

Rats and mice are just two of the mammals that belong to the order Rodentia. Over 2200 species of rodents exist with more than 40 percent of all mammal species belonging to the Rodentia order. Australia has over 60 native rodent species and three introduced pest species.

Rodents have been successful in populating every continent (except Antarctica) because of their small size, short breeding cycle and ability to eat a variety of foods. They are the second most successful mammal on the planet, coming second only to humans.

Rodents consume and destroy their food source during feeding. This can cause devastating damage to a wide range of different settings such as domestic households, commercial businesses, farms, manufactures and livestock to name a few. Not only do they gnaw through many materials, but rodents can also ruin food supplies by excreting on them.

Not all rodents are considered pests, rodents are an important part of the food chain being prey for meat eating animals such as cats, snakes, large birds and foxes to name a few. Rodents are also important ecologically for spreading seeds and spores.

Rodents are characterised as having two sharp continuously growing teeth in the upper and lower jaws. The size of these teeth is controlled by continual gnawing.

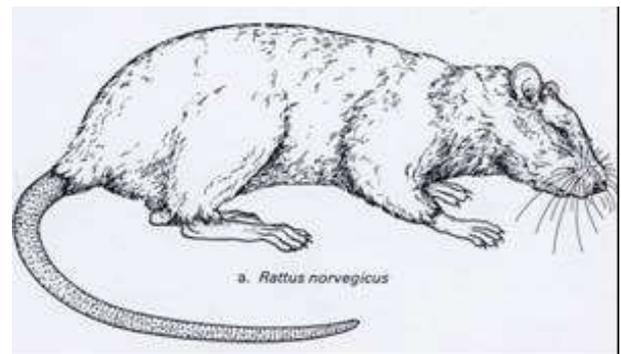
Major pest species

Norway rat (*Rattus norvegicus*)

The Norway rat, also known as the common rat, sewer rat or brown rat, is the larger of the pest rats. Their life span is usually between 9-12 months. Females can have 5-6 litters per year, averaging 8-10 pups per litter. The gestation period is 21 days and the young reach sexual maturity at 3-4 months.

Norway rats are usually active at night and are good swimmers. They dig well and are able to communicate through high pitched vocalisation.

The Norway rat is an omnivore and will eat food from both plants and animal origin. They will eat almost anything, although they prefer starch and protein rich food such as cereals which form a substantial part of their diet. Other foods they eat include meat, fish, vegetables, weeds, earthworms, crustaceans, nuts and fruit.



Physical appearance:

- brown or grey in colour with grey belly fur
- length of head and body between 20-27 centimeters
- length of tail between 16-20 centimetres
- large build
- weight between 200–500 grams
- blunt nose
- short thick ears with fine hair
- grey feet
- banana or sausage shaped droppings.

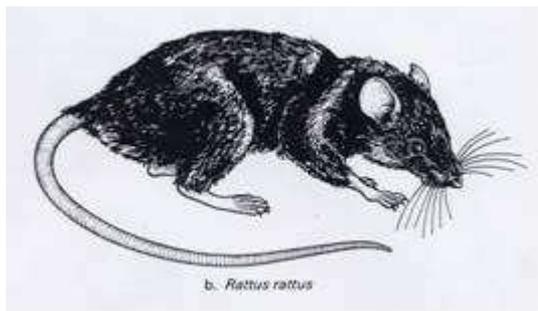
Roof rat (*Rattus rattus*)

The Roof rat, also known as the ship rat or black rat, is smaller than the common Norway rat. Their life span is usually between 9-12 months. Females can have 4-5 litters per year averaging 6-8 pups per litter. Sexual maturity is reached at 3-4 months and females have a gestation period of 3 weeks.

Roof rats are usually found in built up areas or near the coast. They have good climbing ability and can nest in buildings, roof voids and ships.

They eat a wide variety of food items generally feeding on cereals, grains, fruit, and almost any

item that has nutritional value. They are omnivores and will feed on insects or meat if necessary.

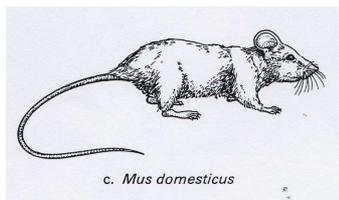


Roof rat physical appearance:

- grey, black or brown in colour with occasional white belly fur
- length of head and body between 14-20 centimeters
- length of tail 25 centimeters
- small, slender, streamlined build
- weight between 200-300 grams
- pointed nose
- large, thin, almost hairless, translucent ears
- pink feet
- ellipsoid or spindle shaped droppings.

