Types of rodents
New Zealand has four species of rodent including three types of rat and one type of mouse:

- Norway or brown rat (*Rattus norvegicus*)
- ship or common rat (*Rattus rattus*)
- kiore or Polynesian rat (*Rattus exulans*)
- house mouse (*Mus musculus*).

Once widespread, the kiore is now only found in South Westland, Fiordland and on a few offshore islands. Ship rats and the house mouse are among the ‘world’s 100 worst’ invaders.

The Norway rat is the larger of the two European rats weighing up to 500g. It has a short body and a thick tail which is slightly shorter than the body. Ship rats weigh up to 170g. It has a pointed muzzle, large eyes and ears. The scaly tail is longer than the combined length of the head and body.

The kiore is the smallest of the three species of rats in New Zealand, but similar in appearance to the ship rat.

Mice are much smaller than rats and weigh 12 to 30g. They have large prominent black eyes, round ears and a pointed muzzle with long whiskers. The head and body is 10cm. Their tail is longer than the head and body.

Where did rats and mice come from?
The kiore arrived in New Zealand in the canoes of the early Maori. Norway rats were the first of the European rodents to become established in New Zealand. They came ashore in the late 18th century from North American and European sailing ships. Ship rats were slow to spread initially due to the establishment of the dominant Norway rat but today they are the most extensively distributed of the three rats and will live wherever there is available food.

Habitat
Rats and mice are widespread throughout New Zealand. They are found in all native environments including forests, dune lands, rivers, lagoons, and estuaries. They are also found in pigpens, poultry yards, in cereal and root crops, along irrigation or drainage ditches, landfills, sewers, and industrial areas where food is processed or stored.

Norway rats are mainly associated with wetland habitat but will also occupy buildings where there are suitable nesting conditions and an adequate food supply. Ship rats show a preference for drier habitats and forested areas.

Food
Rodents are omnivorous, eating both plant and animal matter. They will feed on almost anything including grains, seeds, fruit, meat, insects and rubbish. They will also eat household materials including paste, glue, soap and building materials.

Breeding
Rats and mice are prolific breeders. Rats reach sexual maturity in 2 to 5 months. They can have 3 to 6 litters per year with litters usually containing 7 to 8 young. Mice can have 5 to 10 litters per year. Litters usually consist of 5 to 6 young. Mice can reach sexual maturity at five weeks. In the wild, rats and mice rarely live longer than 18 months.

Why are rodents a problem?
Threat to our wildlife
Rats and mice eat:
- native birds’ eggs and chicks
- seeds, fruits and seedlings of native trees
- native invertebrates including snails, beetles and stick insects
- native skinks and geckos.

New Zealand’s native birds have not evolved with rodents and therefore have no defences against them.

Threat to our health and economy
Rats and mice have lived with humans for centuries. Rats are infamous for being responsible for the spread of the bubonic plague which killed millions of Europeans in the middle ages. Rats and mice are major economic pests as they:
- can decimate crops
- contaminate human foodstuffs and stock feed
- can cause extensive damage to buildings and building materials
- pose a risk to human health through diseases they carry
- pose a safety risk by chewing through plastic insulation on electric wiring causing fires.
How do I know if I have rats or mice?

Rodents will enter your buildings at any time of the year. However, autumn is when mice and rats seek new supplies of food and seek shelter from the colder weather.

Look for the following signs:
- sightings of live animals or dead bodies
- scratching or gnawing noises heard particularly at night
- distinctive smell
- droppings
- runs - rats follow the same routes when travelling, and leave trails through grass and low vegetation
- footprints and smears - marks left on muddy or dusky surfaces
- burrows - entrance holes 70 to 120mm in diameter in grassy banks, under tree roots, at the edge of paving or drain covers surround
- nests - sometimes found indoors, in lofts or under floorboards.

