

Rodent & Insect Fact Sheet

Facts

Wild rats live off man and give nothing beneficial in return. Rats spread disease, damage structures and contaminate food and feed. Rats damage one-fifth of the world's food crop each year. The real damage is in contamination. One pair of rats shed more than one million body hairs each year and a single rat leaves 25,000 droppings in a year.

Rats transmit Murine typhus fever, rat bite fever, salmonellosis or bacterial food poisoning, Weils disease or leptospirosis and trichinosis, melioidosis, brucellosis, tuberculosis, pasteurellosis, rickettsial diseases, and viral diseases such as foot-and-mouth disease. Norway rats can also carry the rabies virus.

The Norway rat and the roof rat are not native North American species. They traveled to the new world with the first explorers. The two species quickly invaded the continent because of their adaptability and fertility. Norway rats are found throughout the United States while roof rats primarily inhabit southeastern, Gulf Coast and southwestern states.

Rats memorize their environment by body and muscle movement alone. They become so engrained by body movements that when objects are removed from their territory, rats will continue to move around them as if the objects were still there. Successful control depends on proper identification of the different species. Norway and roof rats differ in size, habits, food preferences and regions. Techniques that eliminate one species may not eliminate the other.

Many times roof rats live in the upper stories of buildings, while Norway rats occupy the basement and first floor of the same building. Rats visit fewer food sites than mice. However, rats eat much more at each site than mice.

Signs

Rats constantly leave droppings. Fresh droppings are dark in color and soft in texture, but after three days they harden and lose the dark color.

Rats always travel the same runways and leave "smudge marks" - a buildup of dirt and oil from their fur - along walls, pipes, gnawed openings and beams and rafters.

Rats keep indoor runways, or well-used paths free of cobwebs, debris and dust. Outside, runways appear as narrow paths through vegetation.

Rats make sounds when climbing, clawing and moving. Footprints and tail drags can be seen in dusty locations. Use tracking dusts such as talcum or flour to determine if rodents are frequenting certain areas.

Gnaw marks are a sure sign of rats. On wood, the older the gnawing, the darker the wood. If dogs or cats unexplainably get excited, rats are probably moving about in wall voids or ceilings.

Control

Find trouble spots: the most important signs of rats are burrows (especially at the edges on concrete slabs and along foundation walls), droppings, tracks, runways, gnaw marks, a foul odor, rat damaged food packages and live or dead rats. Seal openings that allow rats to enter: Rats can enter any opening that is 1/2 inch wide. Seal any cracks and holes in the foundation walls. All openings where water pipes, electric wires, cables, vents and drain spouts should be tightly sealed. Windows should have tight fitting screens.

Eliminate food sources: Don't store garbage outside in plastic bags. Don't let bird seed accumulate on the ground, or leave pet food outside overnight. Don't leave ripe fruit or vegetables under trees or in the garden to decay. Don't put food scraps in compost piles.

Eliminate rat nesting sites: Remove piles of debris, bricks or boards. Stack lumber and firewood at least 12 inches off the ground so rats cannot burrow underneath. Do not stack any material against the outside walls.

Rat Trivia

- The phrase: "Rats are the first to desert a sinking ship" has some basis in fact. In the days of wooden sailing vessels, rats lived in the holds of the ships and would be the first to know if a leak had developed. Ironically, their incessant gnawing in the wood often caused the leaks.
- In some cities, the sewer rat population outnumbers the people population. In Australia, one farmer recorded 28,000 dead mice on his porch after one night's effort to poison them and 70,000 in a wheat field in one afternoon.
- Each year, rodents cause more than one billion dollars in damage in the United States alone.
- Water doesn't stop Norway rats. They can swim as far as 1/2 mile in open water, dive through water plumbing traps and travel in sewer lines, even against strong water currents.
- Unlike the teeth of other mammals, the front incisors of rodents never stop growing. In fact, continuously growing front teeth is a trait shared by all rodents from the tiniest mouse to the largest capybara. By observing captive mice and rats who have nothing to gnaw upon, it's been found that these incisors can grow up to five inches per year. Rats constantly gnaw anything softer than their teeth, including lead sheeting, improperly cured concrete, sun dried adobe brick, cinder block, wood and aluminum sheeting.
- The battle to rid dwellings of rodent infestations can certainly seem to be an uphill battle and time seems to favor the rodents. After all, rat and mice bones have been found in the caves where cavemen lived.
- Although water is vital to human health, such is not the case with all rodents. Desert dwelling kangaroo rats, gerbils and prairie dogs never drink water. A chemical process transforms part of their solid food into water.
- A rat can drop down 50 feet without injury. What's more, rats have a 36 inch vertical jump and a 48 inch horizontal jump. Rats can also scale rough vertical surfaces and walk along thin ropes and wires. Roof rats are agile climbers and can shimmy the outside of three inch diameter pipes or any size pipe within three inches of a wall. Rats are capable of climbing the inside of vertical pipes that are 1 1/2 to 4 inches in diameter.
- Since rats can fit through openings that are as small as 1/2 inch in diameter, it is very difficult to rat-proof a building.

