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## RIPARIAN REVEGETATION & RESTORATION

The ultimate aim of riparian revegetation is to ensure the stability and functional integrity of waterways.  
1. Riparian vegetation will:

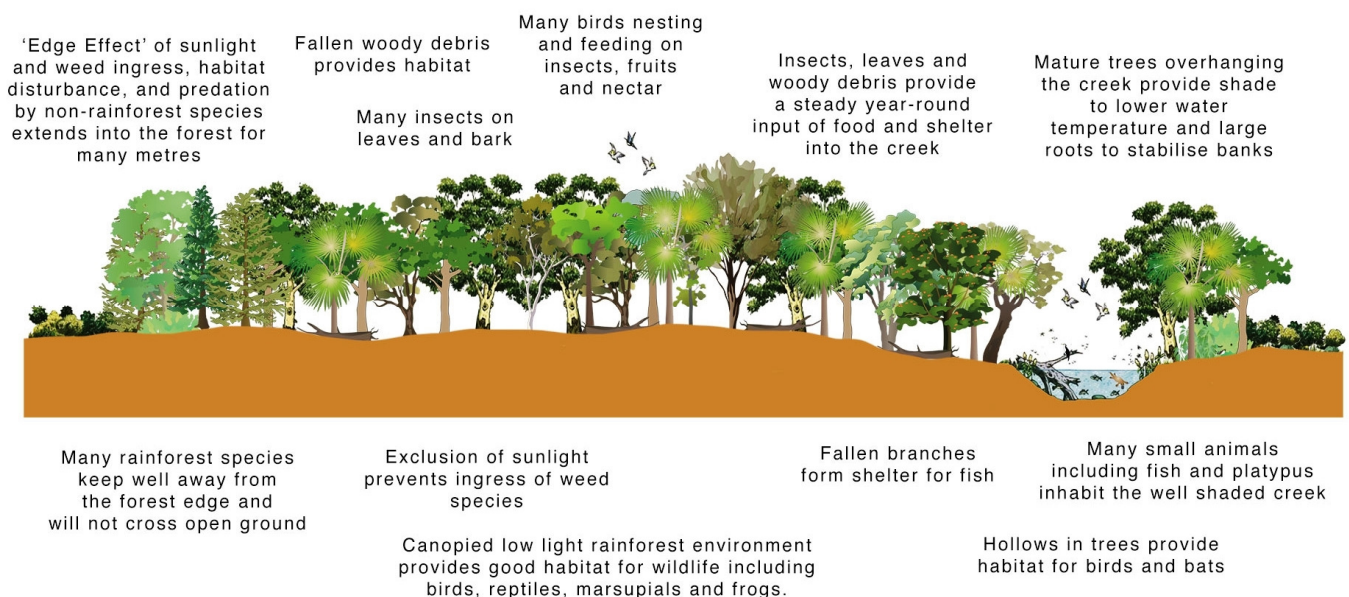
- Provide bank stabilization to prevent erosion and reduce sediment inputs into our waterways and the Great Barrier Reef.
- Provide shade in waterways to help prevent toxic algal blooms through regulating instream primary production and providing instream aquatic habitats for fish and other life forms.
- Provide shading, which prevents invasion of exotic weed species such as Para Grass & Guinea Grass
- Help reduce water flow rates during flood periods. Reduced flood water rates helps minimise soil loss from overland flow and damage to infrastructure and crops.

2. Suitable local plant species that are specially adapted to cope with flood periods and increased water flow rates must be used in riparian revegetation plantings.

3. Site preparation and planting of riparian revegetation projects in waterways which flood annually must be timed appropriately. Most on-ground works should be delayed till the likelihood of flood events has passed.

4. It is best to undertake revegetation working out from patches of existing remnant vegetation. Build upon what already exists. This helps with natural plant recruitment and seeds do not have far to travel to reach fertile ground.

### Riparian vegetation providing connectivity along waterways linking one area to another, improving water quality, preventing erosion and providing habitat.



## SITE PREPARATION

Good **site preparation** is important for successful plant establishment. It can make the job easier and reduce the amount of maintenance needed after planting.

