Environment Canterbury Weed Control Summary 2022-2023

Upper Waimakariri

Fig 1: Crack willow trees in the Cora Lyn wetland spring system.

Introduction

This report is to summarise Environment Cantebury's weed control operational work in the Upper Waimakariri Basin for the financial year June 2022 – June 2023. This report will also include the in-kind work we have been involved in. Environment Canterbury was able to deliver on $ 150,037.08 GST exclusive of operational funding in this catchment.

All of the weed work that we complete in this catchment is informed by the Upper Waimakariri River Weed Control Strategy (Boffa Miskell Limited, 2022).

Sycamore Control

$30,037.08 (GST exclusive)

Fig 2: Sycamore along the edge of Lake Pearson, completely displacing grey scrub.

Priority 8 of the strategy was to control sycamore. Sycamore, *Acer pseudoplatanus* is a weed tree in New Zealand as it has the ability to form dense stands and is shade tolerant which allows it to outcompete and displace native vegetation. The species has a high spread vector due to its helicopter type seeds which allow it to disperse over large distances by wind, but it can also be spread by water and gravity.

The target species has been selected due to the high risk to biodiversity and not being a pest species managed under the Canterbury Regional Pest Management Plan 2018-2038 (Environment Canterbury, 2018). The risk is that biosecurity will not be controlling/monitoring these weeds in the upper catchment and without a strategic and aligned approach there will be prolific spread and dominance of these species in the Upper Waimakariri Catchment.

Sycamore is currently not abundant in the Upper Waimakariri catchment, its only populations are contained to the Pearson management unit and has been identified as a species that would benefit from control and eradication from the catchment (Boffa Miskell Limited, 2022). Sycamore is an issue as it is already well established in the riparian margins surrounding Lake Pearson. It has started to spread south to southwest throughout the native scrub (Composing of mostly manuka and matagouri) and is threatening the margins of existing native beech forest opposite the Flock Hill Homestead.

Control Methodology

Drone Survey

An Unmanned Aviation Vehicle (UAV) was used to locate sycamore infestations on farmland prior to commencement of control operations. Data collected was used to plan for more efficient ground control, so that a greater number and area of sycamore could be controlled cost-effectively. This was particularly useful for the Eastern slopes of Mt Manson where sycamore was persistent amongst the grey scrub which would have been particularly hard to find.

Fig 3: GPS waypoints from the drone survey.

Weed Control

Ten days of sycamore control was to be focussed initially on plants within the farmland. Once this had been completed, control was then to be undertaken alongside the edge of Lake Pearson. A second round of funding then enabled work to continue along the edges of Lake Pearson. All mature trees and larger juveniles were drilled, and holes were filled with herbicide. Smaller trees and seedlings were controlled by either cutting the stem at ground level and pasting the stump with herbicide, or hand pulling. Other pest tree species (elder, hawthorn, cherry laurel, and pine) were controlled as they were found when travelling to the sycamore infestations. Other pest plant species present in the control area - such as crack willow (*Salix xfragilis*), sweet briar (*Rosa rubiginosa*), broom (*Cytisus scoparius*), and blackberry - were not controlled.

Fig 4: Control line data.

Summary

It was good to make a start on the sycamore at Lake Pearson, however, follow up control is needed to eradicate sycamore from this catchment. Control works with Environment Canterbury budget will focus on continuing control along the lake edge and near the flock hill entrance especially where sycamore spread is threatening the beech forest. Further control will also focus on mature seeding trees at Grasmere lodge.

Holly Control

$20,000.00 (GST exclusive)

Fig 5: Holly under beech canopy on the true left of the Cass River.

Priority 12 of the Strategy (UWWS) was to progressively contain holly from within the Pearson Management Unit to prevent further spread into the beech forest of the Cass River catchment. European holly (*Ilex aquifolium*) is an invasive plant that is large and long lived. This species can invade and displace native vegetation forming large dense stands. It is bird spread and a prolific spreader which makes management very difficult. The holly has spread from the Grasmere homestead and Romulus Hill where there is a large infestation and is now beneath the canopy of the native beech forest in the Craigieburn Forest Park, on the margins of the Cass River and adjacent land on Cora Lynn Station. It was described in the UWWS as an 'emerging issue' and if left poses a serious threat to the landscape and vegetation within the Upper Waimakariri basin and the other species which are dependent on this habitat (Boffa Miskell Limited, 2022). Rowan, cotoneaster, wilding pines, and grey willow were also identified within this area and were controlled as part of this work.

