Integration of science, management and community: Rehabilitation of riparian vegetation in a weedy environment, Sherry River, Motueka catchment

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Motueka Catchment

Sherry Catchment
The joint forces of CSIRO & SCION

Classified and assessed existing vegetation

- Visually examined 1:10,000 colour orthophotographs, enlarged to 1:4,000
- Classified riparian vegetation
- Calculated area, average width, length of riparian vegetation classes
- Ground truthed/fine tuned
- Assessed vegetation in 5 randomly selected transects/vegetation class.
Vegetation classes:

- Deciduous Hardwood
- Indigenous Forest
- Isolated Beech
- Mixed Exotic Shrubland
- Mixed Indigenous Shrubland
- Plantation Forest
- Pasture
Vegetation class by area (m²)

- 37% Deciduous Hardwood
- 29% Indigenous Forest
- 12% Mixed Indigenous Shrubland
- 8% Mixed Exotic Shrubland
- 6% Pasture
- 7% Plantation Forest
- 1% Isolated Beech
- 8% Others
Vegetation class by length of Sherry River

- Plantation forest: 35%
- Mixed exotic shrubland: 18%
- Deciduous hardwoods: 17%
- Indigenous forest: 11%
- Pasture: 10%
- Beech: 7%
- Mixed indigenous shrubland: 2%
- Total: 100%
### Dimensions of riparian vegetation classes

<table>
<thead>
<tr>
<th>Vegetation Class</th>
<th>Ave Width (m)</th>
<th>Length (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deciduous Hardwood</td>
<td>5.2</td>
<td>36,300</td>
</tr>
<tr>
<td>Indigenous Forest</td>
<td>6.1</td>
<td>19,350</td>
</tr>
<tr>
<td>Mixed Exotic Shrubland</td>
<td>4.8</td>
<td>18,640</td>
</tr>
<tr>
<td>Mixed Indigenous Shrubland</td>
<td>5.4</td>
<td>10,340</td>
</tr>
<tr>
<td>Pasture</td>
<td>4.1</td>
<td>11,800</td>
</tr>
<tr>
<td>Plantation Forest</td>
<td>6.1</td>
<td>7,150</td>
</tr>
<tr>
<td>Isolated Beech</td>
<td>4.1</td>
<td>1,970</td>
</tr>
</tbody>
</table>
Community landcare group formed

- Local farmer based
- Assistance from NZ Landcare Trust
- Keen to learn how to manage riparian vegetation, especially how to control weeds.
Old man's beard
Native plant establishment trial

- Aim: to quantify effects of weed control on native plant survival and growth in weedy environment.
- Mature willows removed, June 2004
- Weed seed left to germinate
- Site sprayed, May 2005
- Manual weed clearing
- 7 hardy species planted, Sept 2005.
Following willow removal & spraying *, August 2005

* Glyphosate/Tordon/Escort/Pulse mixture
Species planted:

- Wineberry
- Karamū
- Cabbage tree
- Totara
- Kānuka
- Black matipo
- Ribbonwood
Treatments:
• Synthetic weedmat
• Woollen carpet
• Repeated chemical spraying *
• No weed control

* Glyphosate and clopralid + Pulse, 4 sprayings in year 1

10 replicates with chemical control strip separating each
Pest control

- Fencing – stock elimination
- Egg repellent sprayed immediately following planting
- Hares controlled by spot-lighting.
9 months after planting, May 2006
One year after planting, October 2006
One year after planting, November 2006
% survival by species, 1 yr after planting

- C. australis
- K. ericoides
- P. regius
- A. serrata
- P. totara
- C. robusta
- P. tenuifolium

Legend:
- Control
- Chemical
- Carpet
- Weed Mat
% survival, 1 yr after planting

p=0.26, no significant difference
The Joint Forces of CSIRO & Scion

Height increase of surviving plants (cm)

-25 0 25 50 75

C. australis  K. ericoides  P. regius  A. serrata  P. totara  C. robusta  P. tenuifolium

Control  Chemical  Carpet  Weed Mat
Height increase of surviving plants (cm)

- Control A
- Chemical AB
- Carpet AB
- Weed Mat B

p=0.053
## Calculated costs, 1 yr after planting

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Material cost</th>
<th>Labour cost</th>
<th>Total cost/m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>No weed control</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Chemical</td>
<td>$0.40</td>
<td>$0.75</td>
<td>$1.15</td>
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<tr>
<td>Weedmat</td>
<td>$0.98</td>
<td>$1.19</td>
<td>$2.17</td>
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<tr>
<td>Carpet</td>
<td>$0.20</td>
<td>$2.74</td>
<td>$2.94</td>
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</table>
Preliminary conclusions

- Weed control primary consideration and cost.
- Survival slightly greater with chemical control.
- Economics depend on cost of labour.
- Future plantings dependent on farmer uptake/initiatives.
Rank grass / native plant establishment trial, Oct 2006
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