Landcare Research
Manaaki Whenua

Beating Weeds, Success Stories and Economic benefits

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Beating Weeds

- Was $1.4m/yr FRST project, now $0.95m/yr (LCR core)
- AgR/DOC/Scion major collaborators
- BW mainly environmental weeds, strong focus on biocontrol
- Complements AgR Undermining Weeds
- Works closely with LCR operational weed biocontrol projects funded from National Biocontrol Collective, SFF etc

BW highlights – not all biocontrol

- Prioritising weeds for management (AgR)
- National Weeds Database (AgR)
- Herbicide developments for wilding trees (Scion and DOC)
- Herbicides for difficult-to-control weeds (AgR)
- Optimising weed management in lowland bush (AgR and DOC)

BW Highlights: Weed Biocontrol

- Safety record
- Improved risk assessment
- Selecting the best targets
- Agent selection
- Improved monitoring including $$ benefits
- Aims: improve cost-effectiveness, maintain safety, widen support, avoid pitfalls, happy stakeholders

Case study: St John's Wort

- St John's What?
- *Hypericum perforatum*
- Major pasture weed in 1930s

- Biocontrol by *Chrysolina* spp beetles – huge success for NZ

- Limited evidence: fertile ground for sceptics

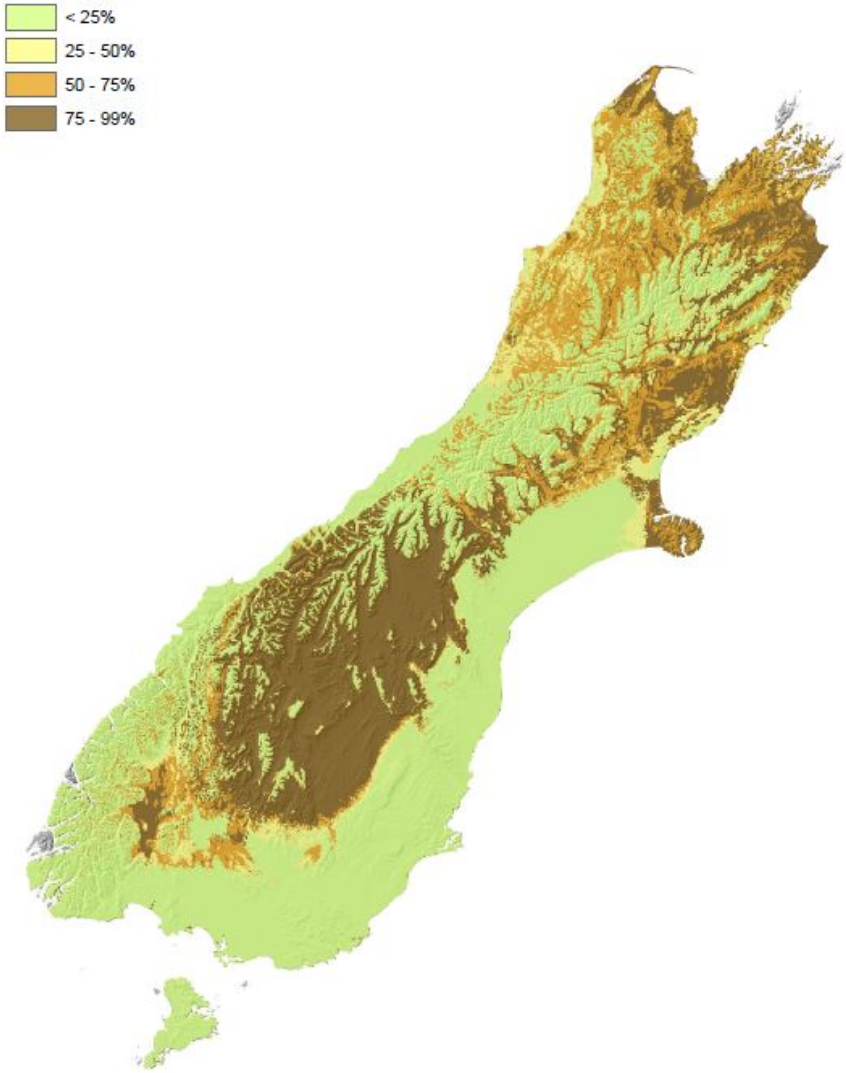
St John's Wort – Demonstrating Success

- Past evaluation patchy
- Insecticide exclusion studies

- Aim: compelling, high-quality evidence of success

SJW Biocontrol Economics

- Spreading weed in 1920s
- How bad would it have become?
- Eco-climatic modelling, based on distribution of early, serious infestations



SJW Biocontrol Economics

- Losses: pasture displacement
- Only on low value land
- Low/fast spread scenarios
- Biocontrol costs (1940-60)
- Net Present Value
- NZ better off now by $150m-1490m from SJW biocontrol (slow-fast spread scenarios)
- Even lower figure more than covers all costs of weed biocontrol in NZ

SJW biocontrol: Risk Assessment

- Native NZ *Hypericum* spp not tested – reliance on overseas risk assessment
- BW: modern no-choice oviposition, feeding and development tests – high risk of non-target attack in field
- But not realised in field?
- Under current rules, *Chrysolina* spp rejected
- Need to improve risk assessment e.g. relative performance scores

Another Economic Analysis

- Ragwort flea beetle: benefits to dairy farming of $41m/yr (reduced control costs)

- Climate matching: Need plume moth in wetter areas ($19m/yr)

Weed Biocontrol Successes

- 2000: SJW (complete), ragwort, nodding thistle, Mexican Devil weed, alligator weed (all partial)
- 2015: ragwort (nearing complete), mist flower (complete), bridal creeper (complete)

But wait, there’s more….

- Heather beetle

Outbreak margin April 08 – purple flowering heather outside, grey dead heather inside

Pole marking release site (2001)

Frost flat near Tongariro National Park

- Broom gall mite

- Tradescantia beetles: ‘shiny’, ‘stripy’ and ‘knobbly’…

- Cali thistle leaf beetle

Weed Biocontrol in NZ

- More impending successes
- Great combo of research + operational
- Delivering tangible benefits to NZ
- Demonstrating these far better than before
- But – danger that core funded research will be eroded
- Still plenty of operational/research challenges
- NZ currently leading globally in research and practice in weed biocontrol

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