** Gives a full greyish-white to buff coloured ash. Burns with a crackling noise.

**Odour:** Freshly cut surfaces have a faint sour odour.

**Cutting:** A sharp knife cuts this species across the grain with distinctive ease, leaving a very smooth surface with a soapy feel.

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.



# Red Cedar

**Botanical name:** *Toona ciliata*

**Local names:** Cedar

**Interest:** The name *ciliata* has not been readily accepted by botanists, the old genus *australis* is often preferred.

## Tree Description & Occurrence

A tall deciduous tree up to 40 metres in height and 1.0 to 2.0 metres stem diameter. Older mature trees can be 3 metres in diameter. The trunk is often irregular in cross-section and older trees are often buttressed to some distance up the trunk. The bark is grey or brown in colour, very scaly and rough, and sheds in oblong pieces.

This species is found in rainforest along the eastern coast of Australia. The main areas of distribution are between Ulladulla, New South Wales and Gympie, Queensland, and farther north it occurs on the Eungella Range west of Mackay and the Atherton Tableland. Outside Australia it extends to Papua New Guinea and the Philippines.

Timber of this species is now of limited commercial availability as the main areas in which it occurs have received World Heritage listing.

## CRRP Significance

Red Cedar is planted in small numbers in all shires. Plantings are in a mixed species configuration. Early growth rates are high compared to other rainforest species with diameter increments of greater than 2.5cm and height increments of less than 3.0m per year. This species is sensitive to dry conditions, poorly drained soils and frosts. Performs best on protected sites with rich soils and a rainfall in excess of 1500mm per year. This species suffers from regular attacks from moth larvae. These attacks are difficult to control and cause severe stem deformation and in some cases, death.

## Wood Appearance

**Colour:** The heartwood ranges from pink to deep-red brown. Sapwood is usually yellowish-white in colour.

**Grain:** Coarse, open and usually straight. The occasional presence of wavy interlocked grain can produce an attractive fiddleback figure. Growth rings are obvious in back sawn timber.

## Wood Properties

**Density:** 450 kg/cubic metre at 12% moisture content; approx. 2.2 cubic metres of seasoned sawn timber per tonne.

**Durability:** Class 2 - Highly resistant to decay when fully exposed to weather, clear of the ground and well drained with free air circulation.

**Lyctid Susceptibility:** Untreated sapwood susceptible to lyctid borer attack.

**Preservation:** Sapwood readily accepts preservative impregnation but penetration of heartwood is negligible using current commercial processes.

**Seasoning:** Can be satisfactorily dried using conventional air and kiln seasoning methods.

**Hardness:** Very soft (rated 6 on a 6 class scale) in relation to indentation and ease of working with hand tools.

**Machining:** The timber will dress and mould to a smooth finish with sharp blades and cutters. When turned, some surface woolliness can occur.

**Fixing:** No difficulty has been experienced with the use of standard fittings and fastenings.

**Gluing:** Can be satisfactorily bonded using standard procedures.

**Finishing:** Will readily accept stain, polish and paint. Because of the coarse texture of the wood, filling may be necessary before finishing.

## Uses

**Decorative:-** Furniture, plywood, shop and office fixtures, turnery, carving, inlay work, picture frames, lining, mouldings, joinery.

**Others:-** Boat building (light), marine plywood, coach and vehicle building. Has been used for sporting goods, aircraft construction (seaplanes), pattern making, templates, blind roller, venetian blind slats, gun stocks. High quality colonial and antique furniture made from this species is much prized.

## Identification Features

### GENERAL CHARACTERISTICS

**Sapwood:** Yellowish-white to light grey.

**Heartwood:** Pink to dark red-brown.

**Texture:** Coarse, vessel lines prominent on backsawn surfaces.

### WOOD STRUCTURE

**Growth Rings:** Often prominent due to its ring porous structure.

**Vessels:** Medium to large; arranged in short radial multiples with a distinct tendency to decrease in diameter from earlywood to latewood; some reddish deposits may be present.

**Parenchyma:** Indistinct under a lens but some terminal banding occurs.

**Rays:** Visible without a lens.

### OTHER FEATURES

**Burning Splinter Test:** A match size splinter burns to a full white ash.

**Figure:** Prominent on back-sawn surfaces due to the ring porous structure.

**Odour:** Heartwood has a pleasant and distinctly spicy aroma.

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.



