



RATS!

YOUR GUIDE TO AVOIDING RODENTS

LIKE THE PLAGUE

ORKIN



CANADA™

PEST CONTROL DOWN TO A SCIENCE.®

WE SMELL A RAT — AND ABOUT 1,700 OTHER RODENT SPECIES.

After all, rodents make up about 40 percent of all mammals worldwide.¹ They can live on nearly every continent (lucky you, Antarctica), thrive in virtually any climate and survive no matter the season. So wherever you are, odds are you're in the presence of a rodent.

While you're chewing that over, rats will be, too. The word "rodent" stems from the Latin word "rodere," meaning "to gnaw." And for good reason: rodents' incisors never stop growing, requiring nonstop nibbling to wear down their teeth, which grow an average of 12.7 centimetres.² Dentists, meet your match.

But we're not just talking about idle teething. 20 percent of the world's food is believed to be contaminated by rats and mice,³ while one in four structural fires are thought to be caused by rodent damage to electrical wires.⁴ In fact, these petite pests pack an economic punch, causing billions of dollars' worth of damage every single year.

So how do you protect your business from these mini menaces? Should you be worried about a mouse in your house – or your business? Take a tip from the Orkin Man: avoid these pests like the plague. Because, not to rat on these vermin, but chewing isn't their only dirty habit.

RODENT RISKS

Sure, Mighty Mouse is a superhero. Ratatouille looks sweet. And how could Stuart Little ever be big trouble? But don't let Hollywood blind you to the real horror show. These pests can chow down on your profits, your reputation and your health. Here's how:



SHAPE SHIFTERS

Mice can squeeze through holes that measure less than one centimetre (about the size of a dime), while rats can contort themselves into shapes as small as a quarter.



DISEASE DISTRIBUTERS

What do the Bubonic plague, leptospirosis, salmonellosis and typhus have in common? Rodents. According to the U.S. Centers for Disease Control and Prevention, rodents are known to directly and indirectly transmit 35 different diseases, many of which are potentially lethal.⁶ Now that's sickening.



BIG BREEDERS

Here's an algeb-rat problem: if a single rat can produce seven litters per year, with up to 12 pups per litter, how many baby rodents can be produced in a single year? Let us know. We're scientists, not mathematicians.



REPUTATION RUINERS

Nothing will shutter a facility quite like a rodent spotting. In fact, the mere evidence of live rodents in a food facility can result in a shut down until the issue is resolved. That's news that will travel at the speed of social media.



CONSTANT CONTAMINATORS

Here are some fecal facts for you: a single mouse can produce 49 droppings per day, or 18,000 per year. But hats off to the rats, who can top 25,000 pellets annually – and urinate over three litres a year.⁷

THE FIVE SENSES

Humans may feel a sense of disgust when they see a rodent. But rodents – well – they sense a whole lot more.



SIGHT

Animals of the night, rodents' vision is engineered for low lighting, giving them the ability to detect motion up to 33 feet away, no matter the time of day.



TOUCH

Rats and mice are thigmophilic animals, meaning they are "touch-loving." But it's not about seeking affection. Instead, rodents' sense of touch allows them to navigate dark areas and avoid predators.



SMELL

Just like your favourite perfume, rodents use their urine and pheromone secretions to mark their territories and identify their friends and families. (...Okay, maybe it's a little different than your favourite perfume.)



TASTE

Given they dine on garbage, it's surprising to learn that rats and mice possess a highly developed sense of taste and can identify sweet, bitter, salty and sour.



SOUND

You can stay quiet as a mouse, but it may not do you much good. Rats can hear in the ultrasonic range of 100kHz, whereas the human threshold is 20kHz.

THE FAMILY NEST

Who needs a family tree when you can make a perfectly good nest? Meet the most common members of the *Rodentia* order, which boasts six suborders and 2,700 individual species:



MURIDAE
House mouse,
Norway rat, roof rat



CRICETIDAE
Deer mouse



SCIURIDAE
Woodchucks, chipmunks,
ground squirrels, tree squirrels



GEOMYIDAE
Pocket gophers



CASTORIDAE
Beavers



ERETHIZONTIDAE
Porcupines

The wide world of rodents branches beyond what most businesses need to be worried about. To keep it simple, you can count the most common trespassers on one hand.

