Manaaki Whenua
Landcare Research

NATIONAL ASSESSMENT PROTOCOL

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

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 biocontrol agent rather than target weed since it is common for more than one agent to be introduced per weed and for the applicant role to sometimes be shared around.

Overall approach

Assessment activities will be kept as simple and as affordable as possible since available resources are extremely limited. The aim is to collect information that can be used to inform staff, managers, councillors and rate payers, rather than to convince scientists. Therefore, data that demonstrate a correlation will usually be adequate rather than conclusive proof of cause and effect. The focus will be on simple approaches, done well and repeated around the country. However, where possible, information that could be published in peer-reviewed journals will also be collected to support activities such as seeking permission to release new agents. Manaaki Whenua - Landcare Research will continue to use government funding to undertake more complex cause and effect population and ecosystem-level studies for a few flagship projects, and to assess the impact of biocontrol agents that 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

The agreed desired end outcome is that where weeds are widespread their harmful impacts will be reduced, and where weeds are less widespread (or absent), they will be prevented from becoming a problem. Data will be gathered showing progress towards the end outcome (i.e. intermediate outcomes) such as a reduction in weed abundance, density or vigour. NBC members will contribute for the weeds that are considered significant for them.

The lead organisation will be responsible for encouraging others to collect data and send it to them for compilation/storage. Ultimately, it is hoped that the data can be stored/shared via a national repository.

The NBC will, as a minimum, collect baseline information for its current weed biocontrol targets. Some may choose to collect baseline information for likely future targets. Due to limitations of current data, it will largely be necessary to start collecting baseline data from scratch rather than build on existing data sets.

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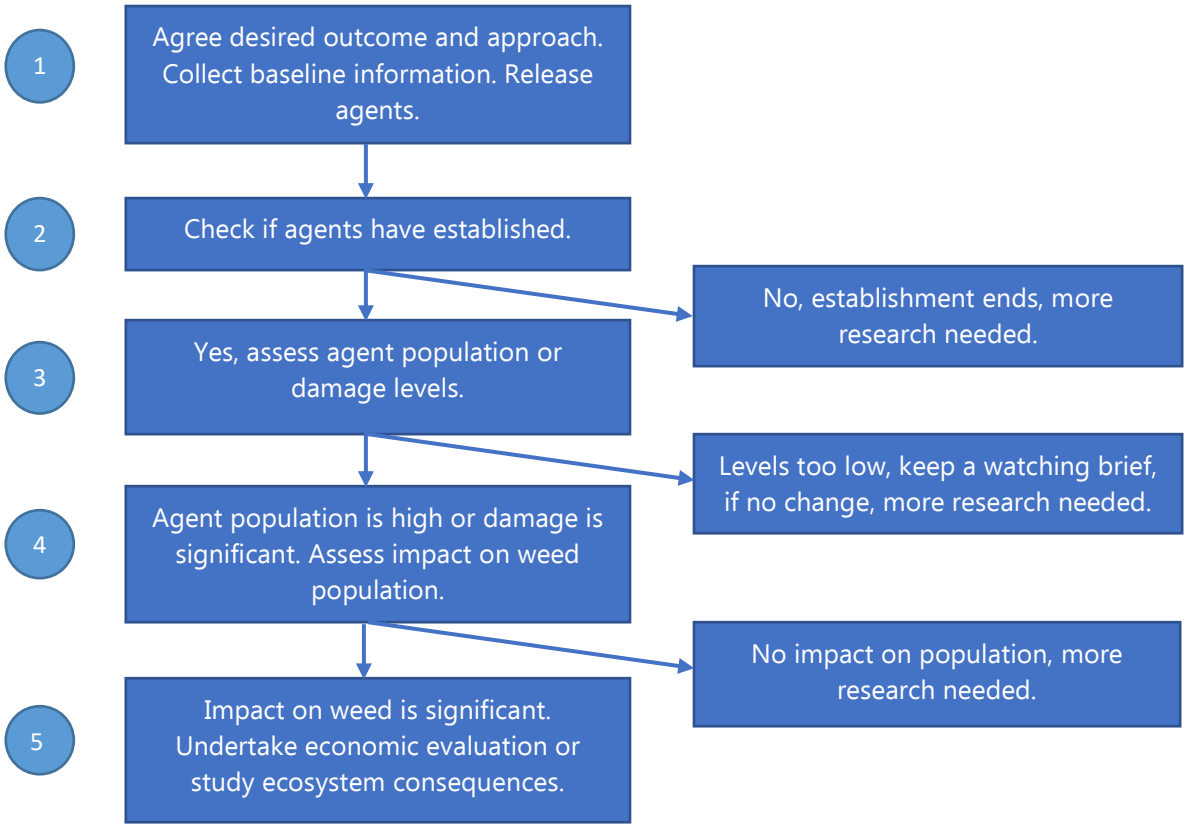

Choosing Sites

10-20 good potential, or actual release sites will be selected nationwide (good weed population, secure, good access, not so degraded that replacement weeds will instantly be an issue). Choice of sites will take into account significant regional and national variation. Photographs will be taken (see below). If site is already a release site, the abundance of agents present or their damage levels will be recorded.

Photos

Photos of the study sites will be taken every 2-3 years using photo points at same time of year. Some sites will lend themselves to photos which can be analysed using digital software, but if not, before and after shots will be taken since they still provide a useful record. Aerial and satellite images may be used where feasible.

Measures of Abundance

Infestations will be defined as major (as far as eye can see), moderate (>100m^2), or minor (<100 m^2). At the densest accessible point, percentage cover and height (where appropriate) will be estimated for an area of 5 x 5m or 10 x 10m (or an equivalent area if the site does not lend itself to a square shape), depending on the species. This measurement will be repeated every 2-3 years.

Step Two: Check Establishment

NBC members will visit at least 75% of initial release sites at least once to check for establishment. If the agent fails to establish, no further monitoring is required. If establishment is uncertain, a watching brief will be kept for at least 10 years. If the agent is clearly established, population/damage levels will be evaluated.

Step Three: Assess Population Build Up/Damage Levels

Whether population build up or damage is measured will depend on the agent. Population size will be estimated where it is easy to collect/count individual insects. The method used will depend on the agent e.g. beat bushes a set number of times, or estimate the number seen over a set time period, etc. Damage will be estimated for pathogens and also where insect population assessments will be difficult for cryptic species, etc.

If agent population/damage levels are low, a watching brief will be kept for at least 10 years. If they remain low, more research may be required to understand why. If biological agent populations are high/damage appears significant, then the impact on the weed population will be measured.

Some may choose to check for non-target damage to support Manaaki Whenua - Landcare Research efforts to follow up on this. Some may also choose at this point to study how widely dispersed agents are in order to inform their redistribution efforts.

Step Four: Assess Impact on Weed Population

The impact on the weed population will be assessed by continuing to take photos and measure weed abundance and agent population/damage levels every 2-5 years. Some may choose to set up plots which can be manipulated experimentally to prove cause and effect.

If an impact on the weed population is measured, the ecosystem consequences of this can be evaluated and an economic analysis undertaken.

Step Five: Ecosystem Consequences & Economic Evaluation

Ecosystem consequences will be evaluated through continuing to take photos and measure weed abundance and agent population/damage levels every 5-10 years. Some may choose to set up experimental plots from which more detailed measurements of change can be made. At this point, a decision may also be made to undertake an economic evaluation of the costs and benefits provided by the project.

See *National Assessment Protocol Guidelines*.

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