



A guide to selection for revegetation projects

Using local native plants for revegetation projects contributes significantly to improving biodiversity. By understanding the natural habitat of native plants we can improve our chances of reinstating native vegetation. A range of different plant species occurs along the Clarence River. Where they are located is largely dependent upon their geographic range and distribution as well as preferences for soil conditions and tolerances of different levels of inundation by salt, brackish or fresh water. Species selection for each site is determined by assessing the many factors that influence tree growth, the purpose of the riparian planting and consideration of the following:

- availability of seed resources
- suitability of height and width for location
- soil type
- tolerance to saline or brackish water
- shading of water courses
- harvesting and maintenance of crops
- proximity to power lines, vehicular tracks, fences
- availability of fresh water
- landowner's ability to maintain the site.

The aftercare of revegetation projects is vitally important and maintenance of plantings should be considered as part of any project. This is especially important for threatened plant species.

The Importance of Riparian Vegetation

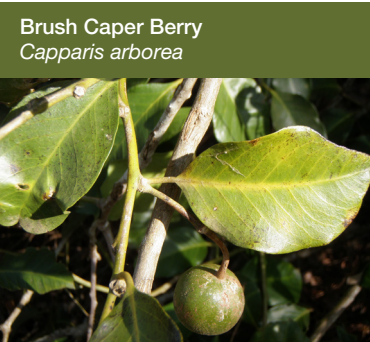
The riparian area is commonly defined as the land alongside creeks and rivers, including the riverbank itself. Riparian vegetation grows next to a waterway, whether it is a gully, creek, swamp, wetland, river, fresh or saline. Aside from the aesthetic and biodiversity benefits provided by healthy riparian vegetation, plants along the Riparian zone provide important functions such as:

- filtering of sediment, nutrients and pollutants before they reach the waterway
- protection against wave and flood erosion – the roots of trees bind and reinforce soils
- shading of waterways – provides fish friendly habitat and reduces blue-green algae growth
- ensures healthy ecosystems
- a source of food and habitat for aquatic and terrestrial species
- important locations for conservation and movement of wildlife.

The factors that most influence plant distribution along the river estuary are salt exposure and regular fluctuations in water level caused by tides. As these change with distance from the sea so does the species composition of the riparian vegetation.

The mouth of the Clarence River is located between the towns of Yamba and Iluka with its estuarine reaches extending approximately 108 km upstream to Copmanhurst. The estuarine limit of Mangroves is noted at around Ulmarra (downstream of Grafton).

Generally speaking, the Grey Mangrove occurs in the lowest part of the estuary where salt levels are highest e.g. around Yamba, Iluka, the lower estuary islands and channels. The River Mangrove is more shrub-like than the taller Grey Mangrove and is usually found where salt levels are slightly lower or as an understory to the Grey