# White Cheesewood

**Botanical name:** *Alstonia scholaris*

**Local names:** Milkwood, Milky Pine.

**Derivative:** *Alstonia* was named after Dr Charles Alston a Professor of Botany at Edinburgh University 1716 - 1760.

## Tree Description & Occurrence

A medium to large tree attaining a height of 35 metres and one metre in stem diameter. The trunk is usually flanged or lobed for an appreciable distance up the bole. The bark is light grey to grey in colour and, when cut, is yellowish-brown and exudes a large quantity of milky sap.

This species has a wide distribution in Queensland from near Sarina to Thursday Island. It also occurs outside Australia in New Guinea, south east Asia, India and Sri Lanka.

Timber of this species is now of limited commercial availability as the main areas in which it occurs have received World Heritage listing.

## CRRP Significance

Milky Pine is primarily planted in the shires of Eacham and Johnstone. Plantings are in a mixed species configuration. Early growth rates are averaged compared to other rainforest species with diameter increments of less than 2.5cm and height increments of less than 2.0m per year. This species is sensitive to very dry conditions and heavy frosts. Performs best on protected sites with rich soils and a rainfall in excess of 2000mm per year. This species is more tolerant of adverse conditions and strong winds than most rainforest trees.

## Wood Appearance

**Colour:** The heartwood is white to cream with a very wide sapwood zone which is visually indistinct from the heartwood.

**Grain:** Medium to coarse in texture; straight grained.

## Wood Properties

**Density:** 400 kg/cubic metre at 12% moisture content; approx. 2.5 cubic metres of seasoned sawn timber per tonne.

**Durability:** Class 4 Suitable for use in continuously dry situations only, under cover, well ventilated, clear of the ground and fully protected from the weather and other dampness.

**Lyctid Susceptibility:** Untreated sapwood susceptible to borer attack.

**Preservation:** Sapwood readily accepts preservative impregnation but penetration of heartwood is negligible using current commercial processes.

**Seasoning:** Can be satisfactorily dried using conventional air and kiln seasoning methods. Very susceptible to blue stain.

**Hardness:** Very soft (rated 6 on a 6 class scale) in relation to indentation and ease of working with hand tools.

**Machining:** The timber will dress and mould to a smooth finish with sharp blades and cutters.

**Fixing:** No difficulty has been experienced with the use of standard fittings and fastenings.

**Gluing:** Can be satisfactorily bonded using standard procedures.

**Finishing:** Will readily accept stain, polish and paint, but because of the coarse texture, filling may be necessary before painting or polishing.

## Uses

**Construction:-** Plywood centre veneers, mouldings, lining, treated fascia and barge boards.

**Decorative:-** Carving, turnery.

**Others:-** Has been used for pattern making.

## Identification Features

### GENERAL CHARACTERISTICS

**Sapwood:** Indistinguishable in colour from heartwood.

**Heartwood:** Cream to white in colour.

**Texture:** Medium textured, uniform.

### WOOD STRUCTURE

**Vessels:** Medium to large in size, elliptical in shape, visible without a lens. Mostly solitary but numerous radial pairs and multiples of three or more may occur; occasionally in clusters. Vessel lines conspicuous on longitudinal surfaces.

**Parenchyma:** Visible as numerous fine, wavy apotracheal rows spaced about two per mm.

**Rays:** Fine to medium, readily visible without a lens.

### OTHER FEATURES

**Burning Splinter Test:** A match size splinter burns to a thin partial ash.

**Latex Canals:** May contain elongated radial pockets or latex canals as a characteristic. Note: This timber is very similar to the imported species, jeluton, from which it can be separated by the latter's more closely packed parenchyma and radial canals within the rays.

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.



# Damson

**Botanical name:** *Terminalia seriococarpa*

**Local names:** *Sovereignwood, bandicoot, damson plum*

**Derivative:** *Terminalia* refers to the leaves being located at the ends of the branches.

## Tree Description & Occurrence

A semi-deciduous tree attaining a height to 30 metres with a spread of 5 metres and a stem diameter to 1 metre. The stem is typically buttressed, well formed and branching with a black or grey tessellated, fissured bark and a symmetrical crown.

Damson has a wide distribution across tropical Australia. It occurs from Rockhampton to Cape York, around the Gulf of Carpentaria, across to the Northern Territory and the Kimberley region of Western Australia.

Timber of this species is now of limited commercial availability as the main harvesting areas in which it occurs have received World Heritage listing.

