

# Maximising the Success of Pest Eradication Programs using Decision Support Tools

Dave Ramsey<sup>1</sup>, Dean Anderson<sup>2</sup>, Andrew Gormley<sup>2</sup>, Michael Scroggie<sup>1</sup> and Simon Howard<sup>2</sup>

<sup>1</sup>Arthur Rylah Institute for Environmental Research, Department of Environment, Land, Water and Planning, Victoria

<sup>2</sup>Manaaki Whenua Landcare Research, New Zealand



## Managing Pest Eradications

- Early intervention against pest incursions that eradicates the pest before it become established represents some of the highest benefit/cost investments in biosecurity policy.
- Once a decision is made to initiate eradication of a pest, managers are then faced with decisions about how to proceed, and when to declare success.
- In practice, these decisions about how to manage an eradication response are usually based on subjective reasoning rather than scientific evidence.

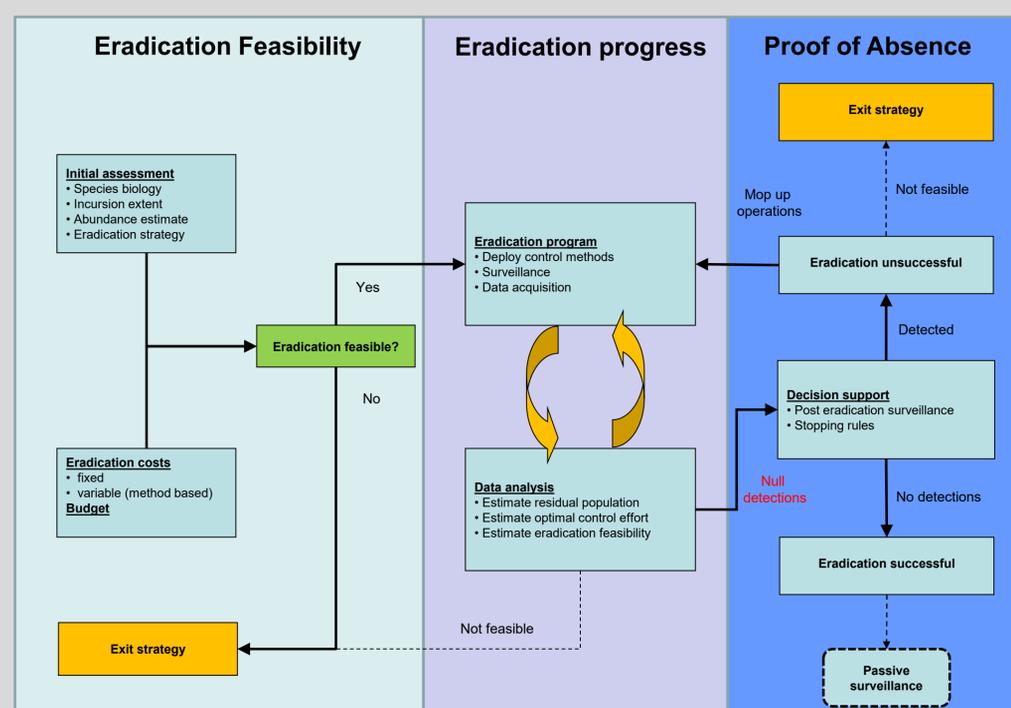
## Key Questions

1. What are the most cost-effective ways to achieve eradication?
2. How can managers monitor progress of an eradication program?
3. When should managers declare eradication success?

