









# **GUEST STAR RATS!**

From the 15<sup>th</sup> of September 2023 to the 16<sup>th</sup> of June 2024, the rat will be our guest of honour at the Sewer Museum!

Hi, I'm Rattus!
And for the next few months,
I'll be the big cheese around
here! You'll find out a bit more
about little old me and the long
history that we share. Take a
good look around the museum
and see if you can find me.
We'll start on the first floor.
Follow me!



# HEY!

Rattus norvegicus is the Latin name of a species that is known by many other names, including brown rat, city rat and sewer rat. In the city, this rodent has made its home in the vast sewer system, enjoying the constant heat and humidity and feeding off the many food scraps that end up in our sewers. The sewers offer this species shelter, accommodation and keep them safe from predators. Like other animals that live in close proximity to humans and are neither wild nor domestic (pigeons, mice, etc.), rats rely on human activities and the waste we produce as a source of sustenance.

A familiar guest of sewers, as well as parks, cellars and gardens – where they're rarely welcome – rats can incite fear, fascination, curiosity and even disgust. They rarely leave humans indifferent. Over time, we have developed increasingly sophisticated capture and control techniques, albeit with sometimes questionable ethics.

The aim of this exhibition is to present this predominantly undesirable creature in an open and unabashed way, and to demonstrate how wonderfully adapted they are to the artificial environment of our cities and to our consumption patterns. Like other urban animals, rats are often labelled harmful or undesirable. But how much do we really know about them? Isn't it time to cast aside some of the ideas and stereotypes that are so difficult to shake? Can we ever reach a place of peaceful coexistence with rats? Let's lift the veil on this little creature who lives mostly out of sight, behind the scenes of the city.

# WHO ARE YOU, RATTUS?

Rattus rattus VS Rattus norvegicus:

COMMON NAMES:

black rat, house rat, roof rat brown rat, common rat,

sewer rat

BODY LENGTH:

16 - 24 cm 20 - 28 cm

• TAIL LENGTH:

18 - 25 cm 16 - 22 cm

• TAIL/BODY RATIO:

>1 (tail longer than body) <1 (tail shorter than body)

• WEIGHT:

150 - 250g 250 - 480g

EARS:

large small

FOOT LENGTH:

31-43 mm 41-45 mm

• FUR:

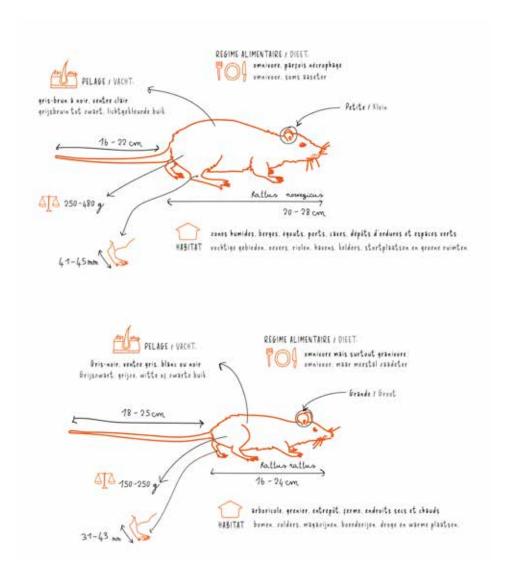
Grey-black coat –grey, white dark grey-brown coat, light or black belly coloured belly

• HABITAT:

trees, attics, warehouses, wet areas, banks, sewers, ports, cellars, rubbish dumps and green spaces.

DIET:

omnivorous, primarily omnivorous, sometimes granivorous scavenger.



Scientific Drawings, M.A.C. Hinton, Rats and Mice as Enemies of Mankind, British Museum, 1918.

[Taxidermied animal] *Rattus rattus*, IrSNB collection. [Taxidermied Animal] *Rattus norvegicus*, IrSNB collection.

