

# Southland Broom Plots Biocontrol Monitoring

Ronny Groenteman, Randall Milne, Jesse  
Bythell, Simon Fowler



# Acknowledgements

Environment Southland: funding for the assessment trial

Envirolink + MBIE core: funding for statistical analysis



# Monitoring Biocontrol Impact – Why?

- Back up anecdotal evidence
- Justify continued investment
- Identify where additional agents are needed
  
- Cost – a major obstacle
- National Biocontrol Collective now committed

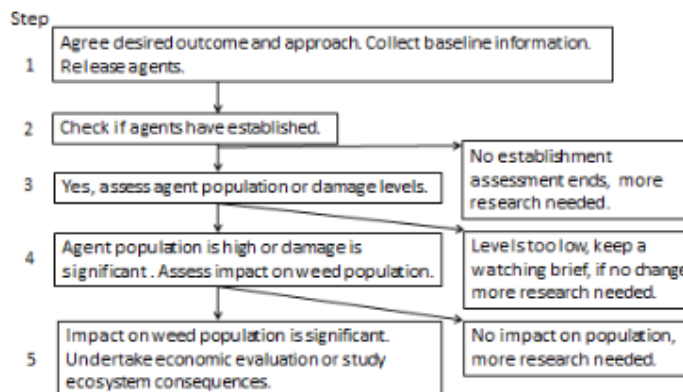
## NATIONAL ASSESSMENT PROTOCOL

### Introduction

The National Biocontrol Collective (NBC), as a major funder of the development and release of weed biocontrol agents in New Zealand, has agreed to a national biocontrol assessment protocol. The protocol, outlined here, describes minimum standards and further options where additional resources are available.

### Lead Organisation

The organisation which is the applicant to release a weed biocontrol agent will be the lead organisation, taking overall responsibility for ensuring adequate follow up occurs for that agent. The lead organisation will act as a project champion involving other organisations as necessary. Where an applicant is no-longer available (e.g. organisations no-longer in existence) an appropriate lead organisation will be agreed by the NBC. Lead organisations are designated by agent rather than target weed since it is common for more than one agent to



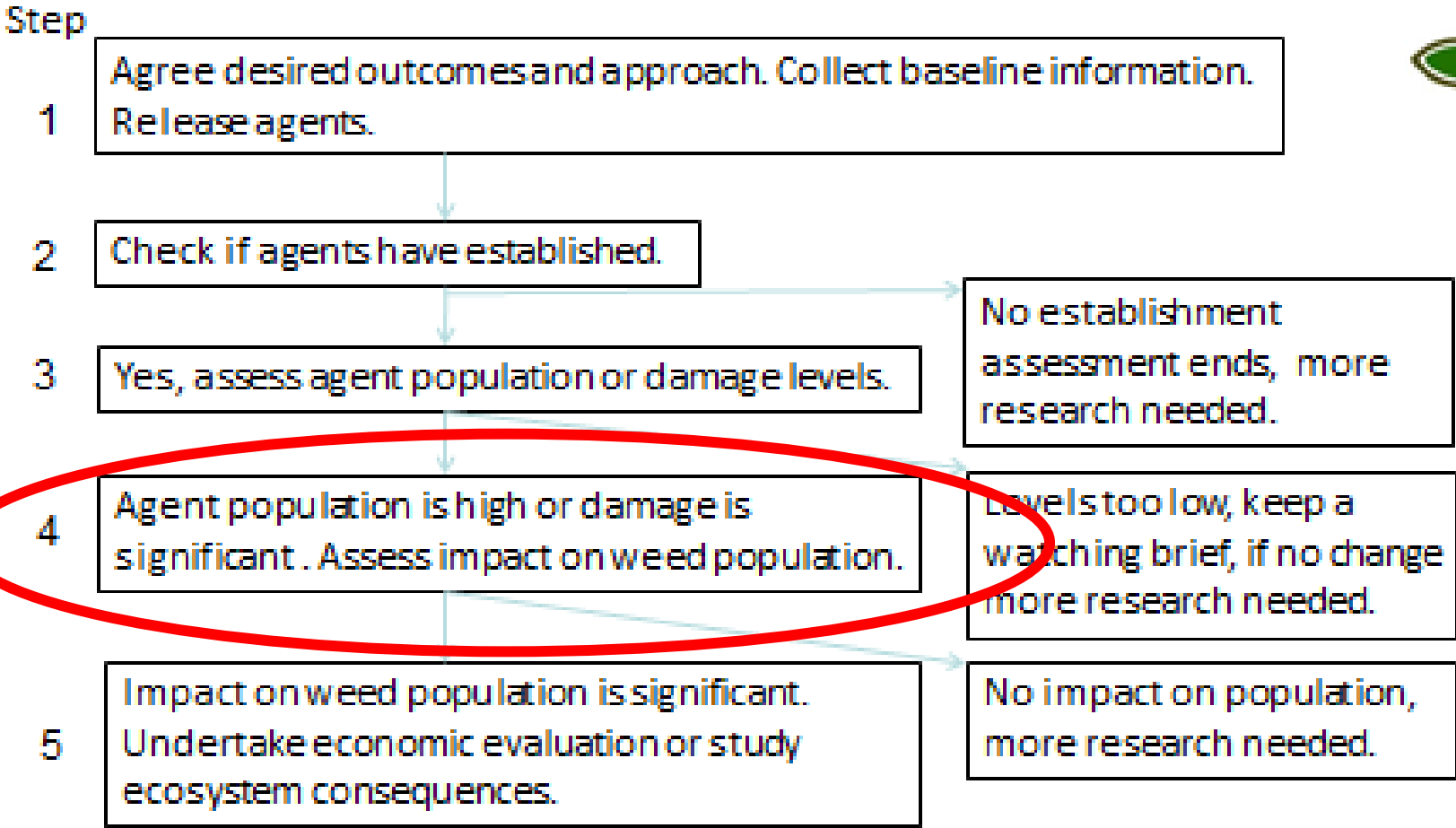
target reproductive structures only (requiring measurement of impact beyond release sites or potentially over many decades).