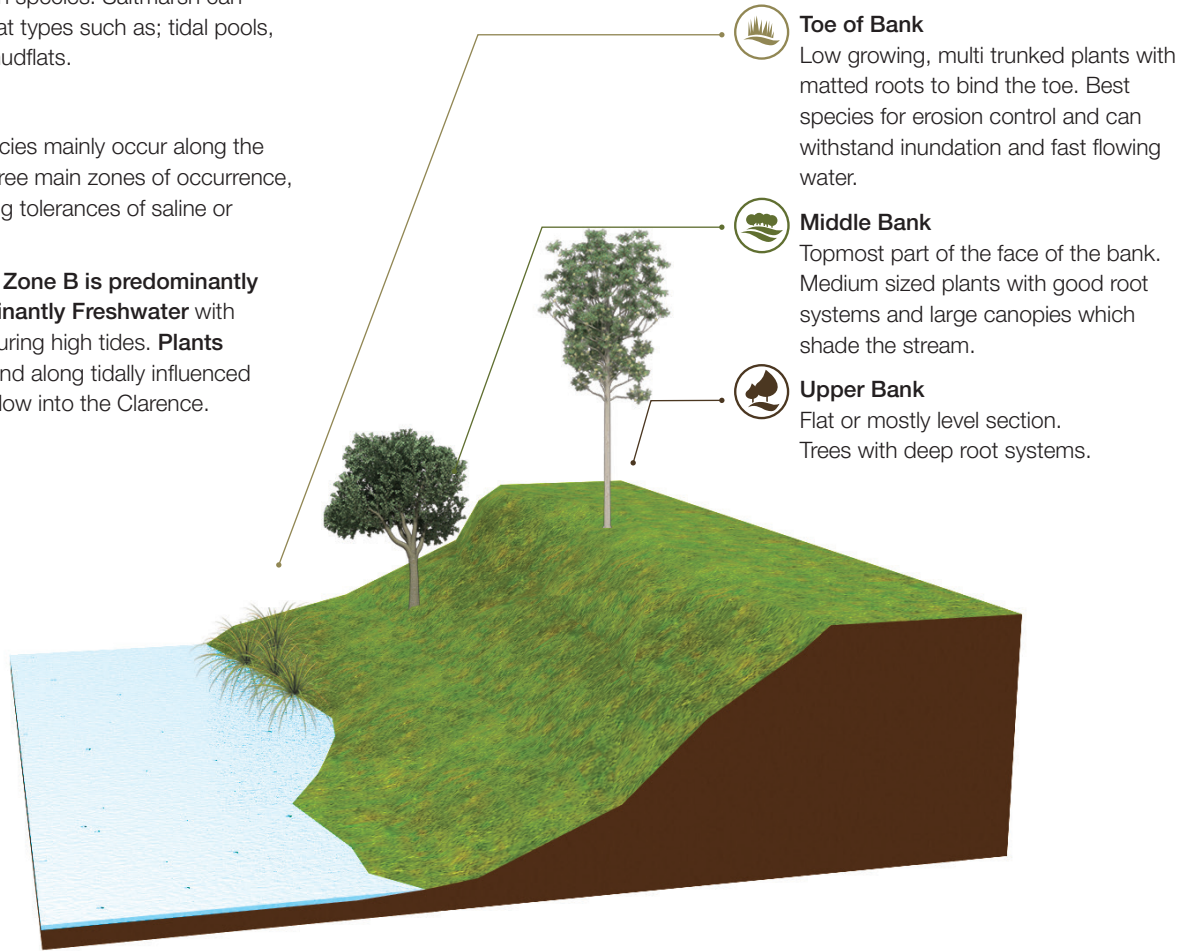


Mangrove. Saltmarsh generally occur on the landward side of mangroves. Red Samphire (*Sarcocornia quinqueflora*), Saltwater Couch (*Sporobolus virginicus*) and Marine Couch (*Paspalum vaginatum*) are common Saltmarsh species. Saltmarsh can include a mosaic of different habitat types such as; tidal pools, rush meadows, herb fields, and mudflats.

Zones

To give an indication of where species mainly occur along the river the plant list is divided into three main zones of occurrence, i.e. different plants and their varying tolerances of saline or brackish water.

Zone S is predominantly saline, Zone B is predominantly Brackish and Zone F is predominantly Freshwater with some mixing of brackish waters during high tides. **Plants listed in B and F** may also be found along tidally influenced freshwater creeks and rivers that flow into the Clarence.



How wide should the Riparian zone be?

Riparian zone width is heavily influenced by human activity. Agriculture, tourism, fishing, boating and commercial activity have influenced riparian zone width since European settlement. If we were to have an ideal width for riparian ecosystems it would be in the range of 10 - 40 m or more. However, the majority of existing riparian areas of the mid-lower Clarence River which are accessible for revegetation are currently in the range of 5 - 20 m.

How salty is the river?

Seawater is approximately 35,000 ppm while fresh water is generally defined as water with a salinity of less than 1,000 ppm. Brackish water can be anywhere between 1,000 to 30,000 ppm. Water sampling is regularly carried out at various locations on the Clarence River and the table below provides an example of how salty the river can be at the time when the sampling is carried out. This can be different from month to month and year to year depending on river flows and tides.