House Mouse (*Mus domesticus*)

The house mouse is small. They have a life span of approximately 12 months. Females can have 6-10 litters per year. Sexual maturity is reached at about 6 weeks, with a gestational period of 3 weeks. House mice are curious animals and can live indoors or outdoors in close proximity to humans. They have a wide and varied diet including fruits, nuts, grains, animal feed and cereals.



House mouse physical appearance:

- brown or grey in colour
- length of head and body between 8-10 centimeters
- length of tail between 8-10 centimeters
- weight between 14-20 grams
- small slender build
- pointed nose
- large, hairy ears
- pink feet
- small spindle or irregular shaped droppings.

Detection - Identifying rodent infestation

Inspect the premises carefully and look out for signs of damage caused by gnawing or feeding, holes,

smears and droppings. Mice tend to feed by nibbling, eating the outside of grains and leaving the core. However, rats will often leave crumbs or smaller pieces of food.

House mice tend to live inside the building and will gnaw holes up to 20 millimetres in diameter in walls, partitions and floors. Holes made by rats will be larger, approximately 80 millimetres, and may be the entrance to nests. Nests may be found in hidden areas and can be made up of a wide range of materials such as cardboard, paper, straw and rags.

Rodent Control Methods

Sanitation and exclusion:

When looking at ways to prevent and control a rodent problem, always assess the area for possible sources of food, water and shelter. Good levels of hygiene and removal of clutter, excess foliage in the garden, plumbing leaks, food scraps, nesting sites or shelter are all good ways to discourage rodents from inhabiting an area.

Mice are able to squeeze into gaps as small as 8 millimetres, so ensure even small gaps or holes are filled.

Trapping:

Physical traps include glue traps, simple snap traps or more complicated multiple-mouse catching devices. Trapping methods require more time and labour than the other chemical methods of rodent control. Therefore this method is less cost effective and used less frequently by pest control operators. Glue traps can only be used by licensed pest control operators in accordance with the new Prevention of cruelty to animals regulations 2008. For further information contact the Department of Primary Industries, Bureau of Animal Welfare by email: animal.welfare@dpi.vic.gov.au

Situations where trapping of rodents may be the most viable option include:

- instances where chemical pesticides are not accepted such as food premises
- capture of individual rodents that are not taking bait.

Rodenticides:

Rat and mice infestations are commonly controlled using rodenticides. Rodenticides can kill the rodent with a single dose (acute) or through multiple doses (chronic).

Acute rodenticides include:

- Metal phosphides (Zinc*, Aluminium, Magnesium and Calcium)
- Norbormide
- Alpha-chloralose
- Broadifacoum
- Flocoumafen
- Difenacoum.

Metal Phosphides are usually fumigants and are fast acting, single dose rodenticides.

*Once baits containing Zinc phosphide are ingested by the target animal, the pesticide reacts with stomach acid in the digestive system to produce a toxic phosphide gas.

Norbormide is only effective against the common rat. It acts by disrupting the blood supply to vital organs by constricting blood vessels.

Broadifacoum, Flocoumafen and Difenacoum are all highly lethal anticoagulant poisons. Anticoagulants stop blood from clotting causing it to become thin. This results in the rodents dying of internal haemorrhage.

Chronic rodenticides include:

- Warfarin
- Coumatetralyl
- Diphacinone
- Calciferol.

Warfarin, Coumatetralyl and Diphacinone are anticoagulants.

Calciferol is a form of vitamin D used in combination with anticoagulants to improve their rodenticidal effects.

Safety Precautions

- Read the product label prior to use and only apply pesticides in accordance with the label directions including any safety information
- Wear appropriate personal protective equipment (PPE) when handling pesticides
- Do not place baits in areas where they can be accessed by children, pets, wildlife or livestock, or use lockable bait stations
- Place baits only in locations from which they can later be retrieved
- Keep a record of bait placements
- Inspect bait stations regularly and remove baits if the rodent problem ceases ensuring appropriate disposal
- Notify all occupants of the building about the use of pesticides
- Do not place baits or tracking powder where they can cause food contamination, or contamination of food handling areas
- Do not eat, drink or smoke when handling pesticides
- Always wash PPE such as gloves, clothes and boots after pesticide use
- Store pesticides in their original containers and ensure that the label remains intact. Do not transfer products to alternative containers.

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