

RIPARIAN PLANTING - WHAT IS IT ALL ABOUT?

New Zealand - a brief history

New Zealand was first sighted by Dutch explorer Able Tasman in 1642. Over 100 years later in 1769 Captain Cook sighted and continued to extensively explore and map New Zealand and claimed the country for Britain.

As of 1840, at the signing of the Treaty of Waitangi there were only about 2000 white people living in New Zealand, from this point an influx of immigrants from Britain, Australia and other countries started settling the land.

Today, just over 175 years later New Zealand is a very different scene to what it was then. Two key facts state that only 25% of New Zealand's native forest remain (mainly on the west coasts of the South Island) and secondly around 95% of the natural wetlands throughout the country have been drained and cleared. Wetlands are a critical component in filtering and removing sediments and other pollutants in the waterways.

New Zealand's waterways - so what is the problem now?

With the major deforestation and increased industrialization and agriculture intensity, major problems have been caused to our lowland waterways, this comes in the form of three main factors; Sediment being washing into waterways, Nutrients from animal urine and fertilizers seeping into waterways and bacteria (E. coli) from livestock excrement entering waterways.

Sediment - This has probably caused the greatest damage to the waterways in New Zealand. Fine sediments from the deforestation and the barren landscape washes into waterways during the event of rain, sediments contaminate the river and eventually create a mat over the riverbed cutting off life in the stream environment. Sediments take many years to make their way into rivers and many years to clean out, sediment pollution problems our rivers face today could date back to activity from 100 years or more ago. The key focus today is to prevent any further excess sediments entering the waterways.

Nutrients - Excessive nitrogen and phosphorus from fertilizers and cow urine are also a key contributor to low quality waterways. Nutrients wash, leech or are directly injected into unfenced and unprotected waterways, from here the excess nutrients in the waterway causes algae to grow faster than the ecosystem can handle. Large growths of algae are called algal blooms which suck large amounts of oxygen from the water, these occurrences can result in oxygen levels in the river being decreased to the point where fish and other life cannot survive. The algae itself can also be directly toxic and harmful to humans.

Bacteria - Bacteria, in particular E. Coli (Escherichia Coli) comes from the faeces of livestock. E. Coli is in fact a broad term for a bacteria found in humans helpful for preventing the growth of harmful bacteria within the intestines. Some strains such as E. coli O157:H7 which is often associated with food poisoning can be very harmful to humans. E. coli bacteria have become a major factor in causing New Zealand Rivers to become dangerous to swim in. Again runoff and stock having direct access to waterways is the main contributor to this problem.

How does riparian planting help fix the problem?

Riparian zones means the interface between land and a river or stream, or in plain language 'river bank'. This zone is a critical area and ideally needs to be a buffer to filter, slow down/stop, dissipate and use, nutrients, sediments and bacteria before they reach the waterway.

Firstly a riparian zone needs to be fenced off to stop animals have direct access to the waterway. A plain grass riparian zone is better than nothing but the addition of correct planting greatly increases filtration and absorption, and also offers many other benefits like shade over the waterway in summer which is important to river life, bank stability and erosion control, home to birds and food source for fish and aesthetic appeal to name a few.

Diary NZ regulation means farmers must fence off all waterways on their land and it is believed that 96% have done so, the opportunity exists to create beautiful avenues of native planting along our waterways within these fenced riparian zones. No such fencing regulations are in place for sheep and beef farmers although many of these farmers are creating excellent riparian zones as they see the benefits not only for the environment but also for the landowners themselves.

How do I do a riparian zone that will benefit the waterway and add value to my land?

A riparian zone should be between 3-10m depending on the slope of the ground, soil conditions and the flood flows of the stream.

The area should be suitably fenced off and then the existing grass or vegetation sprayed off prior to planting. Planting should typically be approached in 2 zones as per the diagram below, and include a 1m grass strip inside the fence. One factor to bear in mind is access to the waterway, areas along the waterway can be planted out in grasses only, or alternatively one entire side of the bank can be planted out in grasses only. It is always ideal if the north bank can include higher plants and trees to create shade over the water in the summer. Shade has a big impact on reducing waterweed growth and keeping the water cool in summer which is essential to fish and insect health and habitat.

Riverside Horticulture can offer a comprehensive consultation and design service for your riparian planting project and can carry out the complete project including planting and maintenance. One of our riparian planting experts will visit your property and talk through how we can create the ideal riparian planting strip for your unique situation. From here we can put together a comprehensive design layout for wetland filtration systems and other complicated bio filter projects, or offer verbal advice and assistance on simple planting projects.

Correctly planted riparian zones create an excellent filtration system from the runoff from the land to maintain the purity of the water, they create a great habitat for bird and water life while adding native beauty and value to the landscape.

Riparian Planting Diagram

Zone 1 - wet / regularly flood effected area

Carex secta - waters edge
Carex virgata - waters edge

Phormium cookianum spp - upper zone 1
Hebe salicifolia - upper zone 1
Coprosma spp - upper zone 1
Astelia spp - upper zone 1

Zone 2 - upper bank zone

Ribbonwood
Cabbage tree
Coprosma spp
Pittosporum
Austroderia richardii
Phormium tenax



On wetlands, plants such as *Juncus* species and *Eleocharis acuta* can be planted into the edge through the water body itself, to increase nutrient absorption and reduce weed growth.