River Salinity Levels at various parts of the Clarence & Coldstream Rivers & Shark Creek on 26th & 27th November 2012	
Location	Salinity (ppm)
Clarence River at Grafton	590
Clarence River at Swan Creek mouth	3110
Clarence River at Southgate mouth	5410
Clarence River at Ulmarra	3960
Clarence River at Lawrence	9225
Clarence River at Maclean	14300
Clarence River at Harwood Bridge	18900
Upper Shark Creek at bridge on Byrons Lane	2620
Upper Coldstream River at Briner Bridge	2000
Lower Coldstream River at Calligans Creek mouth	5320

Source: Clarence Valley Council Floodplain Project Newsletter, December 2012.

General Disclaimer: Information in this publication is intended as general advice only. For specific circumstances please seek appropriate advice. In compiling this information, the author has taken all reasonable steps to ensure accuracy at the time of publication.



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This project was funded by the Australian Government through the Emergency Response Fund and administered by NSW Reconstruction Authority's Northern Rivers Recovery and Resilience Program 2022-23. Delivered by North Coast Regional Landcare Network.
Update and reprint 2026
Action Grants.
Grafton NSW and the Australian Government CROC-Community for revegetation projects. Published by Clarence Landcare Inc., Mild – Lower Clarence River Riparian Plants – a guide to selection (2012). Reference: Mousley, J.G. (2012).



