The Co-operative Difference

Fonterra Dairy for life

Wetland Restoration in Taranaki

Why are wetlands important?

Wetlands are strongholds of biodiversity and healthy wetlands are rich in flora and fauna. Most wetland species can only live in wetlands, so are very reliant on wetland habitats for survival. Wetlands also perform important functions called ecosystem services. Although wetlands cover only 1.5% of the Earth's surface, they provide a huge 40% of global ecosystem services.

Three important ecosystem services for our local communities are:

- filtration of pollutants from water passing through wetlands
- storage of surface runoff which reduces the height and velocity of floodwaters
- some wetlands can act as a sink for carbon which helps in regulating the effects of climate change

Wetlands also have important cultural values for both Māori and western cultures.

What is the state of wetlands in Taranaki?

In the Taranaki region, approximately only 8.4% of the original wetland area remains. In many cases, the condition of the region's remaining wetlands is still declining due to impacts from surrounding land use. It is therefore important to protect the areas of wetland that remain to prevent further loss of wetland habitat. In addition, providing a dryland vegetation buffer around wetlands improves ecosystem intactness, enhances the biodiversity values of wetlands, and reduces the impact of surrounding land use on wetland condition.

PHOTO 1: CONSTRUCTED MUDFISH PONDS AT RAWHITIROA WETLAND RESTORATION PROJECT

How can I protect and restore wetlands on my farm?

There are lots of opportunities for protecting and restoring wetlands on farms. Depending on what type of wetland habitat(s) you have on your farm, you may be able to undertake some of the following:

1. Fencing and enhancement planting of wetlands that already have good areas of native vegetation.
2. Fencing and enhancement planting of degraded wetlands (wet, boggy, areas in paddocks)
3. Building a constructed wetland

However, it's really important to make sure that any planting or digger work won't have unintended consequences for the wetland and/or connected waterways you are trying to restore. If you have an existing wetland that provides habitat for specific native species, make sure that any enhancement planting will be complimentary. Seek advice from local experts such as the Environment Services team at Taranaki Regional Council (TRC).

If you are looking at doing any digger work in or near an existing wetland, or thinking about constructing a wetland, make sure you talk to TRC staff first to ensure that the proposed work is within permitted activity rules.

Planting techniques

Getting plants established in a wetland environment is not always easy. Some general principles that are good to follow include:

1. Prepare the site well for planting – control any pest plants that are present to reduce competition with native seedlings.
2. Pre-plant spot spraying can be used for dry bank areas, but don't spray over wet areas or water as herbicides are highly toxic to aquatic organisms.
3. Plant at the right time of year – winter is best in mild climates, but planting may need to be delayed in frost prone areas or if the water level is too deep in winter.
4. Ensure seedlings have been hardened off before planting so they can adapt to a more exposed environment outside the nursery.
5. Use succession planting – plant hardy colonising species first as a 'nursery crop', then add in secondary species once some shelter has been established.
6. Protect plants from pests and climatic conditions – there are a variety of plant protectors commercially available, or you can make your own out of feed sacks and use cardboard or carpet for weedmat.
7. Plant in stages – if you have a large area to plant, break it down into smaller sections to make it more manageable.

PHOTO 2: LAKE CLUB RUSH SEEDLINGS THAT HAVE BEEN PROTECTED WITH PLANT GUARDS

Planting sedge/reed species

- In a natural environment, sedges and reeds tend to grow in a large swathe of each species. Planting sedges in clusters of the same species will mimic this. For taller, reedy sedges like lake club rush, plant at close spacings e.g. 30-50cm to get faster canopy coverage.
- If planting into shallow water, prepare the seedlings first by standing them in a tub of water for a few weeks so they can adjust to having their roots submerged before planting.
- Another method that can be used for planting in ponds is to plant seedlings in straw bales and sit the bales in the water. The bales will need to be anchored to stop them floating or rolling over. Another technique that has been trialed is making rafts out of raupō stems and putting sedge plants into the rafts to create floating islands.
- Pūkeko love to pull out young seedlings, especially reeds! Putting guards around newly planted seedlings is vital to ensure they get a chance to get established. It should be ok to remove the guards after about six months (see photo above). Pūkeko may still break off some stems, but they won't be able to pull the plants out of the ground.