Priority 15 of the strategy was also addressed as part of this work as the contractors eradicated the only two known grey willow trees in river gravels above Grasmere Station.

Control Methodology

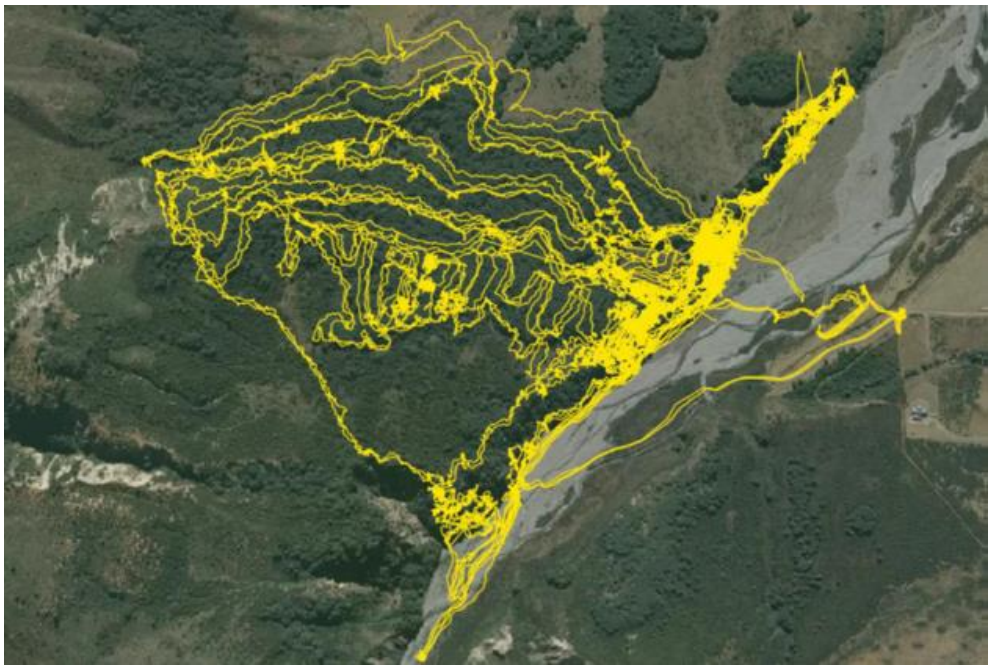
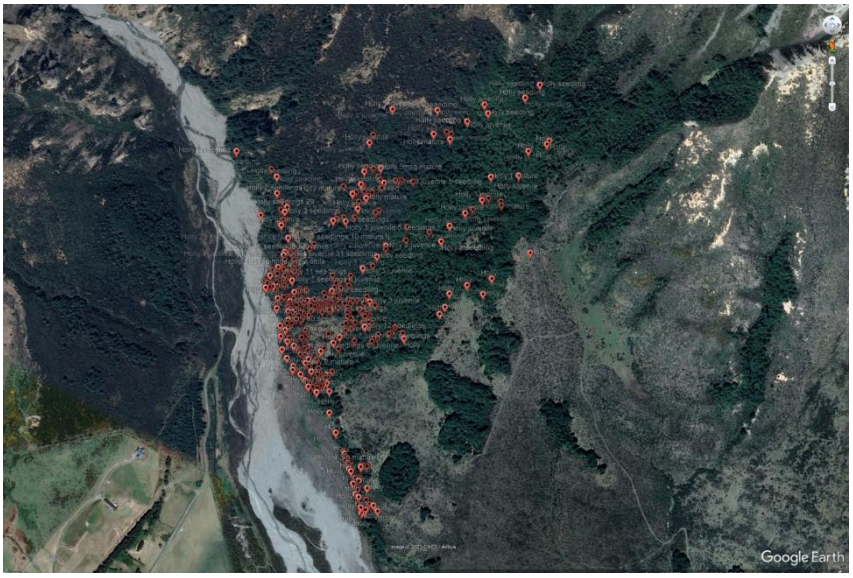


Fig 6: (left) GPS tracks throughout the DOC PCL land.