## Black rats, brown rats and mice: how to tell them apart?

## Rattus rattus, Rattus norvegicus, Mus musculus

Three rodents from the Muridae family. There is a big difference between rats and mice! In this drawer – one of the 42.000 that make up the Zoology collections of the Royal Belgian Institute of Natural Sciences – pay close attention to the differences between these "study skins" (only the skin is preserved) that have been conserved for the purposes of scientific study.

These "study skins" are sometimes called "lollipops" by taxidermists!

Study skins drawer, IrSNB collection.

## **Heightened senses**

Thanks to my highly developed sense of smell, I can easily recognise family members and identify food sources from a distance.

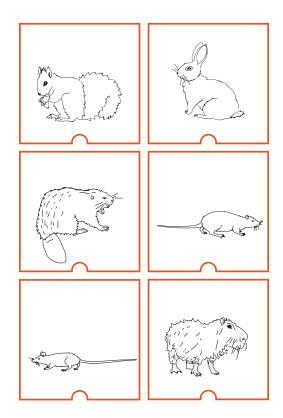
My eyesight isn't the best, but unlike you, I can see ultraviolet light. No movement escapes me because I can look in opposite directions at the same time, which gives me a very broad field of vision.

My whiskers, or vibrissae, are necessary for sensing my surroundings and moving about in the dark.

## What proportion of mammals are classed as rodents?

40 % of all mammal species belong to the order of rodents.

Which of these mammals is not a rodent?



The rabbit is the intruder. Indeed, the rabbit is a lagomorph. Rodents have two pairs of continuously growing incisors, while lagomorphs have three.

"We do know more about polar bears and blue whales than we know about rats."

Chelsea Himsworth, Vancouver Rat Project

Brown rats tend to live in colonies of around 20 to 100 individuals.

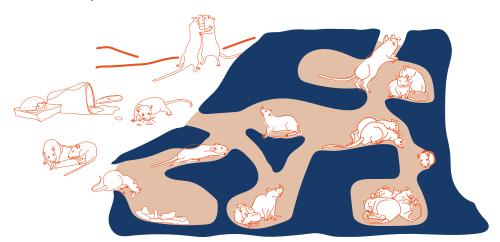
They dig complex burrows located 40 cm deep. This network of galleries includes living quarters, storage chambers and several exits. Nests are made of various materials: plants, paper, cardboard, rags, polystyrene, plastic, etc. Burrows are always located near food sources.

More than twenty social behaviours specific to rats have been identified in natural conditions. These include so-called "positive" behaviours: they clean one another, snuggle up against one another, share their food, play together as teenagers, and even help one another out.

Some behaviours are violent: attacking, fighting and intimidation, which all serve to establish the hierarchy between pack members (the dominants and the subordinates) and to defend the colony's territory.

Most of the time, we don't see rats because they only come out at night and stick to their burrows or the sewers. Above ground, we might sometimes spot them at dawn or dusk, looking for food that has been discarded or in our rubbish bins.

Recent studies show that rats' movements are limited to a perimeter of 10 to 100 meters around the nest.





I emit and can hear a wide range of sounds to communicate with my fellow rats. Some of these sounds reach frequencies you can't even hear – ultrasound!

I'm not known for my discerning taste in cuisine, but I'm very wary of food sources that haven't been tried and tested. This mistrust is called neophobia. I dare say you're a bit the same with certain vegetables we prefer not to mention, don't you?

#### The tail does not make the rat!

As disgusting as it might be to some humans, my tail is very useful to me. It serves as a pendulum to help me keep my balance. It also helps me regulate my body temperature. It's rather soft to the touch but can become scaly if I suffer from any deficiencies. That's when my cousin the squirrel tells me my tail lacks a little panache!





Photomontage © Danièle Rapin, Neuchâtel Natural History Museum.

Sciurus vulgaris (squirrel), IrSNB collection.

My teeth never stop growing, so I'm constantly gnawing on things. Can you guess how many cm they grow a year?