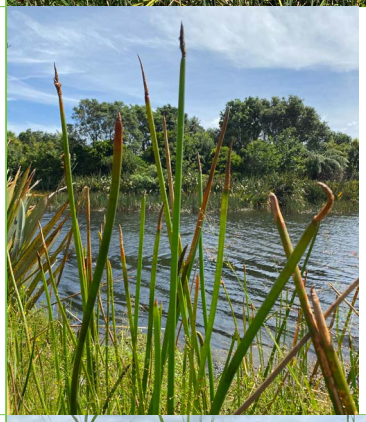
Planting wetland trees

- The three native wetland trees, kahikatea, pukatea, and swamp maire don't cope well planted out in the open. They require shelter to get established. If you have some existing wetland vegetation, this can provide a great place to plant a stand of wetland forest species.
- If starting with a bare area, use hardy plants such as flax, mānuka, karamū, *Coprosma tenuicaulis*, māhoe, and cabbage tree to create some shelter. Interplant with kahikatea and pukatea once the initial plantings are established. Swamp maire needs quite a lot of shelter, so may need to be planted further down the track.

Native sedges and other monocots for wetland planting

The following species are commonly used for wetland restoration planting and are usually available through native plant nurseries. Plant material grown from locally sourced seed should be used where possible. For further information on these and other species, visit the New Zealand Plant Conservation Network website https://www.nzpcn.org.nz/.

Species suited to standing water (~30cm depth)

Māori and common name	Latin name	Notes	
jointed twig rush	*Machaerina articulata*	• Grows up to 2m tall. • Coastal to lowland areas, up to 380m a.s.l. • Not common in Taranaki. In other parts of the N.I. is commonly found around the margins of lakes, ponds, and streams.	
kuawa, lake club rush	*Schoenoplectus tabernaemontani*	• Grows up to 3m tall. • Coastal to montane areas, up to 300m a.s.l • Fairly common in coastal wetlands in Taranaki, often found around lake margins. • Māori traditionally used the stems to make woven mats, baskets, whitebait scoop nets, and kete (containers).	
kutakuta, bamboo spike sedge	*Eleocharis sphacelata*	• Grows up to 1.2m tall. • Coastal to lower montane areas, but mostly lowland. • Fairly common in wetlands in northern Taranaki and some dune lakes around Waverley. Found around pond and lake margins. • The soft, hollow stems of kuta were woven by Māori to make hats, mats, and kete.	
raupō, bullrush	*Typha orientalis*	• Grows up to 3m tall. • Coastal to lowland areas. Common in Taranaki in wetlands, slow flowing steams, and on the margins of ponds and lakes. • Prefers fertile sites. • Can grow quite prolifically and tends to take over and dominate.	

Species suited to boggy ground and intermittent shallow ponding

Māori and common name	Latin name	Notes	
pūrei	*Carex secta*	• Grows up to 1.5m tall. • Coastal to montane. Widespread in wetland habitats, particularly swamps. Often found around the margins of lakes and ponds. • Mature plants form a trunk like base. • Distinguished from *C. virgata* by its branched, drooping seedhead.	
pukio, swamp sedge	*Carex virgata*	• Grows up to 1.2m tall. • Coastal to montane, up to 1000m a.s.l. • Widespread in swampy conditions, also found in damp sites within lowland forest. • Distinguished from *C. secta* by its stiff, upright seedhead.	
sharp spike sedge	*Eleocharis acuta*	• Grows up to 0.9m tall. • Coastal to montane. • Common in open to partially shaded permanently damp ground. Usually in swamps, and on stream, river, pond, and lake margins. Sometimes present in seepages within pasture. • Tolerant of lower fertility sites.	
giant umbrella sedge	*Cyperus ustulatus*	• Grows up to 2m tall. • Coastal to lowland sites in open ground. • Tolerant of a wide range of habitats and conditions. Prefers wetland margins, seepages, streamsides, lagoon and estuary margins. • Common in coastal parts of Taranaki	

Species suited to boggy ground and intermittent shallow ponding cont.

Māori and common name	Latin name	Notes	
harakeke, flax	*Phormium tenax*	• Grows around 1-5m tall. • Common from lowland and coastal areas to montane forest. • Found in wetlands and along slow flowing streams. • Needs plenty of room as plants get quite large, plant well away from fences. • The flowers are a good source of nectar for both birds and insects. • Leaf strips are used to make kete, mats, and piupiu (flax skirts). Extracted fiber (muka) is used to make traditional kākahu (cloaks) and cordage. • provides excellent habitat for goldstripe gecko