

Rodent Repulsion Evident Research

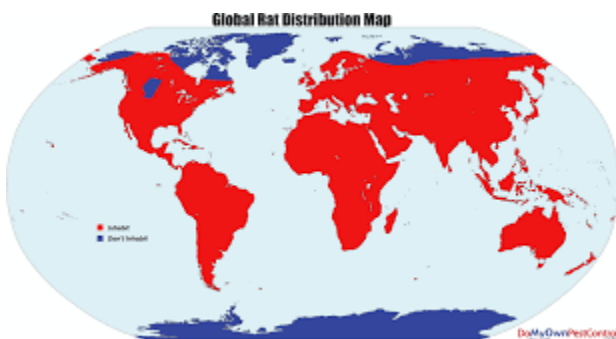
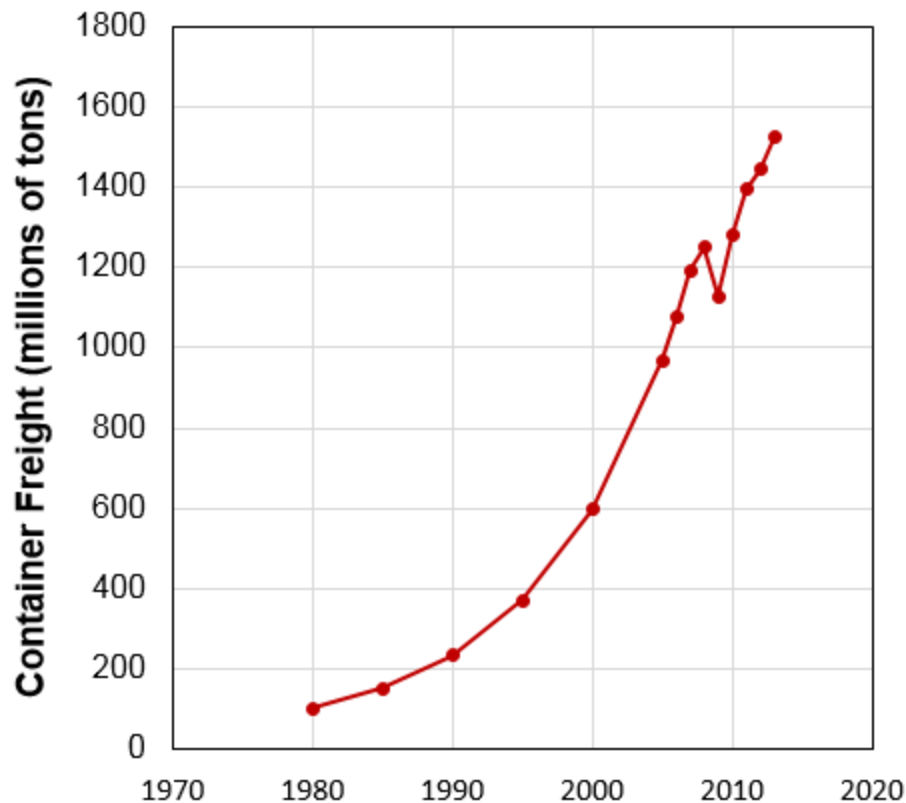
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1: At Rodent Repulsion, we are trying to improve New York City's residents' knowledge of the dangers of vermin among our streets. Specifically, we focus on rodents, or even more specifically, rats. The Brown rat or the Norwegian rat is the most common/dominant species of rat found in New York City's alleyways and sewers. Many people may find them dead on the street too, showcasing how all of New York City is their domain, not ours. We must take back our city from this vermin and protect the sanitation of New York City for the safety of our children and possibly the world too.

2:History

A: NYC's most common rat, the brown rat/norwegian rat, originates from the steppes of China and Mongolia, feeding on plants and small animals. Other rats were the first to start spreading across the world, but eventually the brown rat caught up through the increase in trade and farmland production. Brown rats stow themselves on boats and ships, which travel to major ports/cities to unload traded goods. Brown rats are highly territorial too. Brown rats that would leave these ships ended up missing limbs and having scars which suggests they fought with each other. Though less rats would leave the boat than the amount that entered, rats are still able to spread through the city and host a large population. Rats in general are an r-selected species, meaning they are able to produce a large amount of offspring throughout their lifetime. Being able to host large amounts of offspring requires an abundance of food, which can be found in cities due to uncivilized methods of containing food scraps in garbage bins.



