

TRACKING POSSUM CONTROL SUCCESS

FACTSHEET RD13

WHY WE MEASURE POSSUM CONTROL OUTCOMES

OSPRI's TBfree programme works toward the eventual eradication of bovine tuberculosis (TB) from New Zealand. This requires large-scale control of possums, which are the main wildlife 'vectors' (transmitters) of TB infection to cattle and deer.

Possum control is predominantly by trapping or poisoning, which is mostly undertaken by contractors. To ensure that control is achieved as cost-effectively as possible, OSPRI measures the outcomes of some of the possum control operations they commission.

Ideally, possum abundance would be measured before and after a control operation to determine the percent reduction or kill (effectiveness of the control) and whether a successful outcome has been achieved. A successful outcome is when the post-control density of possums is low enough to prevent TB persisting. Pragmatically, most monitoring has focussed just on final outcomes rather than percent kill as assessing the latter is expensive. However, good progress in reducing TB levels in possums and livestock has created a need for an objective process for declaring TB-freedom in possums, and that process is strengthened by robust estimates of percent kill (% kill).

ESTIMATING HOW MANY POSSUMS SURVIVE A CONTROL OPERATION

Possum control operations using aerial poisoning or ground control aim to reduce possum densities to uniformly low levels across large areas.

Over the past two decades, OSPRI has routinely used leg-hold trap catch to measure possum control outcomes by measuring the number of possums that survived. This measure, called the Residual Trap Catch Index (RTCI), is the number of possums caught per night, per hundred traps deployed, according to a standard protocol specified by the National Pest Control Agencies (NPCA). This reflects the density of possums that remain after a control operation.

The desired operational outcomes or targets are commonly set at 2 percent RTCI so if the contractor has reduced possum abundance to below this level, the operation is deemed a success.

Monitoring lines need to be distributed so that they are representative of the area as a whole. The NPCA has a protocol for determining how many monitoring lines are needed – for example, a 10,000-ha area that is to be aerially poisoned would need 40 monitoring lines with each line comprising 10 traps spaced 20 m apart along a 200-m line.

THE NEW DIRECTION: ESTIMATING PERCENTAGE KILL

The alternative to simply assessing outcomes, based on the number of surviving possums, is to assess the percentage of the population killed (% kill). This can be done by measuring standard indices of possum abundance both before and after control.

Interference devices such as chewcards or waxtags, on which possums leave recognisable bite marks, can be used in addition to trapping to estimate the reduction in the possum population. If leg-hold trapping is used to measure the possum population then possums trapped before the operation either need to be released (to avoid an inflated % kill estimate if the same trap lines are used before and after the control operation) or a new set of post-control lines need to be used.

The difficulties in estimating % kill using pre- and post-control indices of abundance are that it is usually twice as costly as the RTCI approach, and when possum numbers are low, the indices can be too highly variable to be useful.

Another approach to assess % kill involves catching live possums (using leg-hold or cage traps) before the control operation; the animals are anaesthetised, fitted with radio-collars, and then released. At least 30 possums need to be collared to get an accurate picture of control effectiveness, and the sample must be representative of the whole population.

Extra information can be gathered if the radio collars are mortality-latching – when the possum dies, the pulse rate of the radio-collar's signal increases. That enables an observer to tell which possums are still alive and which are dead (and when they die) without actually having to find the possums. Although not yet in widespread operational use, the advantage of the radio-collar approach is that it provides a rapid and easily understood assessment of kill.

This method doesn't provide an estimate of post-control outcomes but that can be obtained using a standardised Trap Catch Index prior to control. The post-control RTCI estimate can then be predicted from the % kill and the pre-control Trap Catch Index.

It is likely that this approach could provide a much stronger insight into control outcomes compared with just using 'outcome focused' post-control RTCI monitoring and provide useful information towards declaring TB freedom in possums.

EXAMPLES OF PERCENTAGE KILL ESTIMATES

Hokonui Forest 2014: 96% reduction following aerial 1080 poisoning measured by mortality of radio-collared possums; 99% reduction measured using trap catch index (TCI) pre and post.

Clarence Valley 2014: 96% reduction following aerial 1080 poisoning measured by mortality of radio-collared possums.

Clarence Valley 2015: 100% reduction following aerial 1080 poisoning measured by mortality of radio-collared possums.

Clarence Valley 2015: 87% reduction following ground control using leg-hold traps and Feratox® cyanide pellets measured by mortality of radio-collared possums.

For more information, please visit ospri.co.nz, or call OSPRI on 0800 482 463.