THE FOUL FIVE

Not all rodents will ravage your business (although we'd like to see a gerbil try). When it comes to business threats, there are five rodents most likely to sink their teeth into your operations.

HOUSE MOUSE

(*MUS MUSCULUS*)

Move over, Fido. The house mouse is actually the mammal humans are most likely to share their homes with – whether they know it or not. Aptly nicknamed the “mammalian weed” for their pervasiveness, house mice are known for their small size, secretive behaviour and prolific breeding.

But don't let the name fool you. House mice are known to infest restaurants, hotels, schools, food plants, hospitals, offices and even modes of transportation. Simply put: house mice make *our* nests *their* nests.



APPEARANCE

The adult house mouse ranges in size from 12 to 20 centimetres long including its tail. All house mice share three common features: **short hair that covers their bodies, moderately large ears and tails the length of their bodies and heads combined.**



LIFE CYCLE

When conditions are favourable, **house mice can breed all year long.** Females can produce 40-60 offspring in a single year – an impressive feat, considering the average lifespan is only one to two years.



LOCATION

Winter is coming. While the house mouse **most commonly exists outside**, foraging in fields and wooded areas, the onset of winter **forces mice to seek areas that provide food and warmth** – like our homes and businesses.



HABITS

The word *musculus* literally means “little thief,” which perfectly suits the house mouse's propensity to **forage for food and nest supplies** within a 3- to 9-metre radius of their nests.



DIET

House mice are considered “*opportunistic foragers*,” meaning they're like humans at an all-you-can-eat-buffet. **They eat everything they can get their hands on** but tend to favour foods that provide a nutritional diet.

Mice may scurry – especially if they're in a hurry. House mice can run up to 3.6 metres per second (faster than 12.8 kilometres per hour) and jump over objects encountered in their runways.

NORWAY RAT

(*RATTUS NORVEGICUS*)

Don't let the name fool you. The Norway rat is actually not from Norway at all. Instead, it originated in Central Asia and then made its way over to North America in the 1770s aboard ships from Great Britain. Today, it is the most widely distributed rat species in Canada.

Because of its large size and aggressive behaviour, the Norway rat is also referred to as "Super Rat" or "King Rat." And for good reason: wild Norway rats have been known to measure up to 48 centimetres with their tail.



APPEARANCE

Norway rats are relatively large rodents, with the majority **measuring over 38 centimetres in length** from head to tail. Their tails, however, are shorter than their bodies, making them distinguishable from roof rats. Shaggy, grayish brown hair covers their bodies.



LIFE CYCLE

It's hard being a member of this rat pack. Due to predators, disease and stress, the average Norway rat **lives only one year as an adult**. But, during those 365 days, Norway rats *carpe diem*. Reaching sexual maturity in just two months, females can have three to 12 litters per year with as many as 12 pups per litter.



LOCATION

Don't look now – there may be a Norway rat right beneath your feet. These rodents are **ground-dwellers that dig subterranean burrows**, making dens alongside building foundations, underneath city streets or beneath heavy rocks.



HABITS

These rats keep it in the family. Norway rats tend to **live in family units**, which are comprised of a dominant male, a breeding female and up to 12 juvenile rats.



DIET

Cockroaches and sewer water – it's what's for dinner when you're a Norway rat. These omnivores feed on **virtually any food they can scavenge**.

Michael Phelps would find the Norway rat a formidable competitor. These expert swimmers can tread water for three days straight and hold their breath underwater for up to three minutes.⁸



ROOF RAT

(*RATTUS RATTUS*)

These rodents are not afraid of heights. Known for their climbing ability, roof rats prefer dwelling in high places like attics, rafters and trees.

Although roof rats were introduced to North America in the middle of the 16th century, they soon lost the rat race to their larger cousins, the Norway rats, who began outnumbering them in the 1800s.



APPEARANCE

These medium-sized rats are either **black or brown** and are **about the same length as the Norway rat**. Born to climb, roof rats have well-developed padding on their feet and a long tail for balance.



LIFE CYCLE

Foraging is second nature to roof rats, who begin seeking their own food at four to five weeks of age. At 12 weeks, they are sexually mature, and **females can produce up to 40 new rodents each year**.



LOCATION

Roof rats thrive within the **dense cover of trees or shadows of attics**. In commercial settings, roof rats are known to build nests in the top levels of storage boxes and other aerial areas.