The assessment protocol follows a hierarchical approach starting simply and becoming increasingly more complex and expensive. How far through the steps an organisation proceeds will depend on results achieved, resources available and level of proof required.

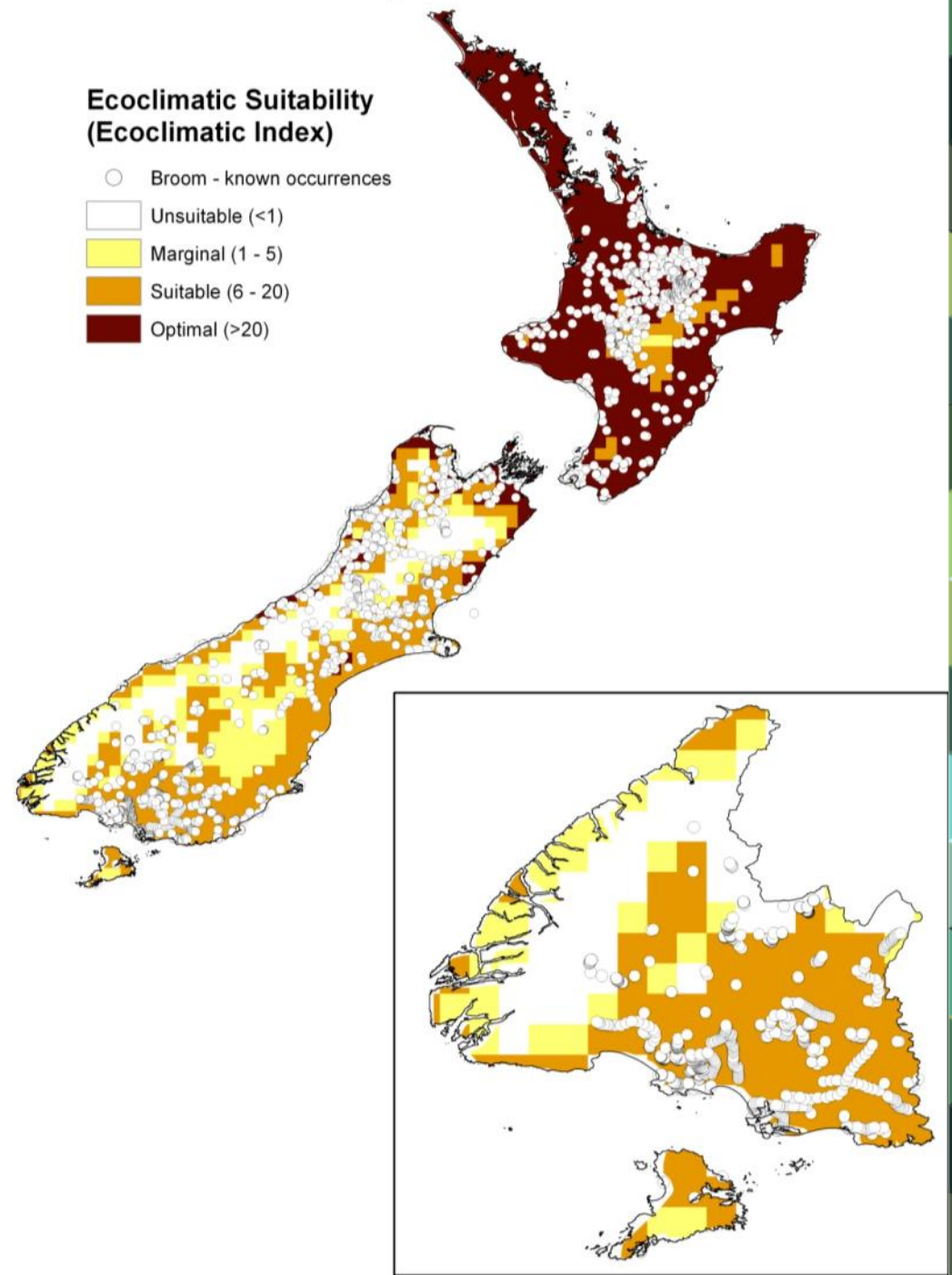
### Step One: Agree Desired Outcomes & Collect Baseline Data