Trapping Tips

- Neophobia, or new-object-fear, makes rats extremely cautious about changes in its territory. It takes several days before a rat will accept a new object as part of its territory.
- Trapping has several advantages over poisons, no hazardous chemicals are used, it permits the trapper to see his successes and it eliminates rat death in inaccessible locations which can create major odor problems.
- The best places to set traps are close to walls, behind objects, in dark corners; anywhere a rat looking for concealment might run. Set traps where rat runways, droppings and gnawings are evident.
- Traps should be set so that the rat, in following its natural course, will pass directly over the trigger. In setting a trap along a wall, the trap should extend from the wall at right angles, with the trigger end nearly touching the wall.

- Rat traps can be used unbaited by placing them directly in the path of rodents with the trigger situated to intercept rats coming from either direction. Expanded treadle-type triggers like the Big Snap-E make this an efficient method.
- Rats may spring traps without getting caught. If ever a trap is found sprung but with no rat caught you can be sure you will never catch it with a trap again.
- Bait for Norway rats should be small pieces of hot dogs, bacon or other prepared meats secured tightly to the trigger. Baits must be replaced every day or so to keep them fresh. Peanut butter also works well.
- An abundance of food makes trapping more difficult. Eliminate as many of the accessible sources of food as possible.
- Human or dead rat odors on traps do not cause a reduction in the catch.

Facts

The house mouse is remarkably well-adapted for living year-round in homes, food establishments and other structures. Homeowners are especially likely to notice mice during winter, following their fall migration indoors in search of warmth, food and shelter. Once mice become established inside a home, they can be extremely difficult to control.

Mice originated in Asia and spread through Europe many centuries ago. In the 1500s, mice arrived on the ships of the explorers in what are now Florida and Latin America. They quickly spread to the northern shores of North America along with the English and French explorers, traders and colonists.

Although most people consider mice less objectionable than rats, mice are more common and cause significantly more damage. Mice are prolific breeders, producing six to ten litters continuously throughout the year. The greatest economic loss from mice is not due to how much they eat, but what must be thrown out because of damage or contamination. Food, clothing, furniture, books and many other household items are contaminated by their droppings and urine, or damaged by their gnawing. House mice gnaw through electrical wiring causing fires and failure of freezers, clothes dryers and other appliances. Mice also can transmit diseases, most notably salmonellosis (bacterial food poisoning) when food is contaminated with infected rodent feces. Other diseases include rickettsialpox, lymphocytic choriomeningitis, leptospirosis, ratbite fever, tularemia, Lyme disease and dermatitis caused by the bites of mites from the mice. Hantavirus (pulmonary syndrome) is another danger becoming more common.

Mice are nocturnal creatures and are rarely seen by the homeowner. The most obvious indicators of their presence are droppings (1/8 to 1.2 inches long, dark and pointed at both ends), sounds of them running, gnawing or squeaking, or damage to stored food or materials for nesting. Highly curious, mice explore their territory daily, paying special attention to new items or physical changes in their home range. Unlike rats, mice show no aversion to new objects.

Compared to rats, mice forage only short distances from their nest, usually not more than 10 to 25 feet. When food and shelter are adequate, their foraging range may be only a few feet. For this reason, traps and other control devices must be placed in areas where mouse activity is most apparent. Mice prefer to travel adjacent to walls and other edges- another critical point to remember when positioning control devices. Mice seem to prefer cereal grains and seeds in their feeding. They are sporadic in their feeding, particularly when there are many food sources available. In these situations, mice may make 20 to 30 visits to different food sites each night, taking as little as 0.15 gram of food at each site. Sites may vary from night to night, but certain sites where the mouse feels safe are nightly favorites. When food sources are limited, mice may visit the source 200 or more times per night, but only 20 milligrams may be taken during each visit. In all, the average mouse will consume only 3 to 4 grams or about 1/10th of an ounce, of food per night.