B: The abundance of rats throughout the world was discovered through newspaper articles and books such as the infamous novel “The Jungle” by Upton Sinclair, who originally published it to expose the corruption of the meat packing industry and the unsanitary conditions provided for the products themselves and the workers. Amongst the description of the working conditions, the novel describes "There would be meat that had tumbled out on the floor, in the dirt and sawdust, where the workers had tramped and spit. There would be meat stored in great piles in rooms; and the water from leaky roofs would drip over it, and thousands of rats would race about on it." The presence of rats brought awareness to the issue of vermin coming in contact with food. Many readers were revolted by the idea of rat particles being in processed foods and other products, which forced the government to act and publish two laws; The pure food and drug act and the meat inspection act.

C: At Dublin 4 complex, rodent sightings started to occur. In this situation, the people called for an exterminator to do a check in over the complex area. The check in

revealed spots where rodents can possibly venture into the buildings. These spots were covered up as a primary precaution in order to reveal whether it would solve the problem. It did not. Instead, the rodent population seemed to grow larger as signs of rodent activity, along with sightings of the mice carcasses, started to increase. Various Integrated Pest Management control methods were initiated in order to counter the growing pest population. In the end, the exterminator found that the rodent activity shifted from being within the complex, to a waste management facility. Lastly, the complex still faced some rodent activity, but it was not associated with the original rodent problem.

D: NYC Health Code 151.02 requires property owners to take effective measures and control the presence of pests on their property. Failure to do so will result in fines. NYC Administrative Code 17-133 allows the city to intervene with a property owner's property if the landlord fails to meet Health Code 151.02's requirements. Public Health Service Act (PHSA) administered by Centers for Disease Control and Prevention authorizes federal response to disease which can be spread by rats. Occupational Safety and Health Act (OSHA Regulations) enforces employers to provide a safe and sanitary work environment for employees. Sanitation related to rats.

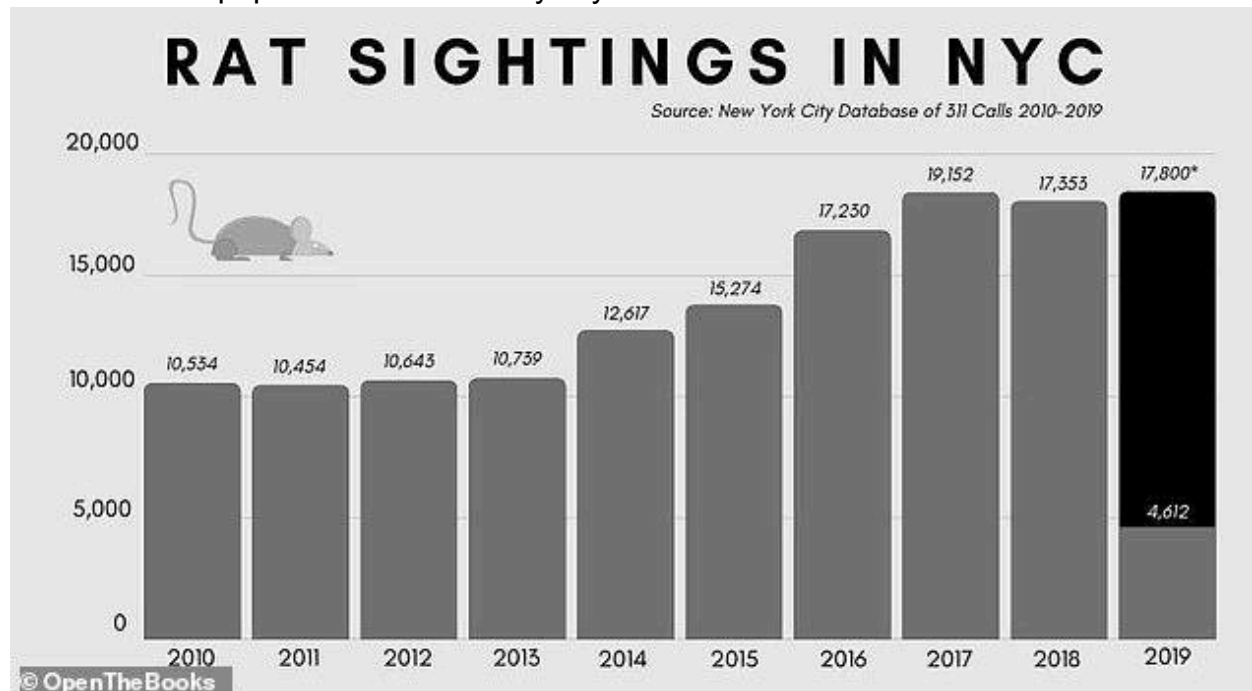
3: Causes for rodent infestations lie within the way people treat their urban environments. In cities, people often do not pay attention to waste disposal/containment and the design of buildings' wall interiors. Such unnoticed factors allow for pest populations to arise. Garbage is often left improperly contained, thus some of the garbage can spill out into an area that is accessible to rodents. Rodents are an r-selected species, thus they reproduce really fast, and in large quantities. Garbage food scraps are a primary source of food for pests that live in urban areas. In order to feed a large population of children without cannibalism, the rats' young are able to feast on this abundance of food waste. Thus people must take care of their waste disposal more in order to prevent the assistance of allowing a pest population to grow. Additionally, pest populations are able to nest themselves in the interiors of buildings' infrastructure. The gaps between walls are accessible to pests and mitigate human interactions for the pests, serving as a safety haven for them.