HABITS

Some guys have all the luck. In dense populations, roof rats will **establish a social hierarchy**, with dominant males mating more than subordinate males.



DIET

Think rodents rely on human food? You're barking up the wrong tree. **Roof rats can exist independently from humans**, instead sourcing their own food from fruit, nuts, berries and tree bark (though they will gladly take anything you leave for them).

Craving a late night snack? Roof rats understand. Roof rats forage for food several times during the night, eating 10 percent of their body weight. So next time you reach for that Chunky Monkey, know you're not alone.



DEER MOUSE

(*PEROMYSCUS MANICULATUS*)

These mice have the same colouration as Bambi, but as the most abundant mammal in North America, their population far outstrips their namesake.

Deer mice scurried under the radar until 1995, when a deadly outbreak of *Hantavirus* spread across the southwestern United States. Deer mice were eventually deemed the transmitters of this respiratory illness, which has afflicted 109 people in Canada to date.⁹



APPEARANCE

Slender and small, deer mice range from **7 to 10 centimetres long** (tail included) with a **pointed nose, large black eyes** and a **bicoloured body**. Their tails are short, but their ears are large.



LIFE CYCLE

While these mice can live up to two years, it is estimated that only **20 percent of wild deer mice survive to reach sexual maturity**. Those that do can produce two to four litters per year, with each containing as many as eight pups.



LOCATION

Unlike many rodents, deer mice are the “country mouse” of the rodent family and **prefer rural and semi-rural areas**. Outside, they make homes in piles of logs, tree cavities and abandoned bird nests.



HABITS

Although deer mice don't hibernate during the winter, they **stay in their nests for several days at a time**, eating stored food rather than facing the cold. Similar to you on the first weekend in February.



DIET

Think rodents are all bad? **You have deer mice to thank for eating thousands of pests**, including gypsy moths and cut worms.

While most deer mice don't make it to their first birthday, one deer mouse lived for over eight years in captivity.¹⁰

FIELD MOUSE

(*MICROTUS PENNSYLVANICUS*)

This mouse's name is coming out of left field. In fact, the field mouse is actually a vole.

Field mice are prevalent across Canada in grasslands, forests and low arctic tundra. In all, 12 vole species live in Canada, but only some are considered true pests. Why? They tunnel, they gnaw and they sneak into your businesses.



APPEARANCE

Field mice are **small and stocky**, typically measuring between 10 to 15 centimetres. The **tail is short**, distinguishing it from other rodent family members.



LIFE CYCLE

Field mice are the **most prolific breeders of all rodent species**, capable of producing 17 consecutive litters in one year. Mamma mia.



LOCATION

Moist areas **overgrown with plants and grass make the ideal home for field mice**, as they construct shallow runways across the surface of the ground.



HABITS

Call them homebodies: field mice are quite content to **stay in their burrows**, aside from short, quick visits down their runways and back. Because of this, even professionals rarely spot these quick crawlies – just their damage.



DIET

Field mice would fit right in at the local smoothie shop. These herbivores depend on **grasses, flowers, fruit and other plants** for their sustenance.

Meadow voles are the most common food source for predatory birds, giving them an annual mortality rate as high as 88 percent.



THE REALITY OF RODENTS

Rodent control is a multi-million dollar business for a reason. After all, these pests can chomp through wires, contaminate products and spread diseases. They may be small – but don't underestimate the bite rodents can take out of your business.

PROPERTY DAMAGE

Rodents are in the business of chewing. Blame it on their anatomy – all rodents have a pair of incisors that never stop growing and jaws that can exert up to 492 kilograms per square centimetre.¹² This creates the need for them to gnaw through anything and everything, including your profits.

Although it's impossible to measure the amount of property damage rodents can cause, this much is clear: we wish rodents would keep their mouths shut.



DAMAGE TO FOOD

In 1982, the Food and Agricultural Organization of the United Nations reported that rats destroyed more than 42 million tons of food, valued at over \$30 billion.¹³ Today, it is believed that the monetary resources lost to combating rodents could be used to feed, clothe and shelter all impoverished people around the globe.

For those in the food industry, these statistics are downright unpalatable. In fact, rats are capable of consuming 30 grams of food each evening, meaning that 50 rats in a food facility can demolish more than 10 kilograms of food per week.

Even worse than the consumption, however, is contamination. Given the impressive amount of fecal matter and urine rats and mice can produce, even a single rat is serious cause for concern.