## Decision Support Tools for Pest Eradications

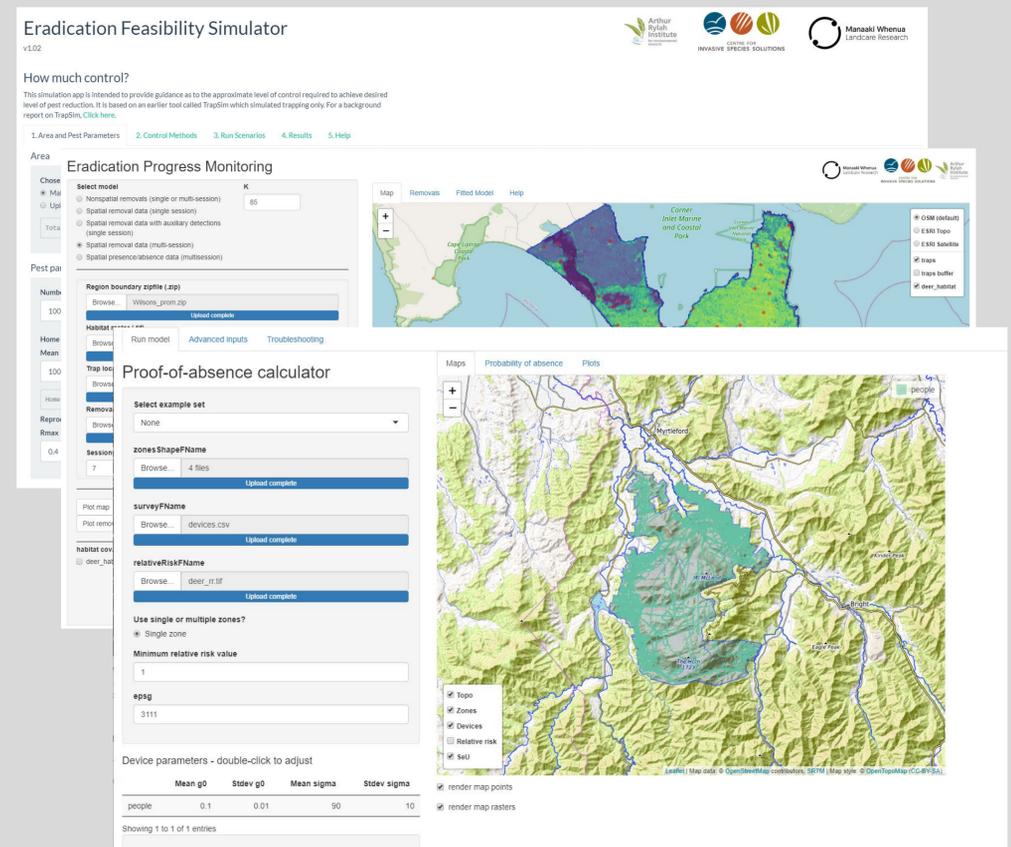
- A framework to guide pest eradication programs was developed (the eradication response framework).
- Three-phase framework
  - **Eradication feasibility:** use basic information on pest species biology, the extent of the incursion and the control methods used to determine whether eradication is likely to be feasible for a given budget.
  - **Eradication progress:** use information collected while undertaking eradication activities to monitor progress such as estimation of residual population size at each stage and calculation of simple metrics that convey the level of population impact of control activities.
  - **Proof of absence:** Once pest individuals are no longer being detected, how much additional monitoring is required to declare successful eradication? What level of confidence do we have that eradication has been achieved?

## Eradication Response Framework



## Web-based tools

- Three web-based decision support tools have been developed targeting each phase of the eradication response framework.
- Each tool allows information related to the eradication response to be uploaded including:
  - Spatial data on the region of interest (GIS shapefile)
  - Locations of monitoring devices / surveillance information
  - Spatial information on risk of occurrence / habitat suitability (raster file)
- Eradication 'primer' developed that documents the different stages of the eradication framework and the quantitative approach to managing pest eradication programs.
- Comprehensive 'user-guides' for each tool are currently in development.



## Conclusions

- Quantitative decision support tools can help managers conduct pest eradication programs in a cost-effective manner.
- Version 1.0 of the web-based tools are on track to be completed by June 2022 and will be freely available from the CISS website ([invasives.com.au](http://invasives.com.au))
- Future work to incorporate these tools into the Biosecurity Commons project ([biosecuritycommons.org.au](http://biosecuritycommons.org.au)) is currently being explored.

Figure 1. Web-based Decision Support Tools targeting decisions around the feasibility of eradication, monitoring eradication progress and declaring eradication success (Proof of Absence)

This project is funded by the Australian Government Department of Agriculture, Water and the Environment