4: Consequences

A: In the present, rats are not acknowledged much by the average citizen unless their work or personal life is outrageously affected by them. People who work in warehouses, subway stations, waste management facilities, farms, food related facilities, and even schools can be affected by rats. What all these places have in common is the abundance of food or food waste among them, which prove to be hospitable for the rodent population. Currently, there are many diseases that are spread through the contamination of food by rodent feces. ...

B: In the future, there is a danger of an abundance of diseases being spread throughout the world because of high rat populations in urban centers. In the past, a famous disease contaminated a large sector of the world called the Black death or the Bubonic plague. This disease was spread by rats who had infected fleas on them. This

method of spreading disease can become very potent/widespread with an abundance of pests in densely populated areas. Our future may depend on whether or not we can contain rodent populations before they sky rocket to uncontrollable numbers.



5: We propose a solution that will rely on New Yorkers. We must understand that this problem is the consequence of our ignorance and thus we must teach ourselves how severe of a situation we are in. During the Great Leap Forward in China during the 1950s, the government issued “The Four Pests Campaign” which aimed to encourage citizens to control the spread of pests themselves. We are advertising a similar approach. We will encourage New Yorkers to take action against the rodents in exchange for money. This will be beneficial in a multitude of ways. Though this will not be steady income, people may be able to get some cash in order to buy food when times get rough. This will be useful especially now as inflation occurs in metropolitan centers. This will be like Killing Two Birds with One Stone ;).

6: Though rats and other rodents are seen as repulsive, some may side with the fact that they are very important to the ecosystem that has developed in New York City. Some may argue rats are important because they supply ecosystems with burrows for shelter, controlling populations of certain species, and even serve as a food source for predators, but this is only in the wild. In New York City, we do not have such large populations of other animals as in the wild. Large animals, predators especially, typically avoid contact with humans out of fear. Thus we have no predators within the city to check the rat population. The burrows they dig are damaging to the city’s architectural infrastructure by creating loose soil, removing support for buildings’ foundations. This uncontrolled population of rats is extremely non-beneficial in urban areas.

Denis Notes:

Article: [Smithsonian magazine: "Cats are surprisingly bad at killing rats"](https://www.smithsonianmag.com/smart-news/cats-are-surprisingly-ineffective-keeping-urban-rat-populations-check-180970428/)

Solly, M. (2018, September 28). *Cats are surprisingly bad at killing rats.*

Smithsonian.com.

<https://www.smithsonianmag.com/smart-news/cats-are-surprisingly-ineffective-keeping-urban-rat-populations-check-180970428/>

Author: Meilan Solly

Final Verdict: Rats are too big and feisty for Cats

A study was conducted that originally researched the effects of pheromones on animal behavior. Later, the group decided to focus on rat-cat interactions and noticed that over a 79 day period, a colony of 150 rats suffered only 2 losses from a group of feral cats. Author of "The Atlantic", Sarah Zhang noted that introduction of felines in order to lower rat populations is not only ineffective, but also peaks the risk of disease introduction through feline feces called "Toxoplasmosis, which causes severe brain damage or even death when transmitted from a pregnant mother to a fetus." Additionally, Cats are known for hunting birds and a 2013 study claimed that cats are responsible for 2.4 billion bird deaths per year within the U.S.A. Thus the multiple studies conducted only lean towards cats not being used to solve the problem of rat infestations. Cats are just too small to hunt the average NYC brown rat, which is big and feisty. Additionally, cats spread disease and hunt other species instead of the intended one.

Article: [TIME: "Here are the diseases in NYC rats"](#)

Worland, J. (2014, October 15). *NYC rats diseases: Here's how many they have*. Time. https://time.com/3507898/nyc-rats-diseases/?utm_source=chatgpt.com

Author: Justin Worland

Final Verdict:

Rats are full of different diseases and bacteria. On average, they are infected with "1.6 bacterial agents and 3.1 viruses", with many more [novel viruses](#) found within them.