Fig 7: (below) Holly controlled waypoints from works this year.

Significant amounts of holly were found in this area, particularly on the steep slopes running up from the true left of the river as well as the edge of the plateau closest to the slopes running down to the river. It was not practical to remove these from site, as per the scope, so we came up with a solution to safely leave cut material on site with minimal risk of it re-rooting. These were controlled with a combination of hand pulling the smaller seedlings, cutting, and pasting larger plants with Grazon stump mix at a rate of 60ml per 1L and chain sawing the largest trees and pasting with Grazon stump mix at a rate of 60ml per 1L.



As holly has the ability to re root from cut fragments to mitigate this the contractors gathered wind fell beech branches to form 'platforms' to then pile the cut material on to this provided a gap between the soil and the cut and pasted holly. Alternatively, contractors suspended cut or pulled holly in tree branches.

Grey willow trees *(Salix cinerea)* were controlled with a combination of drilling and filling with Polaris Glyphosate 360 concentrate and frilling and pasting with Weed Weapon glyphosate gel at a rate of 100g per 250ml.

Summary

Beginning this work was a great start to what needs to be done in this catchment. The following is the recommendation from the contractors.

A team of two people for 3 days will allow for the remaining dense pockets of juvenile and seedling holly that are accessible on the main slope and edge of the plateau to be fully controlled.
Initial search: A search of the manuka forest and steep slopes is recommended within the next 6 months. This search would take two people approximately 5 days. This would leave time to control anything found during those searches.
Ropes access will be required for search/control in the ravines and on the steeper slopes. A separate proposal will be submitted shortly with pricings for this work.
Follow up: A follow up visit on the initial control is recommended in approximately 6-9 month's time. This includes another full search of the mapped area. This would take two people 10 days.
Further follow ups can then be carried out every 12 months.

This will be the priority will be to continue in the next 12 months the follow up and further searches above in the PCL and Cora Lynn freehold parcel. We will also continue control that is already occurring at the source of the population, Romulus Hill.

Cora Lynn Wetland Restoration

Willow control has been implemented to restore a 26ha spring fed wetland within the Upper Waimakariri braid plain. The site is located downstream of Bealey Spur on DOC, LINZ, and Cora Lynn Station land tenure. **Priority 24** in the UWWS was progressive containment of willow species in the main stem of the Waimakariri, which includes this site. The encroachment of crack willow (*Salix x fragilis*) into this wetland has reduced the extent and diversity of the wetland ecosystem and reduced habitat for indigenous fauna. Crack willow spreads by fragments and is moved by water and wind.

Figure 8: Willows invading the large spring fed wetland system at Cora Lynn

Methodology

Contractors used best practice drill and fill methods to control the willow. This involves drilling around the base of the tree holes about an inch deep every 10cm, and then filling these holes with 50/50 lion 490 glyphosate/water mix.

Contractors worked to the specifications of a wetland restoration plan developed by ECAN. This detailed site values, methodology and control priorities. ECAN also installed 3 photo points and 3 permanent wetland vegetation monitoring plots to show changes to the vegetation community following control of willow.

Summary

ECAN contributed $100,000.00 over the 22/23 financial year from its Berm Transition funding towards contractor time. Godfrey's Pest Management were the chosen contractor.

The first target was to control all outlying willows invading intact wetland areas, and everything on the true left (TL) of the main spring fed stream. After completing this, contractors began control on the TR starting at the top of the spring fed system and working downstream. The available budget was not sufficient to complete all works, and control/follow up will continue into the foreseeable future.