MID – LOWER CLARENCE RIVER RIPARIAN PLANTS



A guide to common riparian species



ZONE S		ZONE B		 Middle Bank - <i>Continued</i>		 Upper Bank		 Upper Bank - <i>Continued</i>		Common Vines - <i>Continued</i>	
Zone S - Saline		Zone B - Brackish									
 Toe of Bank		 Toe of Bank									
<i>Avicennia marina</i> Grey Mangrove	T	<i>Aegiceras corniculatum</i> River Mangrove	S	<i>Callistemon viminalis</i> Weeping Red Bottlebrush	Small T	<i>Acacia disparrima</i> subsp. <i>disparrima</i> Ironbark Wattle	T	<i>Eucalyptus robusta</i> Swamp Mahogany	T	<i>Maclura cochinchinensis</i> Cockspur Thorn	V
<i>Bruguiera gymnorhiza</i> Large-leaved Mangrove (not common)	T	<i>Avicennia marina</i> Grey Mangrove	T	<i>Capparis arborea</i> Brush Caper Berry	Small T	<i>Acacia floribunda</i> White Sallow Wattle	T	<i>Eucalyptus grandis</i> Flooded Gum	T	<i>Pandorea pandorana</i> Wonga Wonga Vine	V
<i>Crinum pedunculatum</i> River Lily	GC	<i>Casuarina glauca</i> Swamp Oak	T	<i>Cryptocarya glaucescens</i> Jackwood	Small T	<i>Acacia irrorata</i> Green Wattle	Small T	<i>Eucalyptus siderophloia</i> Northern Grey Ironbark	T	<i>Parsonsia straminea</i> Common Silkpod	V
<i>Rhizophora stylosa</i> Red or Stilted Mangrove (not common)	T	<i>Crinum pedunculatum</i> River Lily	T	<i>Cryptocarya triplinervis</i> Three-veined Laurel	Small T	<i>Acacia melanoxylon</i> Blackwood	T	<i>Euroschinus falcata</i> Ribbonwood	T	<i>Stephania japonica</i> Snake Vine	V
<i>Tetragona tetragonoides</i> NZ Spinach, Warrigal Green	HB	<i>Hibiscus tiliaceus</i> Cottonwood Hibiscus	T	<i>Dianella caerulea</i> Blue Flax Lily	GC	<i>Acmena smithii</i> Lilly Pilly	T	<i>Ficus virens</i> var. <i>sublanceolata</i> White Fig	T	ZONE F	
 Middle Bank		<i>Lomandra hystrix</i> River Mat Rush	T	<i>Dysoxylum mollissimum</i> subsp. <i>molle</i> (<i>D. muelleri</i>) Red Bean	T	<i>Alectryon tomentosus</i> Hairy Alectryon	T	<i>Ficus macrophylla</i> Moreton Bay Fig	T	Zone F - Freshwater	
<i>Acrostichum speciosum</i> Mangrove Fern	GC	<i>Lomandra longifolia</i> Spiny Mat Rush	G	<i>Ehretia acuminata</i> Koda	T	<i>Allocasuarina littoralis</i> Black She-Oak	T	<i>Ficus obliqua</i> Small-leaved Fig	T	 Toe of Bank	
<i>Avicennia marina</i> Grey Mangrove	T	<i>Phragmites australis</i> Common Reed	G	<i>Elaeocarpus obovatus</i> Hard Quandong	T	<i>Araucaria cunninghamii</i> Hoop Pine	T	<i>Ficus superba</i> var. <i>henneana</i> Deciduous Fig	T	<i>Acmena smithii</i> (minor) Creek Lilly Pilly	Small T
<i>Casuarina glauca</i> Swamp Oak	T	ZONES B & F		<i>Elaeodendron australe</i> Red Olive Plum	T	<i>Baeckea virgata</i> Twiggy Baeckea	Small T	<i>Ficus rubignosa</i> Rusty Fig	T	<i>Callistemon viminalis</i> Weeping Red Bottlebrush	T
<i>Crinum pedunculatum</i> River Lily	GC	Zones B & F - Brackish & Freshwater		<i>Ficus coronata</i> Sandpaper Fig	T	<i>Bridelia exaltata</i> Brush Ironbark	T	<i>Flindersia australis</i> Australian Teak	T	<i>Casuarina cunninghamiana</i> River Oak	T
<i>Excoecaria agallocha</i> Milky Mangrove	T	 Toe of Bank		<i>Ficus fraseri</i> Sandpaper Fig	T	<i>Backhousia sciadophora</i> Shatterwood	T	<i>Flindersia schottiana</i> Cudgerie	T	<i>Ficus coronata</i> Sandpaper Fig	T
<i>Juncus kraussii</i> Sea Rush	R	<i>Carex gaudichaudiana</i> Carex	R	<i>Glochidion ferdinandi</i> Cheese Tree	T	<i>Callistemon salignus</i> White Bottlebrush	T	<i>Flindersia bennettiana</i> Bennett's Ash	T	<i>Leptospermum brachyandrum</i> Thin-fruited Tea Tree	S
 Upper Bank: Landward of the toe		<i>Phyllidrum lanuginosum</i> Frogsmouth	R	<i>Guioa semiglauca</i> Guioa	T	<i>Castanospermum australe</i> Black Bean	T	<i>Gmelina leichardtii</i> White Beech	T	<i>Lomandra hystrix</i> River Mat Rush	R
<i>Alphitonia excelsa</i> Red Ash	T	<i>Schoenoplectus mucronatus</i> Club Rush	R	<i>Jagera pseudorhus</i> Foambark	T	<i>Commersonia bartramia</i> Brown Kurrajong	T	<i>Grevillea robusta</i> Silky Oak	T	<i>Lomandra longifolia</i> Spiny Mat Rush	R
<i>Casuarina glauca</i> Swamp Oak	T	<i>Schoenoplectus validus</i> River Club Rush	R	<i>Leptospermum brachyandrum</i> Thin-fruited Tea Tree	T	<i>Corymbia intermedia</i> (<i>Eucalyptus intermedia</i>) Pink Bloodwood	T	<i>Lophostemon confertus</i> Brush Box	T	<i>Phragmites australis</i> Common Reed	R
<i>Banksia integrifolia</i> Coast Banksia	T	 Middle Bank		<i>Leptospermum polygalifolium</i> subsp. <i>cismontanum</i> Creek Tea Tree	S	<i>Dysoxylum rufum</i> Hairy Rosewood	T	<i>Syncarpia glomulifera</i> Turpentine	T	<i>Potamophila parviflora</i> Potamophila (instream sp.)	GC
<i>Cupaniopsis anacardiodes</i> Tuckeroo	T	<i>Acmena smithii</i> (minor) Creek Lilly Pilly	Small T	<i>Lophostemon suaveolens</i> Swamp Turpentine	T	<i>Eucalyptus tereticornis</i> Forest Red Gum	T	<i>Toona ciliata</i> Red Cedar	T	<i>Tristaniopsis laurina</i> Water Gum	T
<i>Elaeocarpus obovatus</i> Hard Quandong	T	<i>Alectryon subcinereus</i> Wild Quince	T	<i>Mallotus discolor</i> Yellow Kamala	Small T	<i>Elaeocarpus grandis</i> Blue Quandong	T	Zones B & F - Brackish & Freshwater		<i>Waterhousea floribunda</i> Weeping Myrtle	T
<i>E. tereticornis</i> Forest Red Gum	T	<i>Aphananthe philippinensis</i> Rough Leaved Elm	Small T	<i>Mallotus philippensis</i> Red Kamala	Small T	<i>Endiandra sieberi</i> Hard Corkwood	T	Common Vines			
<i>Glochidion ferdinandi</i> Cheese Tree	T	<i>Backhousia myrtifolia</i> Grey Myrtle	Small T	<i>Melaleuca linariifolia</i> Snow in Summer	Small T			<i>Derris involuta</i> Native Derris	V		
<i>Guioa semiglauca</i> Guioa	T	<i>Baeckea virgata</i> Twiggy Baeckea	Small T	<i>Melaleuca stypheliodes</i> Prickly Paperbark	T			<i>Eustrephus latifolius</i> Wombat Berry	V		
<i>Hibiscus tiliaceus</i> Cottonwood Hibiscus	T	<i>Breynia oblongifolia</i> Breynia	S	<i>Melaleuca stypheliodes</i> Prickly Paperbark	T			<i>Flagelaria indica</i> Whip Vine	V		
<i>Melaleuca quinquenervia</i> Broad-leaved Paperbark	T	<i>Cupaniopsis anacardiodes</i> Tuckeroo	T	<i>Mischocarpus pyramidalis</i> Yellow Pear-fruit	T						
<i>Myoporum acuminatum</i> Mangrove Boobialla	T	<i>Cupaniopsis parvifolia</i> Small-leaved Tuckeroo	T	<i>Oplismenus aemulus</i> & <i>O.imbecillis</i> Basket Grasses	G						

