Manaaki Whenua
Landcare Research

NATIONAL ASSESSMENT PROTOCOL— SPECIFIC GUIDELINES

The Biological Control Of Weeds Book - Te Whakapau Taru: A New Zealand Guide ISBN 0-478-09306-3

Introduction

The National Biocontrol Collective, as a major funder of the development and release of weed biocontrol agents in New Zealand, has agreed to a national biocontrol assessment protocol. Below are some specific guidelines for those involved in assessment projects to follow.

See *National Assessment Protocol*

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 functions as a project champion, involving other organisations as required. Agreed lead organisations are provided in the table to the right.

Site Selection

Select 10-20 good potential, or actual release sites nationwide (e.g. good weed population, secure, good access, not so degraded that replacement weeds will instantly be an issue). Choice of sites should take into account significant regional and national variation. If information is being collected before releases are made, use the pre-release form, otherwise use the release form. If there are already agents present, their abundance or damage levels should be assessed (depending on the species). There is a unique form to complete for each agent. If there is more than one species present at the site, fill in all the questions on the first form and then for each additional species just complete the insect or fungus information section and staple the forms together.

Target	Lead
Aquatics	Greater Wellington Regional Council
Broom	Manaaki Whenua - Landcare Research
Chilean Needle Grass	Marlborough District Council
Darwin's Barberry	Environment Southland
Field Horsetail	Horizons Regional Council
Japanese Honeysuckle	Greater Wellington (white admiral), Hawke's Bay Regional Council (longhorn beetle)
Lantana	Northland Regional Council
Moth Plant	Northland Regional Council (rust), Waikato Regional Council (beetle)
Old Man's Beard	Horizons Regional Council
Privet	Waikato Regional Council
Tradescantia	Auckland Council
Tutsan	Horizons Regional Council
Wild Ginger	Auckland Council
Woolly Nightshade	Bay of Plenty Regional Council

Photos

Some sites will lend themselves to photos which can be analysed using digital software but if not, take some photos anyway. Also consider opportunities to use aerial/satellite images. Continue to take photos every 2-3 years, unless agents fail to establish or fail to build up damaging populations.

Target	Assessment photos	Abundance measure	Other	When	Agents
Broom	May be possible	10 x 10m or equivalent in area		Dec-April	*Gall mite* – spend 15 minutes looking for galls, estimate number found.
				Oct-Nov	*Leaf beetle* – 20 beating tray samples each from different plants/branches and estimate number dislodged. If none found, spend another 10 minutes beating other broom plants.
				Oct-Nov	*Psyllid* – 5 beating tray samples each from different plants/branches and estimate number dislodged. If lots stop, if not repeat.
				Sept-Oct	*Shoot moth* – spend 15 minutes looking for webbed tips with caterpillars, estimate number found.
				Aug-Sept	*Twig miner* - estimate damage levels: none, occasional, patchy, heavy, or severe.
Japanese Honeysuckle	Likely to be difficult, growing on a fence line etc.	5 x 5m or equivalent in area		Nov-Mar	*White admiral* – spend 15 minutes looking for eggs or damage (but note presence of adults if seen), and then estimate overall damage levels at the site as: none, occasional, patchy, heavy or severe.
Lantana	May be possible	10 x 10m or equivalent in area		Jun-Sep	*Blister rust, leaf rust* – spend 15 minutes looking for signs of infection, and then estimate overall infection levels at the site as: none, occasional, patchy, heavy, or severe.
Privet	May be possible	10 x 10m or equivalent in area	Include some shaded sites	Feb-Apr	*Lace bug* – 20 beating tray samples each from different plants/branches and estimate number dislodged. If none found spend another 10 minutes beating other privet plants.
Tradescantia	Likely to be difficult	5 x 5m or equivalent in area, measure average mat height: <20cm, 20-50cm, >50cm		Nov-Apr	*Leaf, stem and tip beetles* – spend 15 minutes looking for beetles/signs of damage and then estimate overall damage levels as: none, occasional, patchy, heavy, or severe. Note to see leaf beetle damage you may need to look lower down in the mat
				Apr-Nov	*Yellow leaf spot fungus* – spend 15 minutes looking for signs of infection, and then estimate overall infection levels at the site as: none, occasional, patchy, heavy, or severe.
Woolly Nightshade	May be possible	10 x 10m or equivalent in area	Include some shaded sites	Feb-Apr	*Lace bug* – spend 15 minutes looking for lace bugs on the undersides of leaves and estimate the number found. Also estimate the amount of damage: none, occasional, patchy, heavy, or severe