If my head fits, then so will the rest of my body. Barricade any small holes!

Rattus norvegicus skull, IrSNB collection.



Phylogenetic classification makes it possible to determine the evolutionary relationship between living beings and answering the question "who is closer to whom?". Not to be confused with genealogy, where you research your family tree and answer the question "who descends from whom?". Each branch of the tree carries the evolutionary innovations produced by hypothetical ancestors. The top of the tree represents the current groups.

Will you be able to trace the path to my current group within the branches of the tree? Am I a closer relative to the pigeon or to the fox?

Answer: I am closer to the fox, with whom I share a more recent common ancestor. We are **mammals** (attributes: fur + mammary glands). I also share a common ancestor with the pigeon and the fox; we are **tetrapods** (attribute: 4 limbs).

#### **RATATOUILLE FIELD STUDIES**

Waking up at dawn, setting up camera traps, equipping rats with GPS beacons or even carrying out genetic analyses are all in a day's work for the researchers of the ARMAGUEDON project. This unprecedented research project attempts to better understand the brown rat in order to help better manage its existence within the city. A highly controversial subject in the French capital! The three main objectives of the project are to:



Describe the biology and ecology of Parisian rats



Understand the risks of disease and infection transmission from rats to humans



Fight prejudice to help Parisians coexist more peacefully with rats

Capture cage and camera trap, ARMAGUEDON Project – National Museum of Natural History (MNHN).

Rattus norvegicus equipped with a beacon, ARMAGUEDON Project – MNHN.

Photos © ARMAGUEDON Project – MNHN.

## Camera trap video extracts

#### Live from the sewer under the museum!

We are the museum rats, come and join us downstairs! Isn't it about time a research team went into the sewers of Brussels to learn more about their way of life in this strange habitat?

Collect of documentary images © Py & Verde, 2023.

#### **FOCUS ON BRUSSELS' RATS**

Follow the footsteps of naturalist Thomas Jean, who has spent the last few months on the lookout for Brussels' rats.

© La Minute Sauvage, 2023.

#### WHERE DOES THE WORD RAT COME FROM?

The origin of the word is unknown (the word is shared by both Germanic and Romance languages). Linguists hypothesise that it comes from the onomatopoeia of the noise the rat makes while gnawing.

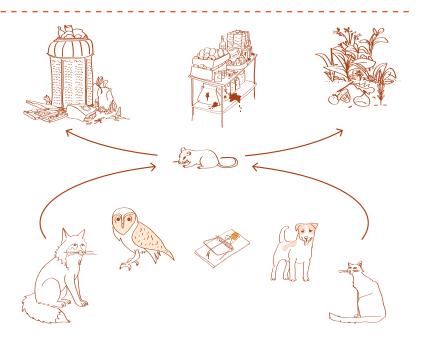
## **RATTUS vs. HOMO DETRITUS**

The rat is known to be a synanthrope: it is neither wild nor domestic, but lives in close proximity to humans and their activities. It thrives in the sewers, an entirely man-made environment that is safe from predators and offers an all-you-can-eat buffet.

Sewer workers sometimes consider me an ally because I feed on the waste down there, potentially preventing blockages in certain sewer pipes.

#### **Bed & Breakfast**

Rubbish bins overflowing with greasy snacks, crumbs left in the grass after your picnic, sewers carrying tons of leftover food, or even your cellars where you keep all your bulky items... You really are spoiling us!



## What's on the menu for the city rat?

Brown rats are considered a commensal species. He shares the same diet as humans, primarily in the form of our food scraps. Dominant individuals (male or female) take priority over subordinates when it comes to food. When food becomes scarce, subordinate rats are the first to die off.

#### Ratatouille?

Rats can be preyed upon by certain raptors or foxes. Young rats may even fall victim to cats or dogs. This is why the sewer is such a safe haven for them; no predator ever ventures there.