## CRRP Significance

Damson is primarily planted in the shires of Douglas, Mulgrave, Hinchinbrook, Johnstone and the Mackay region. Plantings are in a mixed species configuration. Early growth rates are fast compared to other rainforest species with diameter increments of greater than 1.0cm and height increments of greater than 2.0m per year. This species is sensitive to extreme dry conditions and heavy frosts. Performs best on protected sites with rich soils and a rainfall in excess of 1500mm per year. This tree exhibits a good natural form.

## Wood Appearance

**Colour:** Heartwood pales to yellowish brown, sapwood yellow but not always distinct.

**Grain:** Sometimes interlocked.

## Wood Properties

**Density:** 640 kg/cubic metre at 12% moisture content; approx. 1.6 cubic metres of seasoned sawn timber per tonne.

**Durability:** Class 4 - Suitable for use in continuously dry situations under cover, well ventilated, clear of the ground and fully protected from the weather and other dampness.

**Lyctid Susceptibility:** Untreated sapwood susceptible to borer attack.

**Preservation:** Sapwood accepts preservative impregnation.

**Seasoning:** Seasons well.

**Hardness:** Firm (rated 4 on a 6 class scale) in relation to indentation and ease of working with hand tools.

**Machining:** Relatively easy to work.

**Fixing:** No difficulty have been experienced with the use of standard fittings and fastenings.

**Gluing:** Can be satisfactorily bonded using standard procedures.

**Finishing:** Will readily accept stain, polish and paint.

## Uses

**Construction:-** House framing, flooring, linings, mouldings, scantling.

**Decorative:-** Interior joinery, cabinet making.

**Others:-** Serviette rings, paper weights, rulers, walking sticks.

## Identification Features

### GENERAL CHARACTERISTICS

**Sapwood:** Not readily differentiated from heartwood.

**Heartwood:** Pale-gold to yellow-brown.

**Texture:** Coarse and uniform, grain very interlocked.

### WOOD STRUCTURE

**Vessels:** Large, clearly visible to the naked eye, solitary and radial groups of 2-3, numerous and uniform distribution. Deposits lacking. Vessel lines prominent.

**Parenchyma:** Vasicentric, aliform and confluent.

**Rays:** Fine.

### OTHER FEATURES

**Burning Splinter Test:** The wood burns with much smoke and exudation of resin, to a grey-white ash with black streaks.

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.



# Northern Silky Oak

**Botanical name:** *Cardwellia sublimis*

**Local names:** Oak, bull oak, silky oak.

**Derivative:** *Cardwellia* was named after Edward Cardwell, Secretary for the colonies (1864 - 1866).

## Tree Description & Occurrence

A large tree attaining 40 metres in height and 2 metres in stem diameter. The trunk, usually without buttresses, is normally straight. The bark is slightly flaky to non-descript. The outer blaze is commonly biscuit-brown in colour.

This species has a limited distribution in north Queensland between Mt Spec, near Townsville, and Bloomfield.

Timber of these species is now of very limited commercial availability as the main areas in which it occurs have received World Heritage listing.

## CRRP Significance

Northern Silky Oak is primarily planted in the shires of Douglas, Eacham, Johnstone, Cooktown and the Mackay region. Plantings are in a mixed species configuration. Early growth rates are slow compared to other rainforest species with diameter increments of less than 0.5cm and height increments of less than 1.0m per year. This species is sensitive to dry conditions, water logging and frosts. Performs best on protected sites with rich soils and a rainfall in excess of 2000mm per year.

## Wood Appearance

**Colour:** The heartwood is pale pink to brown in colour. Sapwood is usually almost white.

**Grain:** Moderately coarse textured and variable. Quarter sawn timber shows the decorative oak grain to best effect.

## Wood Properties

**Density:** 560 kg/cubic metre at 12% moisture content; approx. 1.8 cubic metres of seasoned sawn timber per tonne.

**Durability:** Class 3 Moderately resistant to decay when fully exposed to weather, clear of the ground and well drained with free air circulation. Not recommended for in ground use.

**Lyctid Susceptibility:** Untreated sapwood susceptible to borer attack.

**Preservation:** Sapwood readily accepts preservative impregnation but penetration of heartwood is negligible using current commercial processes.

