



SUMMIT COUNTY PUBLIC HEALTH

1867 WEST MARKET STREET · AKRON, OHIO 44313-6913
 PH: 330-926-5600 FX: 330-923-6436 WWW.SCPHOH.ORG

RODENT BIOLOGY

Classification

The three commensal rodents include the Brown or Norway rat, the Black or Roof rat, and the House mouse.

Common name	Brown rat	Black rat	House mouse
Scientific name	<i>Rattus norvegicus</i>	<i>Rattus rattus</i>	<i>Mus musculus</i>
Sexual maturity	Attained in 2-3 months	Attained in 2-3 months	Attained in 1 ½ months
Gestation period	Averages 23 days	Averages 22 days	Averages 19 days
No. of young	Averages 6-12 per litter	Averages 6-8 per litter	Averages 5-6 per litter
No. of litters	Averages 4-7 per year	Averages 4-6 per year	As many as 8 per year
No. weaned	Averages 20 females	Averages 20 females	Averages 30-35 females
Weight	250-500 grams	225 grams	15-25 grams
Total length	(nose to tip of tail) 30-45 cm	(nose to tip of tail) 35-45 cm	(nose to tip of tail) 15-19 cm
Head and body	Blunt muzzle, heavy thick body, 18-25 cm	Pointed muzzle, slender body, 16-20 cm	Small, 6-9 cm
Tail	Shorter than head plus body, carried with little movement, 15-20 cm	Longer than head plus body, whip-like movement, 19-25 cm	Equal to or a little longer than head plus body, 8-10 cm
Ears	Small, close set, appear half buried in fur	Prominent, large, stand well up from fur	Prominent, large for size of animal
Fur	Coarse, generally red-brown to gray-brown	Black to slate grey; tawny above, gray-white below; or tawny above, white to lemon belly	Silky, dusky gray

Brown rats are natural burrowers and will burrow near their food and water supply in areas that provide harborage, such as vegetation and piles of clutter.

Black rats are excellent climbers and will nest in higher places rather than burrowing; hence requiring warmer climates than Brown rats.

House mice are ubiquitous and exist in all climates and are routinely found both indoors and out. Their constant gnawing, urinating, and defecating causes extensive damage.

Senses and Capabilities

Rodents are nearly blind, using their sense of touch for guidance. Their long hairs, or "guard" hairs, are used for guidance as they move along walls and other objects. Rodents seldom travel in open spaces, so bait and traps should be placed accordingly.

Rodents have sensory pads on their feet which are very sensitive, hence metal bait stations should be avoided, particularly in cooler climates. Plastic stations with textured floors to simulate a natural surface are best, particularly for rats which are naturally cautious.

Rodents exhibit kinesthetic or memorized muscle movement in which they effectively memorize their environment, much like a blind person. Changing the rodent's environment at the same time as placing bait stations or traps will increase effectiveness, since rodents will be forced to change their habits and seek new harborage. Palletized storage should be used in warehouses as it is easier to move around.

Rodents use their limited eyesight to seek darker areas, hence changing lighting to create shadows will also help to throw them off in their surroundings.

Rodents are excellent swimmers. Brown rats can swim in a 30 mph current without drowning.

Rodent's teeth are extremely hard and they can bite six times per second. Rats exert 150 kgs. of force per square centimeter (2000 psi) and hence can chew through almost anything. They do need harborage to have time to gnaw, however, so keeping areas around buildings clear will deter their gnawing their way in.

Rodents can easily climb in space of up to ten centimeters between two surfaces, such as between a drainage pipe and the outside of a building.

Behavior

Rodents will cache bait in an area where they are comfortable feeding. Pregnant females particularly will build up large food supplies in their nests.

Rodents use their sense of smell to find food and to find their way inside buildings, such as restaurants where they will follow the scent of waste right to the building, starting where the rubbish is stored.

Rodents establish an order, with more dominant rodents getting to feed first and getting the prime nesting sights. If ample food and harborage is available, then less dominant rodents can also survive, but are more likely to be seen feeding during the day, which is less desirable from the rodent's point of view.

Rats groom only once or twice a day, in their burrow, therefore contact dust should be placed in the burrow for best results. Mice groom constantly, hence dust can be placed anywhere mice frequently travel.

Rodents are creatures of habit and will travel repeatedly in the same paths, often forming trails through dirt and grass.

Detecting Rodents

Due to the nocturnal nature of rodents, visual sighting is best performed at night.

Smudge marks from rodent's oily fur will be seen where rodents travel repeatedly along the same walls.

Each rat burrow will have two holes, the "mail" hole which is most often used and the escape route or "bolt" hole which is only used in emergency and will frequently be filled with debris.

Rodent tracks are always larger than the actual foot. Rodent identification by tracks is difficult, although Brown rats and older mice will tend to drag their tails. Tracks in a variety of directions indicate rodents are comfortable in an area.

Feces are a sign of infestation and can be used to identify the type of rodent. Droppings should be swept up and the area inspected a couple of days later to see if the infestation is active. Feces also help identify the rodent's diet, such as insects or dye from a poison bait.