#### **Evidence**

Have you found faeces in a corner of the cellar? Are they the size of a grain of rice or an olive pit? The answer to this question will tell you whether you're dealing with mice or rats. Gnawed objects leave little room for doubt. Take a close look at the marks left behind by these sharp-toothed scoundrels. Rat teeth can chew through almost anything: plastic, wood, electricity cables, concrete, etc.

Mouse



rat



TV remote control Lead pipe Soap Foam sheathing Objects gnawed by rats, Max Hagner Collection, Cantonal Museum of Natural Sciences of Lausanne – Department of Zoology

#### Think we've bitten off more than we can chew?

I can gnaw on just about anything and everything. The enamel covering the front of my incisors has a hardness of 5.5 on the Mohs scale. By comparison, diamond has a hardness of 10, porcelain 7, steel 5.5, copper 3, and your fingernails a mere 2.2.

## Why do I have orange teeth?

The enamel of my incisors contains iron, which explains why they're so strong. Iron rusts in the open air and turns orange.





#### **SELECTION OF ADVERTISEMENTS BY PUBLIVORES**

Ğ	Virus Rouge Talon rat poison Catseye	France Australia USA	1917 1997 2009
	Ratkiller Chamber Orkin	Canada Canada	2015 2012

## **RAT POISON!**

For a long time, poisons commonly known as "rat poison" were composed of arsenic and thallium, both dangerous substances that are now banned. Current rat poisons primarily contain low-dose anticoagulants. These products prevent blood coagulation, which usually causes death by internal bleeding three to seven days after the initial ingestion. This slow death doesn't arouse suspicion among the other rats in the colony, since the "tester" rat doesn't immediately succumb to the effects of the poison.

These poisons are effective but don't break down easily, which means the toxic compounds can accumulate in nontargeted animals and contaminate the environment.

Furthermore, resistance to anticoagulants has been observed in almost all European countries. In parts of England, 70% of rats are now resistant to commonly used anticoagulants.



"Tord-Boyaux" rat poison advertisement, 19th century. Wellcome Collection.

For decades now in Brussels, there have been "large-scale rat extermination" campaigns in the sewer network. Twice a year, 1900 km of sewers across all 19 municipalities are targeted by rat poison based extermination campaigns.

In the event of a sewer system flood, however, these poisons can be washed away. As a result, there is a risk they might contaminate aquatic organisms living in the rivers downstream of the water treatment plants. A study in Germany showed that almost 90% of river fish analysed contained traces of anticoagulants. Hope you weren't planning on having fish for dinner!

In Western society, rats are generally regarded as problematic. Centuries of bitter struggle have led to an impressive range of extermination strategies. Here you will find a small selection.

Researchers from the nature and forest institute (Instituut voor Natuur en Bos - INBO) have taken it upon themselves to score the main population control techniques from the most respectful to the most cruel in terms of animal welfare. Various factors were taken into account:

- pain level
- the time during which the rat remains conscious once the method has been applied
- the effect on those animals that were able to escape
- the potential effect on non-target animals

Discover in this room a trap collection ranging from the least to the most cruel.

## Private collection, H.Leirs



#### GoodNature® A24

Taking the top spot, this device releases a non-toxic lure that targets mice and rats. Attracted by the smell, the animal visits the trap, triggering a CO2 activated striker. The trap resets automatically and the corpse can be removed or carried off by a scavenger without any risk of poisoning.



#### Stunners

An ancestor of the A24, this very old system drops a weight onto the rodent, killing it instantly.



#### Various types of mechanical traps

Mechanical rodent traps were first devised in 1878. Since then, countless models have existed, but the principle is always the same: a metal arch stretched by a spring, snaps shut on the victim when they try to grab the bait.



## Electric trap

When the rat enters this trap, it receives a fatal electric shock of 2000 V during two minutes. This electric shock leads to a malfunction of the heart and breathing, resulting in the animal's death within two minutes.



