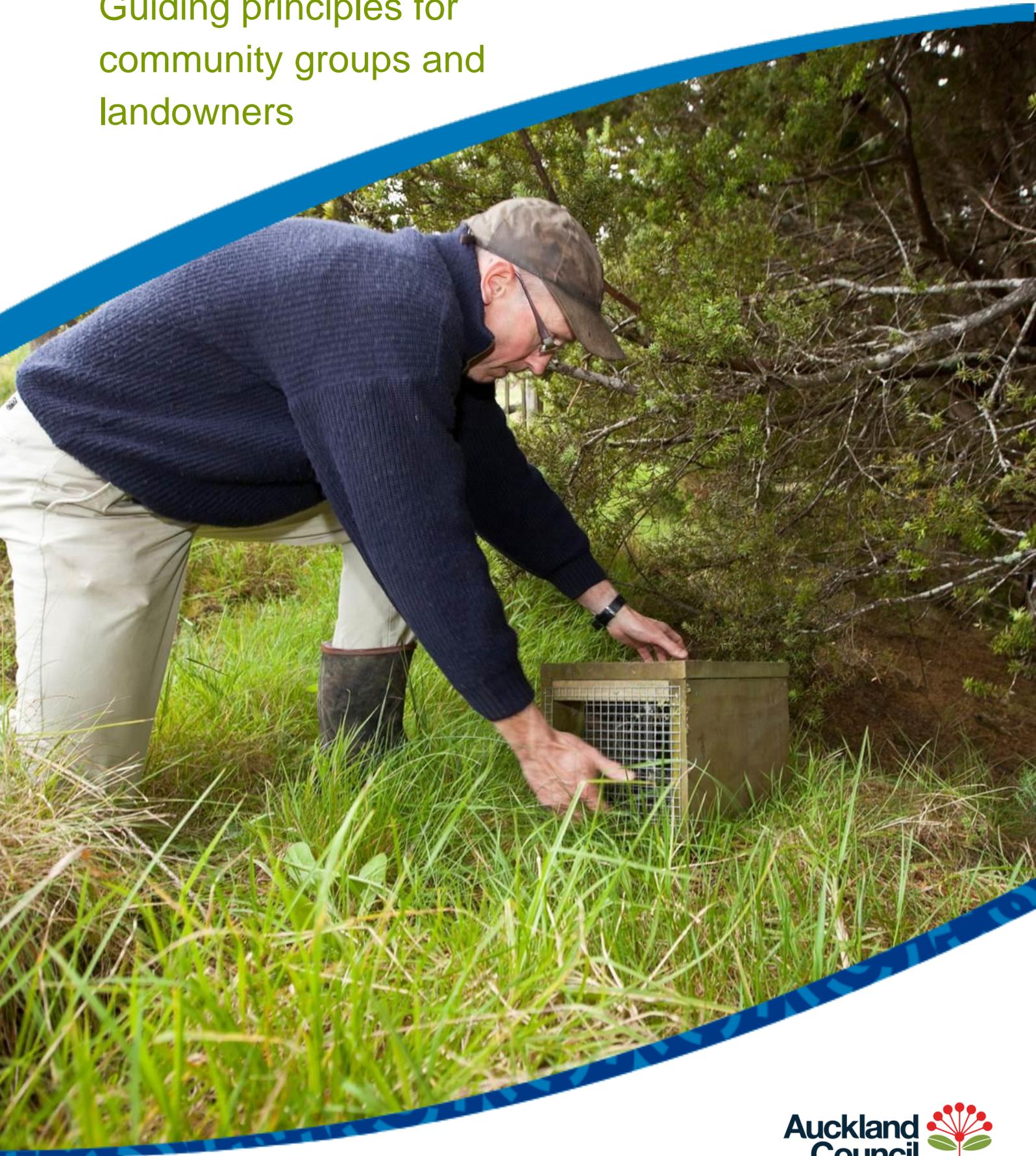


# Pest animal control

Guiding principles for  
community groups and  
landowners



## Guiding principles for pest animal control

When starting a pest animal control project, there are five key principles that will help form the basis of a plan.

These principles can be applied to any pest animal species, and then adjusted to suit the specifics of a certain site, the control method available, the target control/outcome level of the work, or the particular behaviour of the target animal.

In the following pages the word “tool” refers to a trap or bait station.



*Image sourced from slayallpest.com*

# Guiding principles for pest animal control

## Principle one

### Home range of target animal and distance between control tools.

The home range of the target animal will help determine the distance between tools.

Usually we will put a minimum of two tools within the home range of an animal so that it has more opportunity to come into contact with the control tool.

For example, a ship rat has a home range of between 150 and 500 lineal metres. Standard ground-based control lines for rats are lines of bait stations 100m apart, with a station 50m down each line. This results in a bait station being no further than 70m from the next (two within the 150m minimum range).

