

Brown Rat Management

The common brown rat (*Rattus norvegicus* -- also called the Norway rat or sewer rat) is a destructive animal pest found in and around towns and farms. These rodents eat and contaminate large amounts of feed, damage structures by their gnawing and burrowing and may spread diseases that affect livestock and people.

Recognizing Rat Infestations

The presence of rats can be detected by droppings or evidence of fresh gnawing. Tracks can be seen in mud and on dusty surfaces. Runways and burrows may be found next to buildings, along fences, and under low vegetation and debris.



Rat Facts

Norway rats are fairly husky, brownish rodents that weigh about 11 ounces. They are about 13 to 18 inches long including the 6 to 8 1/2 inch tail. Their fur is coarse and mostly brown with scattered black on the upper surfaces. The underside is typically grey to yellowish-white.

Rats will eat nearly any type of food, but they prefer high-quality foods such as meat and fresh grain. Rats require 1/2 to 1 fluid ounce of water daily when feeding on dry food. Rats have keen taste, hearing, and sense of smell. They will climb to find food or shelter, and they can gain entrance to a building through any opening larger than 1/2 inch across.

Rats have litters of 6 to 12 young, which are born 21 to 23 days after mating. Young rats reach reproductive maturity in about three months. Breeding is most active in spring and fall. The average female has 4 to 6 litters per year. Rats can live for up to 18 months, but most die before they are one year old.

Rat Control

Sanitation: Poor sanitation and the presence of garbage allows rats to exist in residential areas. Good sanitation will effectively limit the number of rats that can survive in and around the home. This involves good housekeeping, proper storage and handling of food materials and refuse and elimination of rodent harborage (shelter). Outside dog pens must be properly maintained, to reduce potential rat problems.

On farms where food grains are handled and stored, or where livestock are housed and fed, it is difficult to remove all food that rats can use. In such situations, paying particular attention to removing shelter that rats can use for hiding, resting, and nesting is valuable in reducing rat numbers.

Warehouses, grain mills, and silos are especially vulnerable to rodent infestation. Store bulk foods in rodent-proof buildings, rooms, or containers whenever possible. Stack sacked food on pallets with adequate space left around and under stored articles to allow inspection for signs of rats. Good sanitary practices will not eliminate rats under all conditions, but will make the environment less suitable for them to thrive.

Rat-Proof Construction: The most successful and permanent form of rat

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control is to "build them out" by making their access to structures impossible. Ideally, all places where food is stored, processed or used should be rodent-proof. Store bulk foods, bird seed, and dry pet food in metal trash cans or similar containers.

Seal any openings larger than 1/4 inch to exclude both rats and mice. Openings where utilities enter buildings should be sealed tightly with metal or concrete. Equip floor drains and sewer pipes with tight-fitting grates having openings less than 1/4 inch in diameter. Doors, windows and screens should fit tightly. It may be necessary to cover edges with sheet metal to prevent gnawing.

Traps: Trapping is an effective method of control. It is the preferred method in homes, garages, and other structures where only a few rats are present. Trapping has several advantages: 1) it does not rely on inherently hazardous poisons; 2) it permits the user to determine if the rat was killed and 3) it allows for disposal of rat carcasses, thereby eliminating odor problems which may occur when poisoning is done within the buildings.

A simple, inexpensive wood-based snap trap is available in most hardware and farm supply stores. Wire cage traps are more expensive but somewhat more successful than snap traps. Bait traps with peanut butter or a small piece of hot dog, bacon, or nutmeat tied securely to the trigger. The trigger should be set lightly so that it will spring easily. Set traps close to walls, behind objects, in dark corners, and in places where rat activity is seen. Place the traps so that rats, following their natural course of travel (usually close to a wall), will pass directly over the trigger.

Use enough traps to make the campaign short and decisive. Leaving traps unset until the bait has been taken at least once reduces the chances of rats becoming trap-shy.

Using Poison Baits (Rodenticides): Rodenticides are poisons that kill rodents. They are available as either non-anticoagulants or as anticoagulants. They can be purchased in hardware stores, feed stores, discount stores, garden centers, and other places where pesticides are sold.

The non-anticoagulants cause death either via the nervous system or via the release of calcium into the bloodstream. Anticoagulants cause death as a result of internal bleeding, which occurs as the animal's blood loses its clotting ability and capillaries are destroyed. The active ingredients are used at low levels, so bait shyness does not occur when using properly formulated baits.

Most of these baits kill rats only after they are fed on for a number of days. The exceptions are brodifacoum or bromadiolone, which are capable of causing death after a single feeding. However, rats do not die for several days. When anticoagulant baits are used, fresh bait must be made available to rats continuously as long as feeding occurs. Depending on the number of rats, this may require up to three weeks.

Bait Selection and Placement: Baits are available in several types. Grain baits in a meal or pelleted form are often available in bulk or packaged in small plastic, cellophane, or paper packets. These "place packs" keep baits fresh and make it easy to place baits into burrows, walls, or other locations. Rats will readily gnaw into these bags to get at an acceptable bait. Block style baits are also very effective for most baiting situations.

Use of tamper-resistant bait boxes provides a safeguard to people, pets, and other animals. Place bait boxes next to the walls, with the openings close to the wall, or in other places where rats are active. When possible, secure the

bait station to a fixed object to prevent it from being moved. Label all bait boxes clearly with the words "Caution--Rat Bait" or another similar warning.

Sound and Electronic Devices: Rats quickly become accustomed to regularly repeated sounds. Ultrasonic sounds, those above the range of human hearing, have very limited use because they are directional and do not penetrate behind objects. Also, they quickly lose their intensity with distance. There is little evidence that sound of any type will drive established rats from buildings or otherwise give adequate control.

Predators and Biological Control: Although house cats, some dogs, and other predators kill rats, they do not usually give effective rat control. It is not uncommon to find rats living in very close association with dogs and cats. Rats frequently live beneath a doghouse and soon learn they can feed on the dog's food when he is absent or asleep. Many rat problems around homes can be related to the keeping of pets, on the other hand, some cats and dog breeds will reduce existing rat problems.

Prepared by Entomologists at the Illinois Department of Public Health, University of Illinois, Illinois Natural History Survey, and Purdue University. For additional copies, contact your unit office of the University of Illinois Cooperative Extension Service.

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