Rats gnaw continually, even on non-food materials, in order to wear down their front teeth. Rats and mice defecate wherever they travel, but mostly where they feed. They do not have a bladder so urinate continuously. If droppings are found, the identification of which rodent you have is easy. Rat droppings are much larger, typically 15mm long, with a characteristic pointed end. Mouse droppings are less than 5mm long and usually more numerous.

How do I control them?

Controlling rodents in the home

To control rats and mice in and around your home or buildings, you need to do three things:

1. Remove feeding and nesting grounds

Remove cover that might harbour rats and potential food sources. Clean up rubbish and other places where rats and mice may feed. Remove old newspapers, boxes, rags, piles of timber, household or garden rubbish, and overgrown parts of the section as they provide ideal nesting places.

Composting should be carried out in properly constructed compost bins. Make sure rubbish bins have tight fitting lids and they are always kept on. Do not leave food for pets or birds out overnight where rats can get at it.

2. Rodent proof your buildings

Rodents can climb vertical surfaces, swim through sewerage pipes, gnaw through walls and squeeze through gaps around windows and doors. Mice need a hole only 6mm wide. Keep rodents out of buildings by closing off any access points. For example:
- clear tree branches that overhang roofs as these can provide access to attics
- keep a wide, clear area around buildings, rodents fear open spaces and like to be undercover
- seal holes around pipes into buildings
- make sure doors and windows fit tightly and repair any damage
- screen all holes with fine wire mesh, including ventilators into houses.

3. Control them with traps or poison

Bait stations, bait and traps are available to buy from supermarkets, hardware or farm supply stores.

Traps

Place traps at right angles to a wall with the bait pedal facing the wall. Locate traps where you have seen rodent signs. Bait traps with peanut butter, chocolate or a mix of peanut butter and rolled oats. Ensure the bait is firmly attached to the bait pedal and traps are secured firmly.

Traps placed outside need to be covered or placed in a tunnel.

Bait station using a plastic box with a lid. Cut a hole (4 to 5cm) in the front, for the rodents to enter. Drill two small holes in opposite sides of the plastic container. Thread a piece of wire between the holes to thread the bait onto.

Locate bait stations along walls, in ceilings, near ‘runs’, burrows or waterways and near possible food sources.

Poison bait

Most of the available poisons for rodent control are anticoagulants. First generation anticoagulants such as diphenacrine or coumarin require feeding of the poisoned bait over several days and result in the death of the rat 5 to 10 days after eating the bait. Second-generation compounds such as brodifacoum and bromadiolone allow a fatal dose to be consumed from one feed. The animals still die 5 to 10 days after eating the bait.

Bait can be purchased in block or grain form. Block bait works best as the rodents are forced to eat the bait on site as they cannot carry the food away to hoard.

Bait stations need to be replenished regularly. Bait should be kept fresh and like to be undercover

Poison safety

All poisons suitable for bait stations are either green or blue in colour. They are dangerous if eaten. For first aid and safe use of toxins always refer to the manufacturer’s instructions on the packaging.

If you suspect poisoning, take your animal or pet to the nearest veterinarian clinic. Vitamin K1 is an effective antidote for anticoagulants and may need to be administered regularly for several weeks.

Poisons pose a low risk to cats and dogs if used correctly. Always store poisons away from children and pets.

Controlling rodents in native ecosystems

The most effective option for the control of rodents in native forest is the use of poison or traps laid out on a grid of lines covering the forest block. Traps or bait stations need to be placed 100m apart for rat control, and 50m apart for mice control.

Bait stations need to be located 25 to 30cm above the ground to optimise rat use and avoid rain splashing off the ground affecting bait quality. Traps must be set in a tunnel to keep out non-target species.

Bait stations need to be replenished regularly. Bait should be kept fresh and mouldy baits removed. Traps need to be checked every two days initially then reduced to every 2 to 3 weeks. If rat numbers increase, bait and trap checking will also need to be increased.

Rat numbers bounce back within months once control is stopped therefore control programmes need to be ongoing. Continuous use of a single toxin to control rats is not recommended. Alternate bait types every two years.