DAMAGE TO STRUCTURE

Approximately two percent of a rodent's day – that's nearly half an hour – is spent chomping. Pair that with their incisors' length and hardness, and your business has a problem.

Across commercial buildings, rodents are capable of chewing:

- Utility gas lines
- Electrical wires
- Water pipes
- Support beams
- Aluminum sheathing
- Sheet rock
- Soft metals, including lead and copper
- Soft cement
- Asphalt
- Walls, floors, windowsills and doors

But it's not just rodents' teeth that have destructive potential. Rodents burrowing beneath the ground can collapse your foundation. Moreover, rodents may choose to tunnel into your walls and ceilings, expelling the insulation inside.

HEALTH CONCERNS

Here's a staggering statistic: in the past century alone, more than 10 million people have died from rodent-borne diseases. From the Bubonic plague to typhus, rodents have been implicated in more than 35 types of illnesses.¹⁹

Rodents are capable of both **directly** and **indirectly** spreading disease. This means that some diseases can spread directly through a rodent bite, while others can be passed indirectly through droppings, urine, saliva and/or blood.

Although the frequency of rodent-transmitted diseases is low when compared to the relative volume of these pests, there is no denying that rodents can be, well, sickly. Here are just a few diseases they've been traced to:

THE DISEASE

MODE OF TRANSMISSION

THE DIRTY DETAILS



FOOD POISONING (including *Salmonella*)

Feces of rats and mice contaminate kitchen surfaces and food storage.

Ingesting contaminated food could lead to diarrhea, nausea and intestinal disorders.



HANTAVIRUS

Rodents' feces, urine or body fluids, particularly those originating from deer mice, come in contact with humans.

From 2013 to 2014, an outbreak of *Hantavirus* resulted in 23 cases across Canada.



BUBONIC PLAGUE

Infected fleas living on rodents bite humans.

The Bubonic plague killed more than a third of the human population in 1347.²⁰ Today, there are still more than 600 annual cases worldwide.²¹



RAT-BITE FEVER

Bacteria in the mouths and noses of rats and mice are transmitted via bite.

Most cases appear in Japan, but some are present in Canada, the United States, Europe and Africa.²²

REPUTATIONAL RISK

In the world of business, reputation is king. And nothing creates more of a reputational risk than a rodent sighting.

After all, in the age of social media and review sites, word travels faster than a house mouse when a pest's presence is noticed.

But it gets worse. According to Forbes, 88 percent of consumers trust online reviews as much as a personal recommendation. Only 12 percent of consumers stated that they did not regularly read online reviews. Clearly, word of mouse – er, mouth – is more powerful than ever.²³

5 COMMENTS



TORONTO

Video and photos of rats shut down a Chinatown restaurant.

[LIKE](#) [REPLY](#)



ABBOTSFORD

Popular fast-food chain made the news after a rat was found in a salad.

[LIKE](#) [REPLY](#)



VANCOUVER

Cellphone video of rats in a grocery store prompted health inspector visit.

[LIKE](#) [REPLY](#)



MANITOBA

Free-roaming mice forced a 17 day closure for one restaurant.

[LIKE](#) [REPLY](#)



ONTARIO

More than 10 rodent droppings (some on top of soda syrup boxes) resulted in a failed health inspection.

[LIKE](#) [REPLY](#)

THE REACH OF RODENTS

Sure, they may only be a few centimetres long, but rodents' reach in commercial businesses extends far beyond their compact size. From food-handling establishments to healthcare facilities, learn how rodents can uniquely impact your business.

THE ISSUE

Why would a mouse settle for a house when it could have an entire business? While all businesses serve different roles, they present the same appeals to pests: food, shelter, warmth, chew toys (er, utility wires) and hard-to-reach harbourages. Moreover, the constant flow of people coming and going can ratchet up the chances of an infestation, thanks to open doors and food sources. Is your facility rolling out the welcome mat for rodents?

THE ATTRACTION

If you break one of these cardinal rules, rodents are likely to join your ranks:

- Left out food
- Cluttered spaces, including attics and basements
- Overgrown landscaping
- Poorly maintained walls, foundations and roofs
- Improperly sealed doors and other openings
- Standing water

THE DANGER ZONES

- Stock rooms and stored product areas
- Roofs of coolers and freezer boxes
- Vending machines
- Store or factory floor voids
- Storage shelving units
- Cluttered backrooms, basements and/or cabinets
- Warm suspended ceilings
- Break rooms
- Coffee stations
- Cafeterias
- Custodial closets
- Cluttered offices
- Wall, floor and ceiling voids
- And any place that provides food, water or shelter.