## Hungarian double-door cage and traps

Cages, traps and baskets are all good ways to capture rats alive. While they may seem less cruel, they do cause stress for the trapped animal that will have to be released far from its usual habitat in order to prevent it from quickly returning to the house. Releasing the animal in unfamiliar territory often amounts to a death sentence. It must find food, a habitat, and avoid predation: a real ordeal!



## Rat poisons

Rat poison is usually our go-to solution for dealing with rat infestations in private homes. Unlike mechanical traps, humans won't be confronted with rat corpses if they choose this method. Whereas in the past, the bait could simply be placed in little cups, it must now be stored in solid boxes that cannot be opened without a special key.

## So-called "first generation" rat poisons:

Kapo Rex, Tomorin Geigy for spreading, Ramor Ring. Max Hagner Collection, Cantonal Museum of Natural Sciences of Lausanne – Department of Zoology Second generation rat poison, anticoagulants Pest control department, City of Brussels.



## Glue trap

Right at the bottom of the rankings are the glue traps that lead to prolonged agony. The use of these traps constitutes a violation of Article 15 of the Animal Welfare Act of 14 August 1986, since the killing is not carried out by the most selective, fastest and least painful way for the animal.

Prior to the development of ever more sophisticated traps, humans came up with simple techniques to capture rodents.



#### Trained ferret

An invisible killing since it most often takes place underground. The ferret, once trained, can be a ruthless rat killer. In the past, they were used by French soldiers to flush out trench rats during the First World War. For about ten years now, the municipality of Etterbeek in the Brussels region has been offering this proven method of rat extermination. It has been particularly well-received by the public who considers it a more "natural" option, despite the fact that the ferret is not a natural predator of the rat.

Mustela putorius furo, collection IrSNB.



## Homemade traps

With just a bucket, a plank, and a good homemade bait (for example, a biscuit spread with peanut butter), the trick is done!



## Repeat trap

This ingenious trap combines several mechanisms that lead to the drowning of the captive and arms the trap for the next one. She enters through a gate, attracted by bait. It closes behind her, and the only way out is to climb through a narrow tube that prevents any retreat. A horizontal passage makes her traverse a tilting platform. This platform plunges her into a container filled with water and, by tilting, raises the entrance gate for the next one.

Don't forget that before using these traps, you first need to make sure there is absolutely no risk of me entering your home. Make sure all entry points to your home have been properly sealed and don't leave any food lying around (no, not even for your cat!).

If we're already indoors, it's best to call out a professional ratcatcher.



## Names that leave nothing to the imagination!

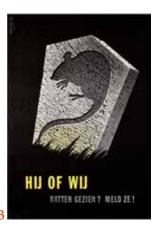
The types of names given to traps, such as "Rat-tox", "Tord-Boyaux", "Tuvora", "Lucifer", "Virus rouge" or "Ramor", don't leave the buyer in any doubt as to their intentions. If you prefer, of course, you could opt for less threatening brands such as "Le Merveilleux" or "GoodNature", but that doesn't mean these traps are any less deadly!

- 1 Advertising blotter for Tuvora laboratory products.

  © Cantonal Museum of Natural Sciences of Lausanne –
  Department of Zoology.
- 2 Havlik, Ratten niet lokken Bestrijden!, Ministry of health and environmental hygiene, 1995. Courtesy of Stichting Het ReclameArsenaal.
- 3 Koen van Os, Hij of wij, 1925. Courtesy of Stichting Het ReclameArsenaal.
- 4 Advertising folder containing an X-ray of a rat and the effects of anticoagulants. Sewer Museum.
- 5 Jan Roëde, Bestrijdt Ratten en Muizen, Nederlands, around 1950. © Jan Roëde Stichting.
- 6 "A cat in a can": Rat-Tox kills rats, mice, field mice, etc., 1934. © BNF.
- 7 Théophile Alexandre Steinlen, *Burnichon rat poison*, 1888. © BNF.
- 8 Advertising blotter for Chauvin rat poison, around 1955.
  © French National Museum of Education.
- 9 "Le Merveilleux automatic traps" billboard, Max Hagner Collection, Cantonal Museum of Natural Sciences of Lausanne Department of Zoology.



