Signs

- Mice constantly leave droppings in the areas they frequent. Approximately 1/8 to 1/4 inch in length, fresh droppings are dark in color and soft in texture. As they age, droppings become hard and brittle.
- Mice travel the same runway time and time again, leaving a smudge mark – a buildup of dirt and oil from their fur - along walls, pipes and holes.
- Footprints and tail drags can sometimes be seen in dusty locations. Non-toxic tracking dust such as talc or flour has proven helpful in determining the presence and location of mice.
- Mice can chew through anything that is softer than their teeth, so gnaw marks are a sure sign of mice. On wood, the darker the wood, the older the gnaw marks are.
- If your dog or cat unexplainably gets excited, it is more than likely that mice are moving about.
- The sound of mice gnawing, squeaking, or running through the walls or ceiling is occasionally the only sign of their presence.
- Favorite nesting materials of shredded paper, insulation material and string are often found in attics and garages.

Rodent Trivia:

- If humans are present to provide warmth and food, mice can survive almost anywhere. In fact, colonies of mice have been found thriving amidst the supplies used on polar expeditions.
- Each year, rodents cause more than one billion dollars in damage in the United States alone.
- Unlike the teeth of other mammals, the front incisors of rodents never stop growing. In fact, continuously growing front teeth is a trait shared by all rodents from the tiniest mouse to the largest capybara. By observing captive mice and rats who have nothing to gnaw upon, it has been found that these incisors can grow up to five inches per year.
- The battle to rid dwellings of rodent infestations can certainly seem to be an uphill battle and time seems to favor the rodents. After all, rat and mouse bones have been found in the caves where cavemen lived.
- Although water is vital to human health, such is not the case with all rodents. Desert dwelling kangaroo rats, gerbils and prairie dogs never drink water. A chemical process transforms part of their solid food into water.
- A mouse can jump down 12 feet without injury. What's more, mice have a 12 inch vertical jump. Mice can also scale rough vertical surfaces and walk along thin ropes and wires.
- The odor of mice is quite distinct. An experienced pest control specialist can tell the difference between rat and mouse odors.
- Because mouse urine has a fluorescent glow, a **blacklight** can be useful in determining the presence of mice.

- Rodents are prolific breeders and the following statistics demonstrate: Age of onset of reproductive capabilities: mice, two months; rats, three months. Gestation period: approximately three weeks. Litter size: five to ten babies. Rebreeding time: Immediately. A female mouse can produce around forty babies per year.

Trapping Tips

- Everyone knows peanut butter and cheese are mousetrap staples, but cotton works extremely well too. That's because the mice use it for nesting.

-Typically, mice only travel up to twenty-five feet from the nest, so trap placement is critical. Place it where mice are known to scurry and in tight or snug places.

- For winterizing storage areas, the Ketch-All drowning attachment and a jar filled with soap and water or antifreeze controls odors, dissolves mouse hair and doesn't freeze up.

- Always wash your hands after placing a set trap and after disposing of a mouse. Even though the Ketch-All and Snap-E traps eliminate hand to mouse contact, germs can spread to other parts of the trap and be airborne.

- Underestimating the number of traps needed seems to be a frequent mistake by would-be-trappers. Remember, it is far better to have too many traps set than not enough to capture the entire population

Facts

Wherever man can survive, so can cockroaches. Cockroaches are born scavengers.

Indoors, cockroaches are fond of starchy materials, such as cereals, sweetened or sugary substances and meat products. A few of the substances upon which they feed include cheese, beer, leather, hair, wallpaper, artwork, paper documents, postage stamps, draperies, paper currency, plus dead or rotting organic matter. They eat books, and the book bindings.

Cockroaches acquire pathogenic bacteria simply by walking over cultures and these pathogens are subsequently transferred to foodstuffs during the normal foraging behavior of the infested roach.

The phrase "cockroach asthma" has been used to describe instances of bronchospasm brought on by inhalation of cockroach allergens. The worldwide estimate of the number of cockroaches is given as 3,500 species, but that number is likely far greater. Many homes and business establishments become infested with German cockroaches when they are introduced inside infested cartons, foodstuffs and other materials. American cockroaches are commonly found in sewers and basements, particularly around pipes.

Control

Proper identification of the infesting species is important in controlling the infestation.

Cockroaches are secretive and often go unnoticed until populations are so large that evidence of contamination or potential health problems is readily apparent. Inspection for cockroaches usually involves visual inspection. A thorough knowledge of preferred habitats of cockroach species helps determine potential harborage sites.

The reduction of clutter is one of the keys to effective long-term control of cockroaches.