**Seasoning:** Can be satisfactorily dried using conventional air and kiln seasoning methods.

**Hardness:** Soft (rated 5 on a 6 class scale) in relation to indentation and ease of working with hand tools.

**Machining:** Machines and turns well to a smooth surface.

**Fixing:** No difficulty has been experienced with the use of standard fittings and fastenings.

**Gluing:** Can be satisfactorily bonded using standard procedures.

**Finishing:** Will readily accept stain, polish and paint. Because of the open grain in this species, filling may be required before the timber is polished.

## Uses

**Construction:-** Once used extensively in north Queensland in general house framing, cladding, linings, mouldings, joinery (particularly windows) and flooring. Now confined more to joinery applications.

**Decorative:-** Plywood, furniture, outdoor furnishings, joinery, shop and office fittings, turnery, carving, inlay work.

**Others:-** Has been used for boat building (light), brushware, gun stocks, cooperage, vehicle and coach building.

## Identification Features

### GENERAL CHARACTERISTICS

**Sapwood:** Creamy white in colour.

**Heartwood:** Pink to pinkish-brown in colour.

**Texture:** Coarse and irregular, a broad ray figure on quarter sawn surfaces, grain straight.

### WOOD STRUCTURE

**Growth Rings:** Indistinct.

**Vessels:** Large, numerous, solitary or in short tangential hoops between the rays. Tyloses absent, but occasionally vessels are filled with whitish deposits or deposits of red coloured gum.

**Parenchyma:** Abundant, aliform and confluent, including vessels between rays, forming loops, generally concave outwards; an occasional short tangential apotracheal band.

**Rays:** Of two distinct kinds (a) broad to very broad, plainly visible without a lens on all surfaces, and (b) fine, indistinct even under hand lens.

### OTHER FEATURES

**Burning Splinter Test:** A match size splinter burns to charcoal.

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.



# Brown Salwood

**Botanical name:** *Acacia aulacocarpa*

**Local names:** Black wattle, hickory wattle.

**Derivative:** *Acacia* is from akazo meaning to sharpen, as many of the acacia species have spiny leaves and aulococarpa means grooved pods.

## Tree Description & Occurrence

Medium sized hardwoods with flanged buttresses at the base, attaining 30 metres in height and 1 metre diameter on favourable sites. Bark is thin, brown, hard and fissured.

Occurs from northern New South Wales along the eastern coast of Queensland to Cape York and also in the coastal areas of the Northern Territory.

## CRRP Significance

Brown Salwood is primarily planted in the shires of Cook, Douglas and Eacham. Plantings are in a mixed species configuration but has potential to be grown in a pure stand. Early growth rates are fast compared to other rainforest species with diameter increments of more than 3.0cm and height increments of more than 2.5m per year. This species is sensitive to severely dry conditions. Performs best on metamorphic soils and rainfall in excess of 2000mm per year. Poor stem form and heavy branching are a problem with this species. Tree breeding work being carried out at present will ultimately result in a superior formed tree.

## Wood Appearance

**Colour:** Heartwood varies from light brown to brown, often streaked with darker markings. Sapwood creamy-white to pale brown.

**Grain:** Grain variable, texture coarse but rather even.

## Wood Properties

**Density:** 690-800 kg/cubic metre at 12% moisture content; approx. 1.3 cubic metres of seasoned sawn timber per tonne.

**Durability:** Class 3 - moderately resistant to decay when fully exposed to weather, clear of the ground and well drained with free air circulation. Not recommended for in-ground use.

**Lyctid Susceptibility:** Untreated sapwood susceptible to lyctid borer attack.

**Preservation:** Sapwood readily accepts preservative impregnation.

**Seasoning:** Can be satisfactorily dried using conventional air and kiln seasoning methods.

**Hardness:** Moderately hard (rated 3 on a 6 class scale) in relation to resistance to indentation and ease of working with hand tools.

**Machining:** Relatively easy to work and machine. Turns well to a smooth finish.

**Fixing:** No difficulties have been experienced with the use of standard fittings and fastenings.

**Gluing:** Can be satisfactorily bonded using standard procedures.

**Finishing:** Staining is normally not necessary. It polishes and paints well.

## Uses

**Construction:-** Once had limited use in general house framing, flooring, linings and mouldings, but is rarely used for these applications now.