Knowing an animal's home range will also help determine the distance an animal would have to travel to re-invade an area, so will help you determine the **shape** of a control area. Long thin areas are less viable than rounder areas as pest animals can more easily re-invade

## Principle two

### Target animals favoured habitat and the placement of control tools.

Placing control tools in areas that are favoured habitat of the target animal will increase the chance of that animal encountering the tool, leading to better control.

For example, rats like to follow bushy ridges, stream banks or coastal edges for ease of access, and a good chance of finding or hearing/smelling prey. These places also need to be close to areas of cover so the rat itself can seek shelter from predators.

If a control area does not have suitable favoured habitat for the target animal there may be no need to place tools there. Although this means the tool/spacing ratio described above may be compromised, it is a better use of resources.

## Principle three

### Frequency of breeding guides frequency of control.

This helps guide how often the tools need to be activated to keep up with additions to the target animal population – matching the rate of control with the target animal rate of breeding. Control is best carried out before a pest animal breeds, to reduce the population in the environment.

For example, rats begin producing offspring when they are between three and five months old. This is why we suggest pulsing bait in bait stations four times a year (every three months). Pulsing means intermittent baiting done on a cycle, rather than having bait out all year round. This allows for more targeted control, and a better use of resources, helps reduce the risk of target animals becoming bait shy, or used to particular baits, and reduces the risk of secondary poisoning of non-target animals.

## Principle four

### Timing of control to be most effective

Good levels of control effort need to be applied over both winter and spring and there are two aspects to this timing:

- 1) From a control perspective pest animal control is often most effective in the winter months. During winter there is less natural food available in the environment and target animals also have higher energy requirements to keep warm, making bait more attractive.
- 2) From an outcome perspective, having pest animal numbers low in spring will be of greater benefit to the population you are trying to protect. This is because spring is when bird species are breeding, spending more time on the nest or in burrows, and having chicks on the nest or in burrows and are more vulnerable.

## Principle five

### Do it safely

In urban areas, use traps in place of toxins where possible. Traps will often not completely remove a population from an area, so toxins can be pulsed to control any remaining animals. All traps and toxins should be contained within lockable stations.

Where toxins are required, pulse their use, limiting the pulses to four per year, each between two and four weeks long. The best months are August, November, January and April. Always remove all remaining toxins from bait stations at the end of a pulse.

Use multiple feed (often called first generation) toxins wherever possible. These reduce the risk of secondary poisoning of pets and native species through eating an animal carcass, for instance. It also places lower toxicity products in the environment.

Be sure to follow the product label, Safety Data Sheet and manufacturer's instructions as they relate to signage, use and Personal Protective Equipment.

## Monitoring

One key issue to understand with monitoring is that there is a minimum size a project area needs to be in order for monitoring to provide meaningful outcomes.

Most pest animal monitoring is measuring the relative abundance of a target pest animal population and is expressed as a percentage. Relative abundance is not absolute abundance.

*Relative abundance* means the number of target animals that monitoring tools detect as a representative sample of a control area. *Absolute abundance* is counting all the target animals in a control area (which is rarely possible).

To be able to measure and compare relative abundance, a set protocol for the spacing of monitoring tools needs to be followed. The spacing also helps avoid double counting.

For project areas where the total area for rat control is less than 300 hectares in size, or for possums, 500 hectares in size, measuring relative abundance is less certain, and monitoring is best represented in a presence versus absence comparison.

The reason for this is that these smaller areas limit the number of monitoring lines you can fit in and this disproportionately represents the pest animal population within the control area. It also disproportionately represents any changes in pest numbers over time and is not an accurate reflection of any pest control work.



For example, for rats, tracking tunnels are commonly used for monitoring. Each monitoring line consists of 10 tunnels. Each line must be a minimum of 200 metres from the next to avoid double counting.

If round in shape, a 300 hectare project area is 1700 metres wide, meaning only eight monitoring lines (80 tunnels) will fit. If 10 of these tunnels are visited by rats this gives a percentage of 12.5%.

If a project area is only 150 hectares, only four monitoring lines (40 tunnels) will fit. If 10 of these tunnels are visited by rats this gives a percentage of 25%. You may in fact have the same number of rats in both project areas, but due to having fewer monitoring tools in the smaller site, the numbers are expressed as a much higher percentage, which is not necessarily correct.

For the smaller, 150 hectare site, a presence versus absence level of monitoring comparison over time is more helpful. For smaller areas, consider outcome monitoring, such as bird counts, seedling count plots or invertebrate counts.

## Home ranges and tool placement of common pest animal species

The table below gives a rough guide to the size of common pest animal home ranges, and the spacing of tools to achieve good control.