The plant species guide represents many of the known species occurring on the mid-lower Clarence River. These species do not occur exclusively in these zones but they occur most commonly there.

LEGEND		
Zone S - Saline	R	Rush
Zone B - Brackish	LR	Littoral Rainforest
Zone B & F	V	Vine
Zone F - Freshwater	GC	Groundcover
T	G	Plants listed in zones B and F may also be found along tidally influenced freshwater creeks and rivers that flow into the Clarence.
S	HB	

References and Resources

Books

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Denis Cox, Glenn Leiper, and Jan Glazebrook, *Mangroves to Mountains: A Field Guide to the Native Plants of South-East Queensland*

Websites

PlantNET National Herbarium of NSW Flora Online at <http://plantnet.rbgsyd.nsw.gov.au/>

CRC for Australian Weed Management at www.weedsrc.org.au

Weeds Australia at www.weeds.org.au

Useful local contacts

Clarence Landcare Inc.
www.clarencelandcare.com.au
Phone: 02 6643 5009

Clarence Valley Council
www.clarence.nsw.gov.au
Phone: 02 6643 0200 (general enquiries)

Please seek advice for your specific location. This is a general guide so not all species listed are suitable for every location in the Clarence.

Acknowledgement

The Caring for Catchments project aims to improve catchment health, build flood resilience and enhance biodiversity through riparian revegetation and reforestation across 4 catchments in the Northern Rivers NSW from 2024-2028. For further information visit www.northcoastlandcare.org.au/caring-for-catchments/