**Decorative:-** Plywood, furniture, shop and office fixtures, joinery, turning, walking sticks.

**Others:-** Fishing rods, archery bows, tool handles (axes and hammers), boat building (light).

## Identification Features

### GENERAL CHARACTERISTICS

**Sapwood:** Creamy-white, distinct from heartwood.

**Heartwood:** Light-brown through to chestnut, occasionally with darker streaks.

**Texture:** Medium to coarse. Straight grain. Lustrous.

### WOOD STRUCTURE

**Vessels:** Medium to large, visible without lens, solitary and radial chains of up to 3, uniform distribution. A tendency for vessel size to decrease with the zone of latewood. Vessel lines visible.

**Parenchyma:** Indistinct.

**Rays:** Very fine, barely visible with lens.

### OTHER FEATURES

**Burning Splinter Test:** A match size splinter burns to a charcoal.

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.

## SPECIES NOTES



# Black Wattle

**Botanical name:** *Acacia mangium*

**Local names:** *Sally wattle.*

**Derivative:** *Acacia is from akazo meaning to sharpen, as many of the acacia species have spiny leaves.*

## Tree Description & Occurrence

Medium sized hardwoods with flanged buttresses at the base, attaining 30 metres in height and 1 metre diameter on favourable sites. Bark is thin, brown, hard and fissured.

Occurs from northern New South Wales along the eastern coast of Queensland to Cape York and also in the coastal areas of the Northern Territory.

## CRRP Significance

Black Wattle is primarily planted in the shires of Douglas, Johnstone, Hinchinbrook and the Mackay region. Plantings are in a mixed species configuration but has potential to be grown in a pure stand. Early growth rates are fast compared to other rainforest species with diameter increments of more than 4.0cm and height increments of more than 2.0m per year. This species is sensitive to severely dry conditions. Performs best on coastal soils derived from metamorphic parent material with a rainfall in excess of 2000mm per year. Poor stem form and heavy branching are a major problem with this species.

## Wood Appearance

**Colour:** Heartwood varies from light brown to brown, often streaked with darker markings. Sapwood creamy-white to pale brown.

**Grain:** Grain variable, texture coarse but rather even.

## Wood Properties

**Density:** 690-800 kg/cubic metre at 12% moisture content; approx. 1.3 cubic metres of seasoned sawn timber per tonne.

**Durability:** Class 3 - moderately resistant to decay when fully exposed to weather, clear of the ground and well drained with free air circulation. Not recommended for in-ground use.

**Lyctid Susceptibility:** Untreated sapwood susceptible to lyctid borer attack.

**Preservation:** Sapwood readily accepts preservative impregnation.

**Seasoning:** Can be satisfactorily dried using conventional air and kiln seasoning methods.

**Hardness:** Moderately hard (rated 3 on a 6 class scale) in relation to resistance to indentation and ease of working with hand tools.

**Machining:** Relatively easy to work and machine. Turns well to a smooth finish.

**Fixing:** No difficulties have been experienced with the use of standard fittings and fastenings.

**Gluing:** Can be satisfactorily bonded using standard procedures.

**Finishing:** Staining is normally not necessary. It polishes and paints well.

## Uses

**Construction:-** Once had limited use in general house framing, flooring, linings and mouldings, but is rarely used for these applications now.

**Decorative:-** Plywood, furniture, shop and office fixtures, joinery, turning, walking sticks.

**Others:-** Fishing rods, archery bows, tool handles (axes and hammers), boat building (light).

## Identification Features

### GENERAL CHARACTERISTICS

**Sapwood:** Creamy-white, distinct from heartwood.

**Heartwood:** Light-brown through to chestnut, occasionally with darker streaks.

**Texture:** Medium to coarse. Straight grain. Lustrous.

### WOOD STRUCTURE

**Vessels:** Medium to large, visible without lens, solitary and radial chains of up to 3, uniform distribution. A tendency for vessel size to decrease with the zone of latewood. Vessel lines visible.

**Parenchyma:** Indistinct.

**Rays:** Very fine, barely visible with lens.

### OTHER FEATURES

**Burning Splinter Test:** A match size splinter burns to a charcoal.

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.



# Mackay Cedar

**Botanical name:** *Paraserianthes toona*

**Local names:** *Acacia cedar, red siris, Mackay cedar.*

**Derivative:** *Toona meaning that it has wood like Red Cedar.*

## Tree Description & Occurrence

A medium sized tree reaching 30 metres in height and one metre in stem diameter. Stem not prominently buttressed. Bark grey or brown, scaly in parts, sometimes showing irregular depressions where the bark scales have fallen off. When freshly cut the bark is pink in colour.