# Hierarchical Approach to Assessment

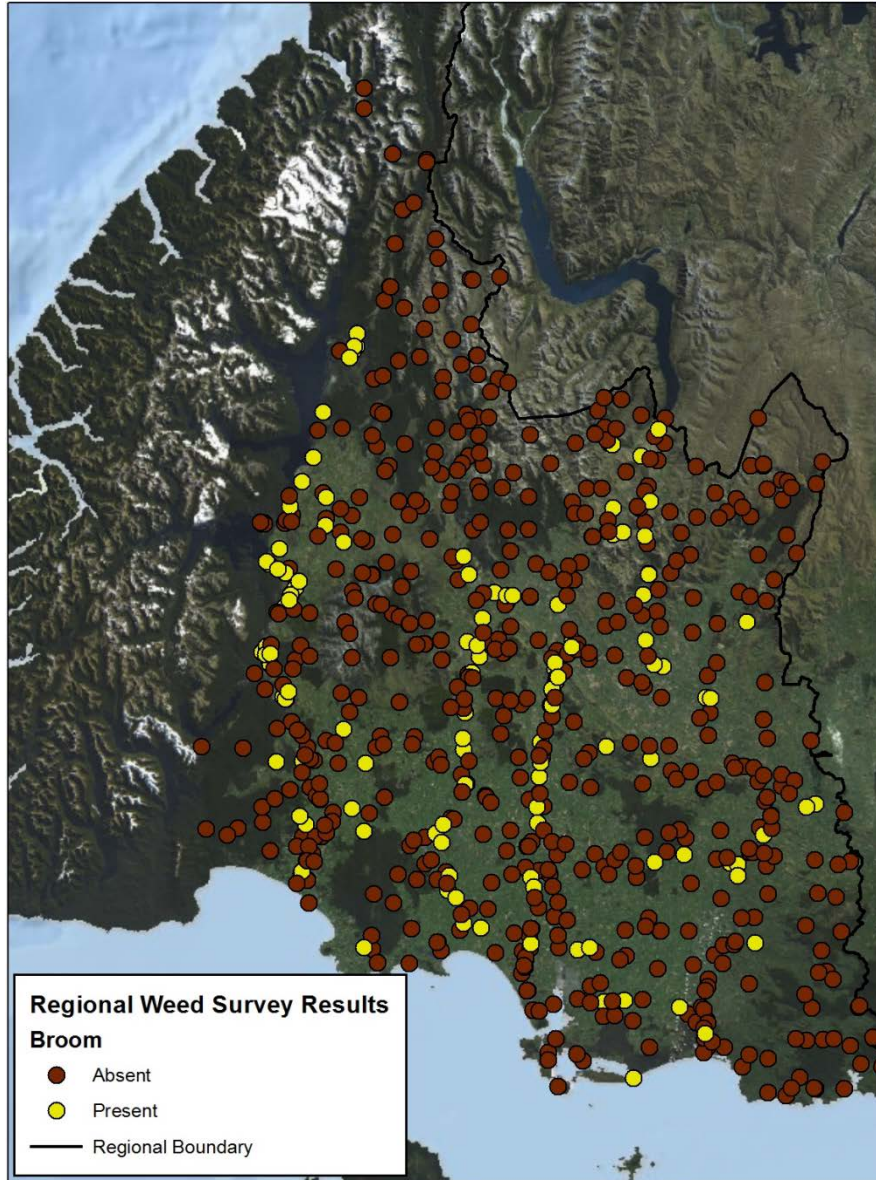


# CLIMEX Model for Broom

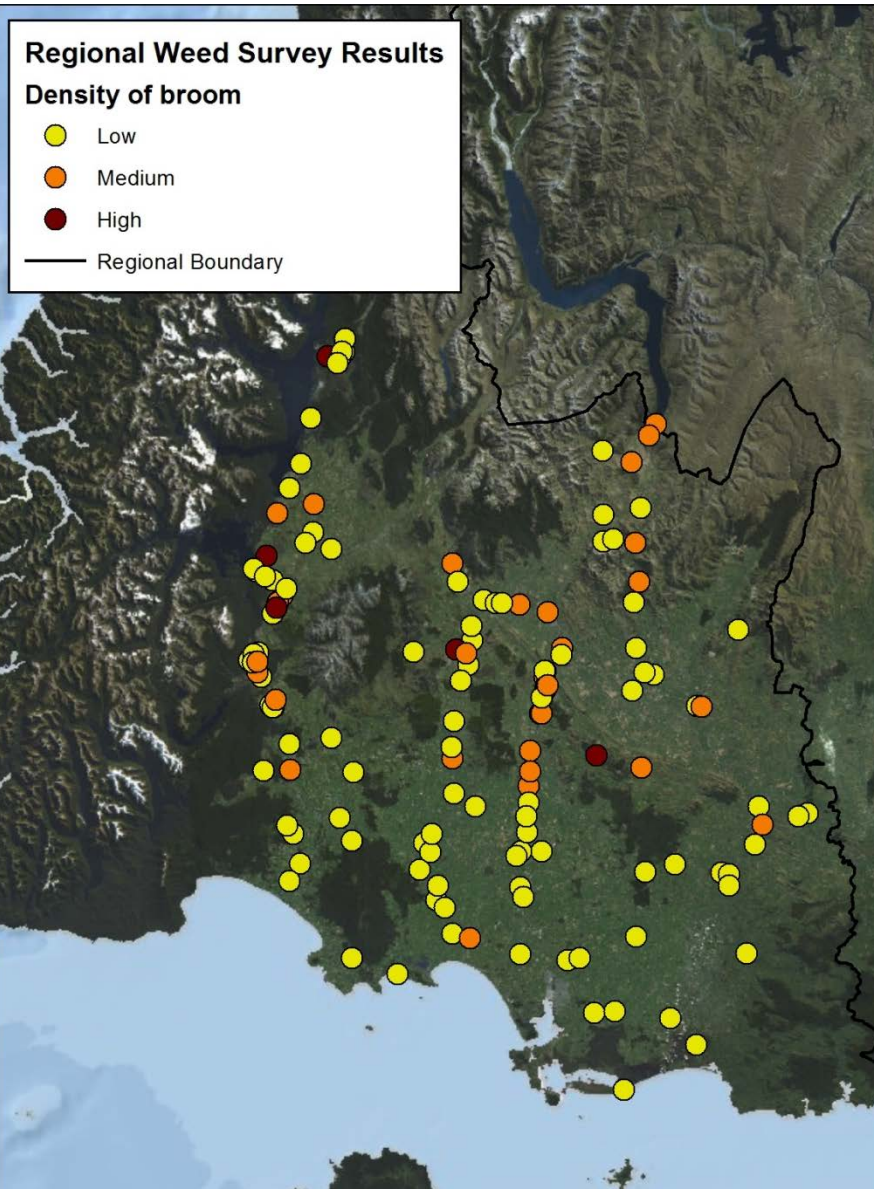


Map by Shona Lamoureaux &  
Graeme Bourdôt,  
AgResearch, Lincoln

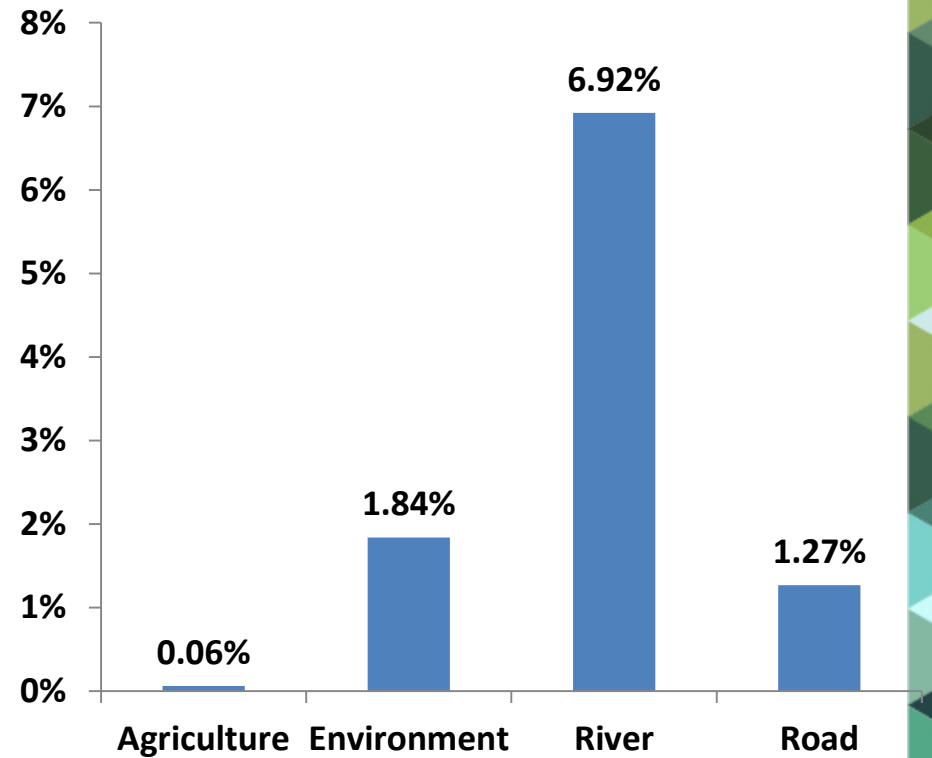
# Broom Presence/Absence



# Broom Density



**Average density within strata**





# Broom Psyllid



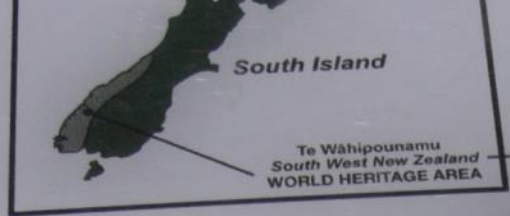
# Twig Miner Damage







ay  
of  
ul



# What did we want to achieve?

Aim of the trial

Experimental design

Data collection

Challenges







# Data Collection

- Plant metrics
- Insect counts
- Plot level
- Native vegetation







# Results

Prior to 1<sup>st</sup> insecticide application:

- Plant basal diameter did not differ between insecticide- and water-treated plots
- Plants in water-treated plots were marginally taller than plants in insecticide-treated plots



# More Results



- Twig miner & psyllid counts:
  - Go up and down between years
  - Are slightly higher in water plots
- Plant survival 4 years on:
  - Similar between trts
  - Could be age- rather than agent-related?

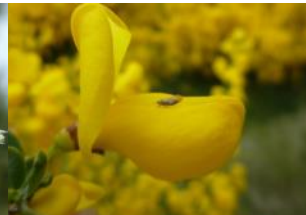
# Even More Results

- Larger plants grow a bit bigger
  - Year 4 was best for height gain
  - Year 2 was best for basal diameter gain
- Seed rain was smaller in water plots



# Concluding Remarks

- Multiple years required to reveal reliable patterns
- Important to take baseline observations prior to treatment application
- Make sure the experimental design fits the agreed objectives
- Assess the optimal timing to take measurements



# Concluding Remarks

- Why ES felt it was the right thing to do to become involved in the assessment trial?
- What sort of commitment did it take: expectations vs. reality?
- Does the hierarchical approach to assessment serve its purpose for Councils?