Like all animals, cockroaches need food and water to survive in and around structures. By reducing access to food and water, cockroach populations become stressed to survive in urban environments. Conversely, poor

sanitation, inadequate maintenance and overcrowding in apartments can create chronic cockroach infestations. Once German cockroach populations are established, it can be impossible to reduce the population by sanitation alone. Harborage alteration for indoor cockroaches often entails removal of materials such as paper bags and boxes, newspapers, excessive household goods, litter and any other items that produce clutter.

Trapping

Many pest management professionals consider trapping to be the most effective means of physical removal of cockroaches.

Ant Facts

More than 10,000 species may exist worldwide. Approximately 570 species occur in the United States and of these, fewer than 30 species may regularly infest homes and other buildings with only ten species considered major pests. Ants have succeeded in replacing other types of structural pests as the number one pest in homes in many parts of the United States. In Texas, the imported fire ant has been deemed by pest control companies as the number one structural pest. In the Pacific Northwest, carpenter ants are responsible for most homeowner calls to pest control operators.

All ant species member live in colonies with one to many queens, immature, numerous sterile female workers and occasionally males. The workers are wingless and characterized by elbowed antennae and the constricted first one or two segments of the abdomen.

Ants can be detrimental to human health; their presence under certain situations can pose a serious human health risk. In hospitals, health care facilities, food processing plants, food packaging plants and food preparation areas of various structures, the presence of ants should not be tolerated because of potential for disease transmission.

Ants frequently are annoying and sometimes dangerous because of their bites and or stings. Not all ants sting. In many ants, the sting has practically disappeared, but venom may be injected into a wound made from a bite. Many ants produce a toxin secreted by glands in the head which is deposited in the bite. The substance is called formic acid and is the source of the scientific name of the ants, Formicidae.

Ants commonly attack livestock. Workers of harvester and fire ants have been reported attacking and killing young pigs. There are also reports of fire ants attacking and killing chicks and newborn calves. Some species of the big-head ant are intermediate hosts of various poultry tapeworms.

Ants can damage crops and ornamental plants. The red imported fire ant is known to remove seeds from seed beds and feed on the seeds of corn, peanuts and beans. Workers of the red imported fire ant will chew on the roots, stems and leaves of plants. In some cases, seedlings are girdled and die.

Ants can spoil range land for grazing by building mounds and clearing sites for their nests. Harvester ants clear large areas of all vegetation about their nest structure. These ants have a potent sting which may further discourage grazing about their nests, Fire ants pose a special problem to harvest operations in hayfields as their large, hardened mounds are known to break harvesting equipment.

Enjoyment of parks and recreational areas where the fire ant is prevalent is often spoiled. Fire ants also show a fascination for electricity and have many reports of damage to electrical equipment. Carpenter ant workers will strip the insulation from cables, causing them to short.

Shade trees are damaged by Carpenter ants. Telephone poles are also not immune to ant attack.

Carpenter ants are the major group of ants that cause damage to wooden structures. These ants tunnel through wood but do not consume it for food as is the case with termites.

Control

Most ant infestations originate from outside the building. Failure to inspect outside to find outdoor colonies or foraging trails is the primary reason most ant control services are unsuccessful. A pest management professional experienced in ant control can quickly locate the source of ant infestations most of the time.

Dry Storage Pest Facts

Dry storage pests compete with humans for food during both the pre-harvest and post-harvest periods. Direct losses from pests result from the actual consumption and contamination. Dry storage pests can infest grain at the grain mill, the processor, the warehouse, the distributor, the retail store, the home and the trailers and railcars in which the grain and food products are transported. Dry storage pests can also aid in the distribution of fungus spores. Some of these fungi produce mycotoxins in food, including aflatoxins, which are toxic to the liver and can cause certain cancers.

Control

Control varies with the type of facility, the pest species, the type of food supporting the infestation and the legal and economic methods of the control available.

Preventing pests from entering a building where food is handled or stored and keeping pests out of food stored in bins or packaging should be the primary goal in a food protection program.

Proper disposal of waste grains is as important as good general outside sanitation.

Trapping

Pheromone baited traps are one of the newer tools which should be part of the monitoring programs in most food processing facilities. Pheromones are chemicals secreted by animals in order to modify the behavior of other animals belonging to the same or closely related species. For pest management purposes, natural and synthetic pheromones, as well as pheromone mimics, can be used.

In addition to pheromone traps, insect light traps are useful tools to detect insect activity. The contents of these traps should be emptied and checked at least twice per month and the insects examined and identified.

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