Distributed mainly in north Queensland coastal rainforests between Mackay and the Endeavour River.

There is a limited availability of sawn timber of these species from private sources within their areas of distribution.

## CRRP Significance

Mackay Cedar is primarily planted in all shires except Eacham and Johnstone. Plantings are in a mixed species configuration. Early growth rates are above average with diameter increments of less than 1.0cm and height increments of up to 2.0m per year. This species is sensitive to severely dry conditions. Performs best on free draining rich soils with a rainfall in excess of 1500mm. Beetle and aphid attack is common and can cause severe stem deformation.

## Wood Appearance

**Colour:** Dark red with some yellow streaks causing a striated pattern on the longitudinal surface. Sapwood is white in colour and up to 50mm wide.

**Grain:** Coarse, large pored with pronounced vessel lines and occasional curly grain.

## Wood Properties

**Density:** 720 kg/cubic metre at 12% moisture content; approx. 1.4 cubic metres of seasoned sawn timber per tonne.

**Durability:** Class 3 - moderately resistant to decay when fully exposed to weather, clear of the ground and well drained with free air circulation. Not recommended for in-ground applications.

**Lyctid Susceptibility:** Untreated sapwood susceptible to lyctid borer attack.

**Preservation:** Sapwood readily accepts preservative impregnation but penetration of heartwood is negligible using current commercial processes.

**Seasoning:** Can be satisfactorily dried using conventional air and kiln seasoning methods.

**Hardness:** Moderately hard (rated 3 on a 6 class scale) in relation to indentation and ease of working with hand tools.

**Machining:** Machines and turns well to a smooth surface.

**Fixing:** Recommended use of brass and copper fittings and fastenings.

**Gluing:** Can be satisfactorily bonded using standard procedures.

**Finishing:** Will readily accept stain, polish and paint.

## Uses

**Construction:-** As sawn timber for general house framing flooring, linings, mouldings and joinery.

**Decorative:-** Furniture, joinery, turnery.

## Identification Features

### GENERAL CHARACTERISTICS

**Sapwood:** Creamy-white to pale yellow, distinct from heartwood.

**Heartwood:** Red to red brown, often with yellow or lighter coloured streaks.

**Texture:** Coarse texture. Grain usually straight but occasionally interlocked.

### WOOD STRUCTURE

**Growth Rings:** Absent.

**Vessels:** Medium to large in size, uniformly distributed, solitary, but also in radial chains with an infrequent cluster. Vessel lines conspicuous on longitudinal surfaces. Dark red deposits frequent in the vessels.

**Parenchyma:** Plentiful, aliform and confluent. The lighter coloured sheaths of soft tissue around the vessels are distinct on all surfaces.

**Rays:** Fine, invisible without a lens. Ripple marks occasionally present.

### OTHER FEATURES

**Burning Splinter Test:** A match size splinter burns to a partial dark grey or black ash filament.

**Figure:** The parenchyma around the vessels, combined with the coloured streaks, give this timber an attractive figure.

**Please note:** Skin irritations and vomiting may occur especially during sanding operations.

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.



# White Mahogany

**Botanical name:** *Eucalyptus acmenoides*

**Local names:** *Yellow stringybark, white stringybark*

**Derivative:** *Eucalyptus* *Eu* meaning well and *kalyptos* meaning covered, *Eu-kalyptos*: well-covered, refers to the cap or lid that covers the flowering bud.

## Tree Description & Occurrence

A tall forest tree attaining a height of 60 metres and a stem diameter over one metre. The bark of these species is rough, fibrous and persistent over the whole trunk and branches and tending to be “stringy”. The colour is greyish-brown.

Occurs in coastal areas from Sydney, New South Wales to Rockhampton, Queensland and isolated areas north to the Atherton Tableland.

Sawn timber of white mahogany is fairly readily available.

## Wood Appearance

**Colour:** Heartwood yellow brown, having a close resemblance to tallowwood. Sapwood is usually paler in colour and less than 20 mm wide.

**Grain:** Generally medium textured and uniform; however, at times it can be interlocked. Greasy to feel, but not as pronounced as in tallowwood and spotted gum.

## Wood Properties

**Density:** 1010 kilograms per cubic metre at 12 percent moisture content; approximately 1.0 cubic metre of seasoned sawn timber per tonne.