TOP 5 SIGNS OF RODENT INFESTATION

You can win the game of rat and mouse by knowing what to look for and alerting your pest control provider as soon as you see signs of rodent activity.



DROPPINGS

For rodents, your business is their personal toilet – which they use about 50 times per day. Keep your eyes peeled for capsule-like pellets.



NESTS

Both rats and mice take great care in their nests, using them as both personal shelters and food storage units. For mice, nests are often made of shredded material, including paper and cloth.



GREASE MARKS

Oil and dirt in rodent fur leave behind dark grease marks on walls, cracks and runways.



GNAWING

Want to grab a bite? If you're a rodent, the answer is always "yes." Be on the lookout for chew marks on packages, walls, insulation, wires, flooring and on pallets and products in your facility.



BURROWS

What goes up must come down. While some rodents prefer the roof, others like to stay close to the ground, burrowing underneath buildings, walls and fences.

HOW TO RAT OUT RATS (& MICE)

These vile vermin reproduce rapidly, so you'll want to call in the professionals as soon as you see signs of a rodent. Here's what to expect from an Integrated Pest Management (IPM) strategy: a technique that will help protect your business – and your reputation. Think of the IPM approach as building a better mousetrap.



INSPECTION

Start with The Danger Zones, paying particular attention to hard-to-reach areas, including basements, attics and crawlspaces and spaces that may contain traces of food. Look out for any signs of a rodent infestation, including droppings and grease marks. Remember, you may not see an actual rodent on your rat race to rodent prevention.



PRO TIP

Inside commercial facilities, there may be multiple areas with signs of an infestation – or of one to come. The key to success is to spend more time on potential “danger zones,” but don't forget that these may change over time.



EXCLUSION

Do you have any spare change? Rats can sneak into holes the size of a quarter, whereas mice can squeeze their flexible bodies into dime-sized openings. With this in mind, it's essential to seal off any and all entry points. Install door sweeps, seal cracks and eliminate gaps around utility lines and boxes. Once you're done with the ground floor, look up. Roof rats are partial to entering attics through a tree limb touching the roof, so trim back vegetation.



PRO TIP

Think of sewers as highways for rats. Gross, but true. Install plastic, one-way rodent-proofing valves inside drains and pest proof exterior vents and drains using metal mesh.



CLEAN OUT

Think cleaning is only for the spring? Aw rats – you're dead wrong. Cluttered offices, basements and attics are a favourite for mice and rats, who will source nearby supplies for food and nesting material. Be sure to clean out interior and exterior spaces frequently, including desk drawers, vending machines and break rooms.



PRO TIP

You may not be the only one making a mess. If you have ever had a pest problem, remember the gifts rodents have left behind – including urine, droppings and hairs – can cause contamination and even attract additional pests.





SANITATION

Rats, like humans, need food and water to survive. The standing water outside your facility and the food in your garbage bins make a pest paradise. If you don't want to roll out the rodent red carpet, continuously empty garbage bins and clean out dumpsters. In addition, check outside faucets and gutters for leaks and/or puddles.



PRO TIP

Rodents aren't particularly picky eaters, and they don't just rely on human food. Think about any other food sources that may be nearby, including birdseed, nuts, berries and honeycombs.



MONITORING

No two businesses – or rodent problems – are exactly alike. Consistent monitoring and maintenance of your business' unique problems are essential to effective pest management.



PRO TIP

When it comes to rodents, communication is key. And no, we're not talking about their squeaking. Be sure there are open lines of communication between your building staff, maintenance crew and pest management provider to identify pest problems early.

We've ratted out who they are, where they live and what they eat. We've learned their fecal facts, their breeding basics and their disease distribution. With this knowledge, we'll begin to close the door (and caulk the gaps) on these pests.

Whether you work in food manufacturing or hospitality, healthcare or child care, rodents will continue trying to find ways in – and we'll continue finding ways to get them out and help keep them out. It's a classic tale Of Mice – and Orkin Men.

Discover more dirty pests at
www.orkincanada.ca



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SOURCE LIST

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