- Choose a good vantage point of the entire site, drive in a star picket and take a photo and record the date. This is your photo point for monitoring your progress over time. Revisit this photo point regularly throughout your project– your photos will demonstrate your efforts & keep you motivated.
- Site preparation involves the removal/eradication of woody and herbaceous weeds, grasses and any declared pest plants.
- Livestock need to be excluded from the site. Site preparation includes the erection of exclusion fencing where the property is used for grazing or where it is important to keep domestic animals away from the area.
- Herbicides used to treat weeds should be those that have the least impact on the environment. In most cases a Glyphosate based herbicide is suitable. The 'frog friendly' Bioactive must be used for weed eradication in areas adjacent to waterways and wetlands unless there is a specific label or off-label permit available. Those herbicides that have residual effects should not be used unless they are an approved herbicide that is to be used specifically on a declared pest species. One option is to spray a 2m circle for every plant (or blanket mulch thickly) a month prior to planting in order to kill off grass & other groundcover weeds in order to reduce root competition in the early stages of plant establishment.
- Specific chemicals or biological controls used to treat individual problem weed species (such as Thunbergia, Rubber vine or Cats Claw creeper sp) should be used if available & necessary. All chemicals are to be used at the recommended rate according to the manufacturer's directions or a specific off-label permit.
- Site preparation should involve two applications of herbicide commencing approximately two months prior to planting. The second herbicide application (approximately one month after the first) ensures that any areas missed in the first application are treated.
- The installation of erosion and sediment control measures should be undertaken as part of the site preparation process. This may include the installation of erosion control mats, organic mulch, silt traps and fences and hay bale barriers.
- If you are using organic mulch, it is recommended that 200mm depth of mulch be installed initially– with the mulch installation timed to be well before the wet season.

**Below: Site preparation at weed infested sites with very little remnant vegetation.**  
*Photos: Whitsunday Catchment Landcare*



## PLANTING FOR EROSION CONTROL

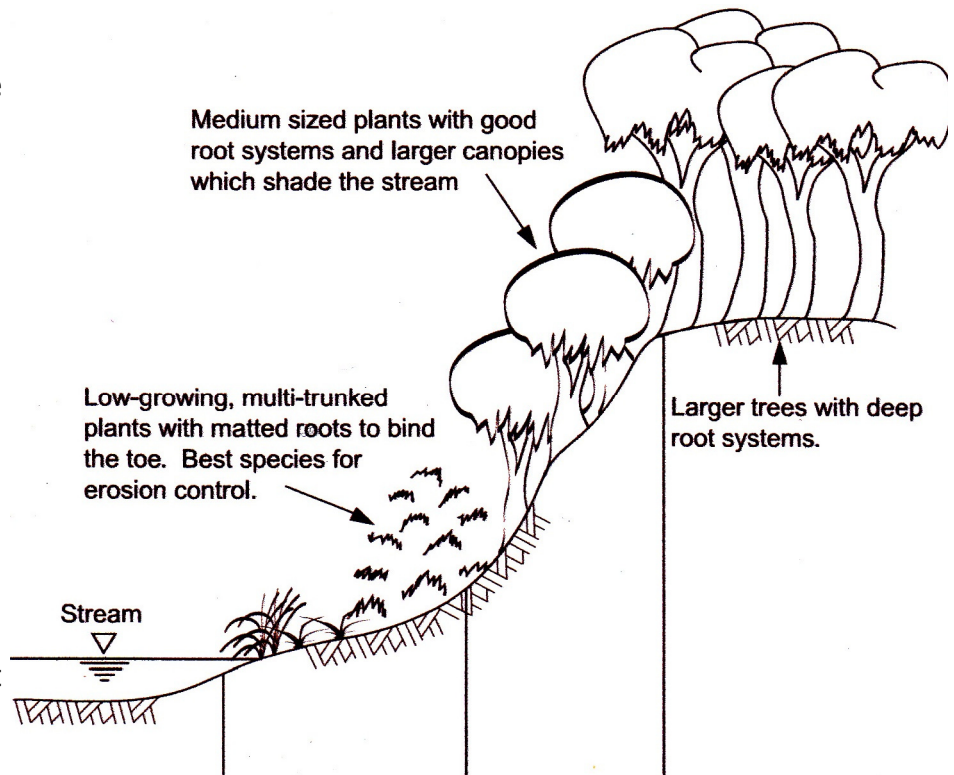
Whilst the key objective of waterway rehabilitation projects is to establish a mixture of vegetation forms i.e. ground covers, climbers, shrubs and trees to give maximum structural diversity, this is not always achievable in flood sensitive locations. In general, planting schemes should be kept simple with a view to establishing ground cover/herb layer and a dense tree canopy.