**Durability:** Class 1 - Highly resistant to decay in ground contact or in persistently damp or badly ventilated situations.

**Lyctid Susceptibility:** Sapwood not susceptible to lyctid borer attack.

**Preservation:** Sapwood readily accepts preservative impregnation but penetration of heartwood is negligible using currently available commercial processes.

**Seasoning:** Can be satisfactorily dried using conventional air and kiln seasoning methods.

**Hardness:** Very hard (rated 1 on a 6 class scale) in relation to indentation and ease of working with hand tools.

**Machining:** Machines and turns well due to its greasy nature.

**Fixing:** No difficulty has been experienced with the use of standard fittings and fastenings.

**Gluing:** As with most high density species machining and surface preparation should be done immediately before gluing.

**Finishing:** Will readily accept stain, polish and paint.

## Uses

**Construction:** As sawn timber in general house framing, cladding, internal and external flooring, linings, joinery, fencing, landscaping and retaining walls.

**Decorative:** Outdoor furniture, turnery, joinery.

**Others:** Structural plywood, boat building (keel and framing components, planking, decking) coach, vehicle and carriage building, agricultural machinery.

## Identification Features

### GENERAL CHARACTERISTICS

**Sapwood:** Creamy brown and distinctly lighter than heartwood.

**Heartwood:** Light brown to yellow brown.

**Texture:** Medium textured and uniform; grain interlocked; greasy to feel, but not as pronounced as in tallowwood and spotted gum.

### WOOD STRUCTURE

**Vessels:** Solitary, small to medium in size. Uniformly distributed, occasionally in oblique chains; seasonal growth zones may be evident. Vessel lines fine and numerous on longitudinal surfaces. Tyloses common.

**Parenchyma:** Varies from abundant to scarce; general difficult to see.

**Rays:** Fine and numerous.

### OTHER FEATURES

**Burning Splinter Test:** A match size splinter burns slowly to charcoal with no ash.

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.



# Tallowwood

**Botanical name:** *Eucalyptus microcorys*

**Local names:**

**Derivative:** *Eucalyptus* *Eu* meaning well and *kalyptos* meaning covered, *Eu-kalyptos*: well-covered, refers to the cap or lid that covers the flowering bud.

## Tree Description & Occurrence

A moderate to large tree attaining 25 to 60 metres in height and 1 to 2 metres in stem diameter. The form is generally good with a straight, clear bole to two-thirds of the total height. The bark is soft, flaky fibrous and persistent to the small branches; brown to yellow-brown in colour often with surface pores and horizontal cracks on under layers. Bark has a characteristic spongy response to finger pressure.

Found in coastal wet sclerophyll forests from Newcastle, New South Wales to Maryborough and Fraser Island, Queensland.

Sawn timber of this species can usually be obtained.

## Wood Appearance

**Colour:** The heartwood ranges from pale to dark yellow brown. Sapwood is usually almost white in colour.

**Grain:** Moderately coarse textured, generally with interlocked grain. Usually free from gum veins.

## Wood Properties

**Density:** 1010 kilograms per cubic metre at 12 percent moisture content; approximately 1.0 cubic metre of seasoned sawn timber per tonne.

**Durability:** Class 1 - Highly resistant to decay when in ground contact or in persistently damp or badly ventilated situations.

**Lyctid Susceptibility:** Untreated sapwood susceptible to lyctid borer attack.

**Preservation:** Sapwood readily accepts preservative impregnation but penetration of heartwood is negligible using currently available commercial processes.

**Seasoning:** Can be satisfactorily dried using conventional air and kiln seasoning methods.

**Hardness:** Very hard (rated 1 on a 6 class scale) in relation to indentation. Relatively easy to work with hand tools due to its natural greasiness, and hence the descriptive name given to the timber by early settlers.

**Machining:** Machines and turns well.

**Fixing:** No difficulty has been experienced with the use of standard fittings and fastenings.

**Gluing:** As with most high density species machining and surface preparation should be done immediately before gluing.

**Finishing:** Will readily accept stain, polish and paint.

## Uses

**Construction:** As unseasoned timber in general house framing and as seasoned dressed timber in cladding, internal and external flooring, linings and joinery. Also in fencing, landscaping and retaining walls.

**Decorative:** Outdoor furniture, turnery, joinery.

**Others:** Structural plywood, boat building (keel and framing components, planking), coach, vehicle and carriage building, agricultural machinery. Has been used for bearings, mallet heads, mauls, wheel spokes, cooling tower components, tool handles, croquet mallets.