9

# **STATUS: Undesirable (variant: harmful)**



#### S.O.S.

## Audio excerpts from interviews with rat-catchers

If you think you might have a rat infestation in your home, you should call your municipality. Some provide their own extermination service, while others can refer you to other pest control professionals. Some of them offer integrated pest management methods and promote prevention. They can give you invaluable advice to keep pests out of your home for good.

- Jean De Marcken, Pest Control Officer for the municipality of Etterbeek
- Jesuino Galhardo Gamito, Extermination Unit of the City of Brussels
- Gino D'Haese, Extermination Unit of the City of Brussels
- Philippe Agie, Pest Control and Exterminator for APES sprl

This is a job that has stood the test of time.

Etching by Visser Cornelis (1629-1658), An rat-catcher in Haarlem. Wellcome Collection.

Fernand Pelez de Cordova (1820-1899), A monkey dressed as a rat-catcher, drawing and watercolor 1863. Wellcome Collection.

Jan Joris van der Vliet, *A rat-catcher*, etching, 1610. Wellcome Collection.

Ernest Henry Griset, *De Terrier and the Rat*, etching, 1871. Wellcome Collection.

## **RATTUS NEWS**

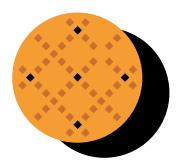
## One big happy family

Whether in the countryside or in the city, the proliferation of rats is worrying. These fertility champions can breed all year round if conditions are right. As each of their young reaches sexual maturity six to eight weeks after birth, it has been calculated that a population could theoretically grow from 2 to 15.000 individuals in a single year if resources are unlimited. The life expectancy of a wild rat, however, rarely exceeds the first year.

## How many are there in Brussels?

Their number sometimes makes the headlines, but these data are fanciful and not based on any scientific study: it is impossible to estimate the population on a city-wide, or even district-wide, scale. However, you do tend to see more of them about when works or floods dislodge them from their underground nests.





## **RAT FACES!**

Here, Brussels wildlife photographer Thomas Jean exhibits the results of a few months spent on the lookout for city rats. Written next to these unpolished portraits are a few of the adjectives and key words collected from the inhabitants of Brussels when we told them we were planning to produce an exhibition on rats.

What comes to mind when you think of rats?

© La Minute Sauvage, 2023

Fascinating
Cute Clever Fear
Ugly Dirty United
Infestation
Disgusting Fat Intelligent
DiseaseFamily



#### The rats are leaving the ship!

For centuries, the rat has been valued for its ability to alert humans to imminent disasters. Brussels' sewer workers can also testify to the valuable services provided by rats.

Audio excerpts from interviews with:

Murat Ozbakar

Pierre Henrion

Marc Busiaux

Michael DeBont

Alain Buseyne

Willy Van Waeyenberghe

## **VECTORS OF DISEASE?**

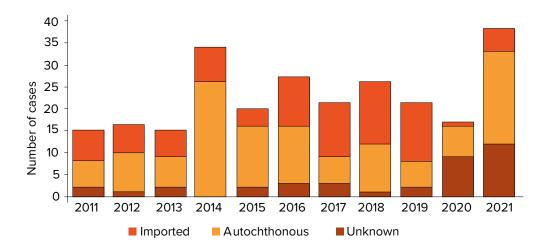
Like most wild animals, rats can be infected with zoonotic pathogens, i.e. pathogens that are transmitted between animals and humans, such as *E.coli* bacteria, salmonella and leptospira.

# Leptospirosis also known in French as "sewer worker's disease"

Leptospirosis is a bacterial infection. The infection mainly occurs in domestic and wild animals, but it can also be transmitted to humans. Bacteria eliminated by animals in their urine can survive for a few weeks in aquatic environments or on damp soil.