Summary:

Brown rats, also known as Norway rats, are the most abundant out of all rat species within NYC. Their weights range from 0.31 pounds to 1.1 pounds, which as mentioned before, is unappealing to cats who harvest prey around 0.07 pounds. Carrying multiple diseases, along with novel viruses, poses rats as a large threat to the health of NYC residents.

Article: [Showsight Magazine: "Doin' what comes naturally... the rat hunting dogs of NYC"](#)

Reynolds, R. (2022, December 7). *Doin' what comes naturally... the rat hunting dogs of New York City*. Showsight Magazine.

<https://showsightmagazine.com/doin-what-comes-naturally-the-rat-hunting-dogs-of-new-york-city/>

Author: Richard Reynolds

Final Verdict: Dogs are Efficient Rat hunters

Ryder's Alley Trencherfed Society, also referred to as R.A.T.S. utilize the old fashion skills of their dogs in order to hunt rats, demonstrating how useful dog breeds originally were. Terriers, is a branch of dog breeds that were specifically made to locate and exterminate burrowing creatures such as foxes or rodents. Their smaller size allows for them to enter the rat burrows, which are often too small for larger dogs. When Wendy Kellerman's grooming area was overrun by rats, too large for her chihuahuas to handle, a group of terriers appeared accidentally and exterminated the rat population. This incident inspired the use of terriers in other areas and thus R.A.T.S. got to work.

[John Calhoun's experiment: Universe 25 experiment](#)

Melchor, A. (2024). *Universe 25 experiment*. The Scientist.

<https://www.the-scientist.com/universe-25-experiment-69941>

Author: Annie Melchor

John Calhoun, a researcher at the Nation Institute of Mental Health, used rodents for many of his experiments. In Universe 25, he investigated the effects of population density on the behavior of rodents. Originally, the rat population was smaller. Calhoun initially started with 4 rat couples, with abundant resources and space. The only constraint was that the space would not expand. Mice are an R-selected species, and thus reproduce multiple times and have many offspring. Within a year's time, the population density became so large, to the point where the social construct and behavior of the mice changed. "Animals became increasingly violent, developed abnormal sexual behaviors, and began neglecting or even attacking their own pups." Eventually, mice born in this new environment inherited new behavior, they were unable to form bonds, which led to less pregnant females, and thus a declining population that eventually died out.

Very Important

Zimmer, C. (2016). *How the brown rat conquered New York City (and every other one, too)* - *The New York Times*. How the Brown Rat Conquered New York City (and Every Other One, Too).

<https://www.nytimes.com/2016/10/28/science/brown-rat-new-york-city.html>

Now Dr. Munshi-South and his colleagues [have completed the first in-depth genetic study of brown rats](#) from around the world. Their story has twists and turns that surprise even the experts.

After spreading slowly for thousands of years, the scientists found, brown rats scampered over much of the planet in just the past three centuries. And once brown rats settle into a new city, the new study suggests, they repel all newcomers — a finding that could have big implications for our health.

These rats may have traveled on overland routes, or perhaps hidden on ships that sailed along the coasts of Asia and Europe.

The new study suggests that brown rats were slower to spread around the globe than our other familiars, the black rat and the house mouse. Geography may be the reason: House mice originated in the Fertile Crescent, and black rats in India.

Farming societies and widespread trade arose in those places much earlier than in northern China, giving the black rat and the house mouse early opportunities to travel.

Brown rats in Alaska and along the Pacific Coast of the United States and Canada can trace much of their ancestry to Russia, Dr. Puckett and her colleagues found. Their ancestors may have stowed away aboard ships that traveled to fur-trapping communities in the New World in the 1700s and early 1800s.

Foxe, K. (2025, June 10). *RTE locked in €5.4K battle against mice & rats invading 4 spots on huge campus*. The Irish Sun.

https://www.thesun.ie/news/15349325/rte-mice-rats-invading-campus-fair-city-set/?utm_source=chatgpt.com

Last December, exterminators were called in after a “reported mouse sighting” in the campus creche, according to inspection logs.

A follow-up inspection warned that there was a large gap under the main doors of the library, which might have been the cause of the problem.

A report said: "Bristle strips are advised as it prevents easy access for rodents.

"All fly units cleaned and maintained, and new sticky boards fitted and found to be in good working order."

All monitoring points were inspected and showed no signs of "lingering activity," but two new special mouse-catching RADAR units were installed as a precaution.

Follow-up inspections on the canteen and other food areas of RTE showed no further activity, according to records.

During April, an exterminator twice found evidence of rodent activity at a rubbish compactor area, although a follow-up later that month said the problem had been resolved.