## Identification Features

### GENERAL CHARACTERISTICS

**Sapwood:** Pale coloured, almost white.

**Heartwood:** Varies in colour from light to dark yellow brown.

**Texture:** Moderately coarse, generally with interlocked grain; greasy to touch.

### WOOD STRUCTURE

**Vessels:** Medium in size, solitary with some touching; a few in multiples, tending to oblique chains. Tyloses abundant. Vessel lines prominent.

**Parenchyma:** Visible with the aid of a lens. Abundant, paratracheal and diffuse.

**Rays:** Fine.

### OTHER FEATURES

**Burning Splinter Test:** Produces a charcoal tipped with grey or white ash.

**Figure:** Lacking, but possesses a distinctive lustre and greasy appearance.

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.



# Kwila

**Botanical name:** *Intsia bijuga*

**Local names:** *Johnstone River teak, scrub mahogany (North Queensland), merbau (Malaysia), vesi (Fiji), Moluccan ironwood (United Kingdom), go-nux (Vietnam), ipil (Philippines), hintzy (Madagascar), melila, bendora (Papua New Guinea), lumpho, lum-paw, makamong (Thailand), kivoli, uvuala (Solomon Islands).*

**Derivative:**

## Tree Description & Occurrence

A large hardwood attaining 40 metres in height, with a trunk of 0.6 metres diameter. Often a bushy tree forming a spreading canopy.

Occurs in the Johnstone River and Daintree areas of north Queensland, Malaysia, Fiji, Vietnam, Philippines, Madagascar, Papua New Guinea, Thailand, Solomon Islands, New Caledonia, Vanuatu and Samoa.

## Wood Appearance

**Colour:** Heartwood yellowish-brown or orange-brown when first cut, turning darker with age to brown or reddish brown. Sapwood white, pale yellow or buff and sharply differentiated from heartwood.

**Grain:** Grain variable but usually interlocked or wavy, texture is coarse but even. Attractive figure on back-sawn material.

## Wood Properties

**Density:** 830 to 865 kilograms per cubic metre at 12 percent moisture content. Approximately 1.2 cubic metres of seasoned sawn timber per tonne.

**Durability:** Class 2 - Highly resistant to decay when fully exposed to the weather, clear of the ground and well drained with free air circulation. Only moderately decay resistant in the ground.

**Lyctid Susceptibility:** Untreated sapwood susceptible to lyctid borer attack.

**Preservation:** Sapwood accepts preservation impregnation.

**Seasoning:** Kwila seasons well with kiln or air drying, with little degrade and very little shrinkage or movement.

**Hardness:** Hard (rated 2 on a 6 class scale) in relation to indentation and ease of working with hand tools.

**Machining:** Working properties variable. Cuts cleanly but may have a blunting or gumming effect on cutting edges. Cutting angle should be reduced to 20° when planing quarter sawn stock. Turns well.

**Fixing:** Kwila tends to split unless pre-bored, but holds fastenings well.

**Gluing:** Glues satisfactorily except with casein glues.

**Finishing:** It takes paint, stain and polish well, but gum bleed-through or oily patches may affect the finish.

# Uses

**Construction:** Framing, decking, treads, general construction.

**Decorative:** Furniture, turnery, panelling, joinery, shop fitting, cabinet making, parquet flooring, carving, veneer, counter and bench tops.

**Others:** Boat building, vats, musical instruments, bowls and tool handles.

# Identification Features

## GENERAL CHARACTERISTICS

**Sapwood:** Sharply differentiated from the heartwood.

**Heartwood:** Dark red-brown or yellow-brown in colour.

**Texture:** Coarse and even; grain often interlocked.

## WOOD STRUCTURE

**Vessels:** Moderately large, visible to naked eye; short radial pairs or multiples and solitary cells. Sulphur-yellow and dark coloured deposits often visible. Vessel lines prominent on longitudinal surfaces.

**Parenchyma:** Abundant, aliform and occasionally confluent, with terminal bands present.

**Rays:** Moderately fine, not visible without lens.

## OTHER FEATURES

**Burning Splinter Test:** A match size splinter burns to a white ash.

For further information on this species and others please contact the Community Rainforest Reforestation Program (CRRP) in Atherton, Queensland on 40911844.

Wood properties and timber utilisation information compiled by DPI Timber Research