Species	Average home range (metres)	Tool spacing (metres)	Good location for tool (trap/bait stn)	Comments
Rat	150	70	Ridges, stream/coast edges, track edges, always close to vegetation cover. Not in open pasture.	Ship and Norway rats have different home ranges. 150m is a minimum and 700m is a maximum
Possum	300	150	Ridges - especially prominent trees (kohekohe, totara, pine, pohutukawa, macrocarpa). Track/road edges.	Males use prominent trees to call from to hold a territory. The male is usually caught first. Continue trapping as he will have been stopping other possums accessing the trap/bait
Stoat	1300	450	Ridges, valley floors, track edges, even in open pasture.	Stoats are hard to detect and do not enter traps as easily as other pest animals. A greater number of traps within their home range are required to effectively control them.
Mouse	30	15	Ridges, stream/coast edges, track edges, always close to vegetation cover.	Mice require most bait to be available to them for five or more days to achieve effective control.

## Recording data

Recording what is caught, where it is caught, and bait consumption levels over time is important to assess the success of the control methods being used. Patterns can be detected and methods adjusted accordingly where necessary, to maintain efficiency.

There are several programmes that can be used to record activity at trap and bait station locations that don't involve the use of spreadsheets, or hand-drawn maps.

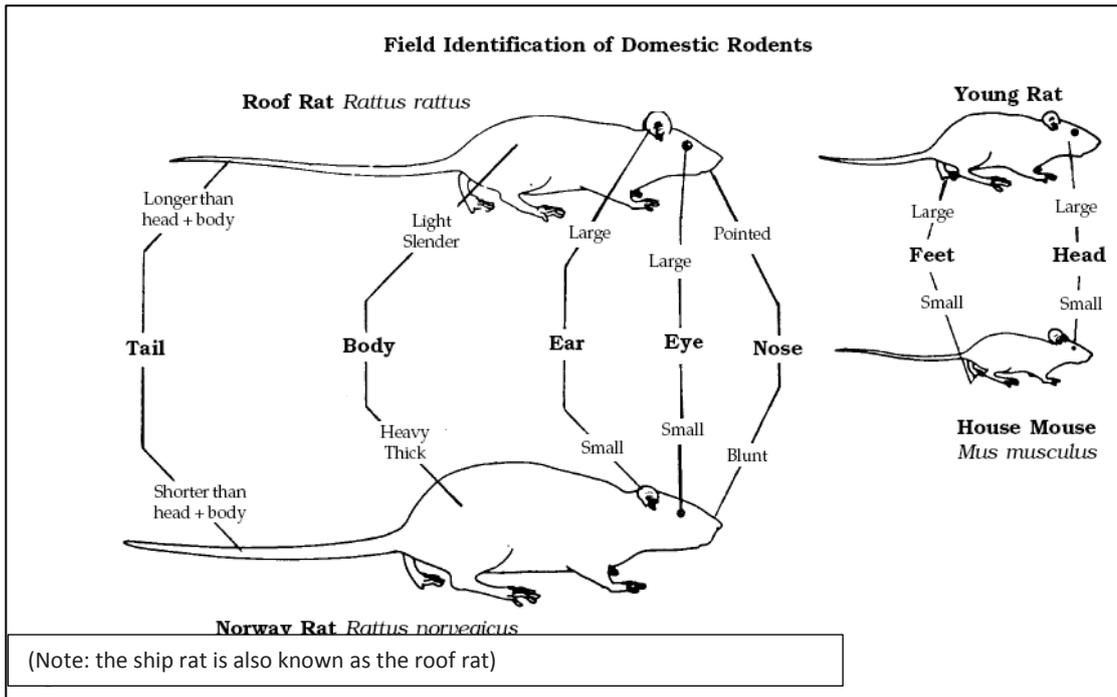
Predator Free NZ offers a list of online tools available, a comparison of their features and some examples of groups using each tool.

Go to <http://predatorfreenz.org/online-tools-for-predator-control/> for more information.

For further information on pest control techniques including monitoring, trap or bait selection and pest plant control advice, please refer to the Auckland Council series of *Best Practice for Pest Control* guides, available on request from [biosecurity@aucklandcouncil.govt.nz](mailto:biosecurity@aucklandcouncil.govt.nz)

# Identifying some common pest animals

## Rat



## Brush-tail Possum



## Stoat vs weasel



Stoats have a black-tipped tail; a weasel's tail is plain and shorter.

The line between white and brown on a stoat's belly tends to be smooth; with ferrets it does not.



For further identification tips on these and other pests, go to <http://www.pestdetective.org.nz/>

Find out more: phone **09 301 0101**  
or visit **[aucklandcouncil.govt.nz/](http://aucklandcouncil.govt.nz/)**