This disease has long been associated with sewer work, but is actually no longer very widespread in this profession. In the event of contact with the urine of a rat infected with the disease, sewer workers are now sufficiently kitted out to prevent the risk of infection: goggles, gloves, boots and waterproof suits.

According to Sciensano, a few dozen cases of leptospirosis are diagnosed in Belgium each year. Many of these infections are contracted while travelling abroad, most often from swimming or water sports in fresh water. A peak was observed in 2021, but a link between rising cases and the exceptional floods of that summer cannot be ruled out.



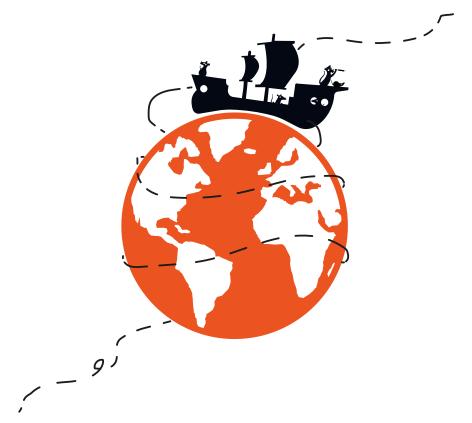
Source: Number of reported cases of leptospirosis by site of infection, per year, Belgium, 2011-2021.

Without wanting to make you paRATnoid, don't forget that I'm not the only natural host of these pathogens! Other small rodents, as well as cattle, pigs and dogs, sometimes carry these bacteria and eliminate them through their pee, too.

Here is some advice from Dr. Rattus to avoid contamination:

- don't touch wild animals
- avoid direct contact with animal urine
- don't swim in water potentially contaminated with animal urine
- cover open wounds with a waterproof bandage before swimming or kayaking in fresh water





# Cosmopolitan species

The black rat (*Rattus rattus*) and brown rat (*Rattus norvegicus*) conquered the whole world, originating from India and China. The proximity between rats and humans developed with the rise of agriculture during the Neolithic era in the Middle East and the Mediterranean. The dispersal of the rat was accelerated first by the travel of nomadic populations, then by the development of cities, and, last but not least, by maritime trade. The black rat is said to have been the first to have made it to Western Europe, in around 1000 BC, and spread out across the continent following the conquests of the Roman army.

Not as much is known about the history of the brown rat. It's presence in Western Europe dates back to the early Middle Ages, but they seem to appear in larger numbers from the 15th century onwards. Nowadays, brown rat populations have overtaken black rats in all major cities in Northern and Central Europe.

A stowaway of rail and sea transport, the brown rat now exists on all continents, except Antarctica.

### What about the plague?

The rats that helped spread the plague through Europe during the Middle Ages were black rats.

Contrary to popular belief, the black rat was just as a victim of the plague bacillus transmitted by its flea, *Xenopsylla cheopsis*, as the humans the flea would move on to once the host rat had died.

Be careful not to lump the two species of rat together. Brown rats appear to be resistant to the plague bacillus and unlike the black rat, they attract a different species of flea that does not transmit the plague anyway.





Picture of Xenopsylla cheopsis. Face de rat, t. 1, 1993, comics by Ptiluc. © Vents d'Ouest, Glénat.

## LAB RATS

#### Sacrifice for science

Rattus norvegicus has paid a heavy price to humans by becoming a laboratory test animal for biomedical research. The first lab rats were introduced at the end of the 18th century and the beginning of the 19th century, in America and Europe.

These days, in Europe, we use over 600.000 rats each year. Scientific research using rats allow for major advances in research against cancer, neurological diseases, the effect of new drugs, transplants and much more.

Everyone is familiar with the little white rat who has to find its way through a maze, right? Well... that's me! I'm inexpensive, docile and I breed quickly, which makes me a popular test animal for researchers. I'm also the third mammal, after the mouse and human, whose genome has been fully decoded.