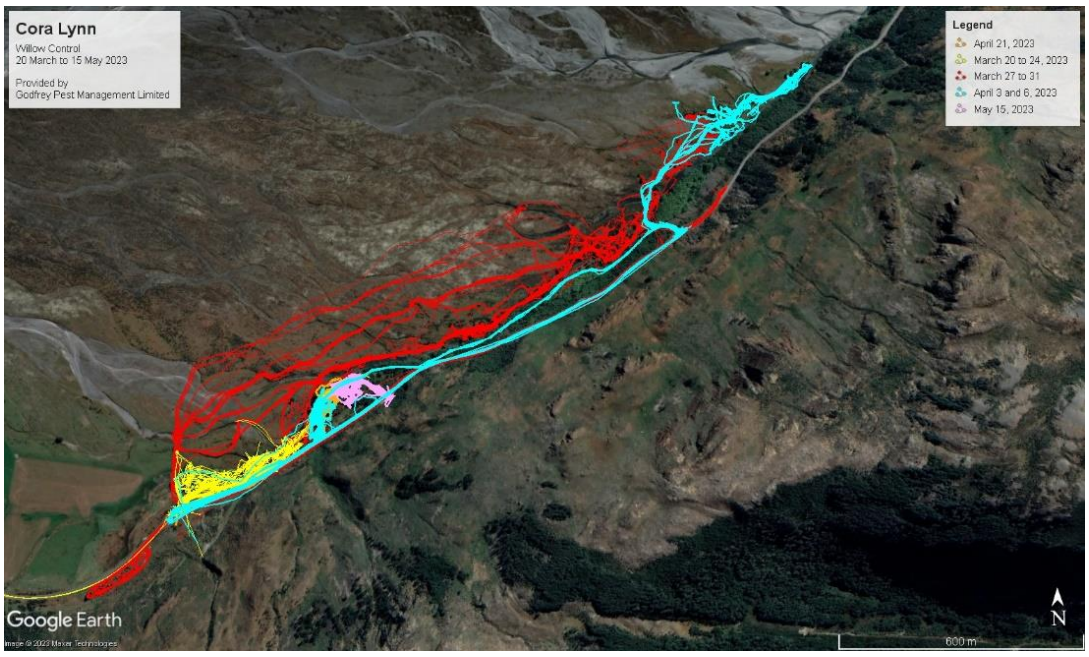


Figure 9: GPS tracks of contractors showing completed works.

Priority	Site within Management Area	Management Programme	Weed Species	High-level Cost / Benefit	Proposed Control Type	Frequency / Timing of Control	Explanation	Benefit of Control	Ecan spend (GST exclusive)	Comments
8	All, known infestations on western shoreline of Lake Pearson and on flanks of Mt Manson Updated to include Grasmere lodge, Romulus hill and around Flock Hill homestead	Eradication	Sycamore	**$ $** / ✓✓✓	Ground control	Ground control (spray, drill & fill; cut n paste) annually between summer – autumn	Frequent abundance of sycamore along western shoreline of Lake Pearson. Unknown abundance on Mt Manson. Control must be completed prior to autumn.	Prevents spread into native forest areas and loss of grey shrublands.	$ 30,037.08	Just the start of the big project
12	Cass River Catchment	Progressive Containment	Holly	**$ $ $** / ✓✓✓	Ground control Possibly aerial control	Ground control annually with any cut material removed from site: - drill & fill – spring-summer - cut n paste – all year	Present in riverbed, islands, terraces, and adjacent native vegetation on hill sides from Snowslide Stream downstream and on hillsides near Cass. Seek to eradicate.	Restores native forest (existing infestations) and prevents spread into other beech forest areas.	$ 19,900.00	Holly work on Nth slopes over Cass River- just the start to the control job!

15	Cass River	Progressive Containment	Grey willow	**$ / ✓✓**	Aerial control	Aerial control (aerial foliar spot spray) biennially in full leaf stage	Only two plants in river gravels above Grasmere Station. Control must be completed while plant is in full leaf. Seek to eradicate.	Maintains braided river character and function, rather than establishment of riparian willow forest.	$ 100.00	Killed the two known trees
24	Main stem of Waimakariri	Progressive Containment	Willow spp.	**$ $ $ / ✓✓**	Aerial control Ground control	Aerial control (aerial foliar spray) annually in full leaf stage Ground control (drill & fill) annually between summer – autumn	Willows abundant along roadside and rail line. Control must be completed while plant is in full leaf. Seek to eradicate.	Restores braided river character and function, rather than riparian willow forest.	$ 100,000.00	ECan project to control willows at the Cora Lyn wetland area, $100,000 on drill and fill control methods
								Total spend: (GST exclusive)	**$ 150,037.08**	

REFERENCES

Boffa Miskell Limited 2022. *Upper Waimakariri River Weed Control Strategy: 2022-2032*

Environment Canterbury 2018. *Canterbury Regional Pest Management Plan 2018 -2038*