Trialling ways to manage Southland's hill country erosion

Environment Southland's senior land sustainability officer, Keith Finlayson, is passionate about protecting the land. With the help of funding from the Ministry of Primary Industries Hill Country Erosion Programme and support from landowners, Keith has led a one-year project aiming to understand the best methods for managing erosion on Southland's hill country.

"People may not think Southland has much of a problem when it comes to hill country erosion – we're more known for our low-lying flat land and cohesive soils, but space planting still has an important role in Southland," Keith explains.

"We have issues with sediment in our rivers, and some of that has come from hill erosion."

With $150,000 in funding, Environment Southland has created a strategy (Manaaki Whenua) and implementation plan (Rural Consulting Limited) to address erosion in Southland.

"We found a lot of knowledge on erosion management methods had left the organisation with previous staff members, so we also undertook staff training in land use capability, forestry, and Te Ao Māori principles."
The final part of the project was to trial hill country erosion mitigations with landowners from the Orauea River Catchment Group (pronounced Or-ra-wea), including creating some useful community resources like videos and a booklet.

Orauea is a small catchment in the Waiau area. An important issue affecting it is the presence of a significant amount of mudstone rock, which is highly unusual for Southland.

This catchment was chosen for the trial because of its known erosion risk. Erosion can also contribute to higher phosphorus and microbial losses, which are attached to sediment particles lost from erosion.

The project got underway with Keith and the Environment Southland team hosting a workshop with landowners, during which they discussed the mitigation options—pole planting, stock exclusion, detainment bunds, and native planting in retired areas.

This was followed up with site visits and a report was provided to the landowners with a recommended option, cost and timeframes outlined.

The team explored three different methods of mitigation at five properties. They are land retirement and native planting, pole planting for a landslip and space planting on a slumping hillside.

This pilot will contribute to a new cost-share programme to encourage pole planting and other hill country erosion mitigation measures in Southland.

Land management officer ramming around the base of the pole to ensure firm footing.

Poles soaking in a creek for 7 days prior to planting.

The project delivered:

- Three different methods of mitigation on five properties.
- Over 1000 natives were planted on three different farms - an average of 10-12 plants per person per hour (large plants), and the cost was $6.77 (GST incl) per PB2 plant. This included flax, toetoe, carex secta, hebe salicfolia and cabbage trees.
- Over five days, we planted 745 poles - averaged seven poles per person per hour across the project and cost $11.50 (GST included) per pole. We planted tangoio willow with some poplar nigra, mainly because of availability.
- Over 180m of fence were constructed, and another 200m will be completed in Spring 2024.

Planting 450 natives and 200 metres of retirement fencing over a 2500m2 area.

"We had great engagement from the Orauea landowners – really the number one most important thing for success.

It's great to build up our knowledge and work on a project that will make meaningful improvement to soil health and water quality. We'll be able to take learnings from this to other locations that are at high risk of erosion."

Key Learnings

- Delivering a pilot within the timeframe requires careful planning and clear communication with all involved.

- Increased levels of support for landowners to participate and deliver aspects themselves would have made this pilot even more successful.

- Mother nature will have her say – we almost lost some poles to flooding while soaking in a creek.

- It's important how you handle the poles—keep them damp, soak them immediately, and plant them shortly after. Avoid damaging the bark.

- The size of the poles makes a difference to logistics. Due to the varying size of our poles we could get 205 on a single axle trailer. Larger A grade poles with 45mm small end diameter would halve this.

- Planting timeframes took longer than anticipated and it was hard physical labour. We could manage 4-5 hours of planting each day for five days.

- Keeping track of pole numbers requires diligent attention to detail with good systems. Our bundles were 10, 15, 20 +/- 2 depending on size.

- A helpful piece of kit - A specially made pole bar with dimensions to help ensure planting depth.

- Walk the area to get a really good feel for the size. Areas of erosion are always larger than they look initially, which becomes obvious when walking through the area.

Thanks to MPI for the project funding, Environment Canterbury, Horizons Regional Council, and Greater Wellington Regional Council for the helpful advice and pole bar dimensions that got us going, and to Louise Askin at MPI for her assistance throughout the project.

Space planting 200 tangoio willow poles on two hectares including an active slip.