#### **Bioethics**

Research conducted on laboratory rats is governed by regulations and strict animal welfare controls. Each research project involving animals is evaluated by an ethics committee that verifies whether the principles of the 3 Rs have been followed:



**R**eplacement: is there an alternative that does not involve the use of live animals?

**R**eduction: minimise the number of animals used without jeopardising the aim of the project.

**R**efinement: adapt breeding, housing and care in order to eliminate or minimise any pain, suffering or anxiety.

Staff involved in the study must also undergo training, and the institution may be subject to inspections by services overseeing animal welfare.

Rattus norvegicus (albino rat), IrSNB collection. Laboratory cage, Free University of Brussels.

Numerous laboratory experiments have highlighted the ingenious nature of rats when they are motivated by a food-based reward. The observed rats then demonstrate remarkable learning abilities.

# Heroes in training

The Belgian non-profit organisation APOPO works to train *Herorats*, considered valuable allies in landmine and tuberculosis detection, proving to be even more effective than laboratory technicians themselves!



© Apopo.

### "This is not a rat"

Allow me to introduce my distant African cousin, the Gambian pouched rat! Maybe one day, they will train me to search for leaks in the sewers rather than trying to come up with ways to exterminate me!

Apopo video and photos. © Apopo. 1:1 size mascot



## **TOWARDS A PEACEFUL COEXISTENCE?**

Living in harmony with sewer rats does not mean giving them free reign to invite themselves into our homes, but we should ensure that, at times when population control is necessary, they are not made to suffer unduly. It is also crucial to give more consideration to the collateral damage caused to the environment and to non-target animals. Isn't it time to evaluate the effectiveness and relevance of massive rat extermination campaigns?

So far, there have been few studies carried out on the impact of various rat extermination methods on the regulation of urban rat populations. Better knowledge of their spatial distribution and population dynamics would allow for more integrated, sustainable and effective management. The use of poisons should only be considered as a last resort, after having implemented other prevention techniques such as the use of airtight bins in public spaces, adjusting and respecting waste collection schedules, a ban on feeding pigeons and stray cats and limiting rodent access to the sewers. By drastically reducing food sources and suitable habitats, it is possible to naturally limit rat populations.

Regarding health risks associated with rats, the probability of being bitten is almost nil as rodents tend to run away from humans. The main danger lies in the consumption of food contaminated by their urine or feces or the contact between a wound and these contaminants. Again, prevention can reduce this risk.

Rats have remarkably adapted to the urban ecosystem. However, it's necessary to change our perspective on this species to ensure a balanced and respectful coexistence with all urban wildlife.

# **RATTUS QUIZZ**



## What beautiful eyes!

Whether black, red, pink, ruby or bi-coloured, the colour of a rat's eyes is often linked to the colour of their coat because genes that change eye colour often have a "diluting" effect on hair colour. Wild rats have black eyes, albinos have pink eyes, and domestic rats' eyes seem to fall between the two with various shades of red.

And when my eyes are bulging, it's a sign of extreme well-being!

# **Rat Kings**

This phenomenon, which scientists have so far been unable to explain, is the result of a bad trick played by nature on otherwise healthy rats who find themselves tied together by their tails for life. Sounds repulsive, don't you think? It does, however, prove how community-minded rats are, since the other members of the colony

apparently pitch in to ensure the survival of those joined together. The largest rat king discovered so far contained 32 rats. It is kept in a museum in Germany.



Photos. © Coll. of the Natural History Museum of Nantes.

Do you think I wash more often than you do?

I wash up to 7 times a day.



## How greedy am I?

I eat the equivalent of 10% of my bodyweight every day, which usually corresponds to 9kg of your waste per year. You're welcome!

# Do you think I'd be able to take a bath in your toilet bowl?

I, the brown rat, am an excellent swimmer. I can even travel through toilet pipes, using the air pocket in the U-bend to catch my breath before diving back in and coming up to surface in the bowl.

If you want to see a rat in action, crawling up the toilet U-bend, scan this code.



scan me