For photos to be useful, the following is important:

- Take at the same time of the year.
- Take at the same place. Record GPS of the photopoint, and compass bearing.
- Where possible, include distinctive landmarks that are likely to be durable e.g. fence posts, sheds, power poles, etc.
- Time of day may be important due to shadows, etc

Assessment photos require a bird's eye view so all individual plants are visible and not just plants in the foreground. This will often only be possible for weed infestations on hillsides or where overhead shots are possible. It may be worth taking photos of the photopoints themselves, especially if more than one person is likely to be involved in the photography.

Weed Abundance Measures

Define infestations as major, moderate or minor using the criteria below and repeat every 2-3 years, unless agents fail to establish or fail to build up damaging populations:

- Major infestation- as far as the eye can see
- Moderate infestation- >100m^2
- Minor infestation covers- <100 m^2

At the densest accessible point, estimate the percentage cover of the weed for an area of 5 x 5 or 10 x 10m, depending on the species. If the site does not lend itself to a square shape, then an equivalent sized area of another shape can be used (e.g. 10 x 10 = 2 x 50 or 1 x 100m, etc.). For tradescantia, measure the height of the mat. Don't worry if some stems or plants are shorter or taller, it is the average height which is important. Repeat the above measurements every 2-3 years, unless agents fail to establish or fail to build up damaging populations.

Checking Sites for Agent Establishment and Population/Damage Levels

Refer to the summary information in the table on the next page as to the best time of year and method to use. You will need to be able to identify the agents confidently.

If in doubt take photos or collect samples to send in for verification. For further information consult "The Biological Control of Weeds Book": https://www.landcareresearch.co.nz/discover-our-research/biosecurity/weed-management/using-biocontrol/the-biological-control-of-weeds-book/

When checking a site, spend 5 minutes checking the release point intensively and then look further afield for another 10 minutes. Note that if you have 2 people checking, you should halve the amount of time spent e.g. 5 minutes becomes 2.5 minutes for each person.

A beating tray sample consists of hitting a branch or small bush briskly twice over a white tray/sheet or piece of cardboard. Check the tray after each sample.

Where an estimate of numbers is required, it is not necessary to count every individual. We are interested in presence/absence and relative abundance, so select from the following broad categories: none, tens, hundreds, thousands. When estimating plant pathogen infection levels at a site (e.g. lantana rusts), use the following categories: none, occasional (signs of infection present but not common), patchy (signs of infection are present but are variable throughout the site, some plants may have no symptoms, and others may have heavy

Agent	Non targets to check
Broom – Leaf beetle, Shoot moth	Tree lucerne (*Cytisus proliferus*), Tree lupin (*Lupinus arboreus*), Russell lupin (*L. polyphyllus*).
Japanese honeysuckle – white admiral	Himalayan honeysuckle (*Leycesteria formosa*), Weigela (*Weigela* spp.). Ornamental honeysuckles e.g. (*Lonicera* × *americana* ("American honeysuckle"), *L.* × *heckrottii* ("gold flame honeysuckle"), *L. periclymenum* ("Graham Thomas" honeysuckle).
Lantana – Blister rust, Leaf rust	Ornamental verbena e.g. *Verbena officinalis*, and hybrids
Privet – Lace bug	Lilac (*Syringa* spp.)
Woolly nightshade – Lace bug	Eggplant (*Solanum melongena*), Poroporo (*S. aviculare, S. laciniatum*).

symptoms but this would be rare), heavy (the majority of plants are showing signs of infection and at least some plants are beginning to show signs of stress), and severe (severe infection is obvious and widespread).

An optional extra is to check non-target plants for agents or damage if some potential risk was identified in an EPA application. If any suspected nontarget damage is found, a sample and/or photos should be sent in for verification. Where no non-target damage is found, record this result.

Another optional extra is to study how widely agents have dispersed away from release sites, to help to inform redistribution efforts.

For further information contact:
Lynley Hayes
Manaaki Whenua - Landcare Research
PO Box 69040
Lincoln 7640
NEW ZEALAND
Email: hayesl@landcareresearch.co.nz
Ph (03) 321 9694