Depending on erosion type, different strategies for prevention are applicable:

1. **Mass failure/slumping** – use deep rooted species ( trees in particular) as they are more capable of reinforcing banks against mass failure.
2. **Scour** – vegetation on the bank face can reduce scour by both strengthening the bank and providing a physical shield. Vegetation can also create backwaters that slow the flow against the bank face. Understory species such as grasses, sedges, low shrubs are particularly effective in reducing scour.
3. **Rain splash, rill erosion, crumbling**– All types of vegetation can be used to help reduce these forms of erosion

A riparian planting can reduce flow velocities, directly reinforce river banks and intercept and slow surface runoff. Some basic principles to be remembered when understanding riparian vegetation are:

- Successful bank stabilising tree species, have root systems that can withstand exposure without drying out and capable of forming a dense mat cover over the creek bank as a physical erosion barrier. The roots must also be long enough to pass below the level of active bank erosion. The roots of most riparian species typically develop a central root ball that is about 5 times the diameter of the trunk. Root densities decline rapidly beyond the root ball. Typically there are few roots extending beyond the canopy drip line or deeper than 2mtres under the stream bank surface. The extent of root reinforcement may be further limited by high water tables and or heavy textured sediments and soils. Useful species include– *Melaleuca* sp. *Casuarina* sp. *Acmena* or *Syzygium* Sps.



**Above:** Stylised cross section of vegetation types & recommended planting layout.

- Many ground covers will not grow below the low-flow water line. Sedges, rushes and reeds however can grow on the margins of water, offering stability. Generally, they will not survive for long periods in water that is more than 0.5m deep. They flourish in low velocity flows but will withstand short periods of inundation and even high velocity floods. Herbaceous species can provide erosion protection by forming matt-like roots systems that physically cover creek banks. Plants like Matt Rush (*Lomandra* sp.) grows in clumps and has a dense branching rhizome system which acts as a soil binder and promotes soil stability. Hardy in both sun & shade it can be planted at the mean water line on the steepest parts of the banks and on mid slopes. Rushes (*Juncus* sp.) and Sedges (*Carex* sp.) are most useful in streams that change height quickly and/or have a wide range of continuous flows, so that most of the marginal vegetation is not submerged for long periods.
- It is usual to establish some groundcover on an creek bank even though it may be susceptible to trampling and grazing pressure. Although the roots of grasses are seen at depths of over a metre on exposed stream bank profiles, the bank reinforcement is low. However grasses do play a key role in reducing surface erosion which contributes fine soil particles to waterways. There are some very hardy native grasses that play an important role in riparian revegetation. **Qld Blue Couch, Sea couch**
- The width of riparian planting to provide bank stability will depend on a range of factors. A general rule is a planting should extend 5 metres back from the crest of the bank and then a metre for

## PLANT QUALITY.

- Plants should be sun hardened and receiving reduced watering prior to planting. Ask your plant supplier to implement the hardening & reduced watering prior to collecting your plants from the nursery.
- All plants used in the proposed tree planting should be locally endemic and species should be selected on their suitability to site conditions and their value to local fauna. No exotic plants, declared pest plants or plants not local to the local vegetation community should be planted in rehabilitation and revegetation projects.
- Plants sourced should be grown from seed collected from a local provenance. Some local Landcare Groups have plant nurseries that stock plants grown from locally collected seed of appropriate provenance. Landcare encourages you to consult with these Landcare nurseries when sourcing plants.
- OPTIONAL– Depending on the soil conditions, you may want to use slow release fertiliser. Fertilising will increase the growth rate of the plants but not necessarily their ability to cope with extreme conditions or reduction in the maintenance period.
- Invite your local Landcare Group to help. Landcare has a pool of volunteers that may be able to help.

**Below:** Revegetation site- just planted and being irrigated.  
Photo: Whitsunday Catchment Landcare



**Below:** Landcare volunteers planting tube stock. Many hands make light work.  
Photo: Whitsunday Catchment Landcare



**Right:**  
Another revegetation site a few months after planting  
Photo: Whitsunday Catchment Landcare

