

THE RAT

OUR FRIEND AND FOE

Research on rodents to improve livelihoods

Rodents are the most successful mammals, second only to humans.

A handful of species can cause serious agricultural and health problems for people. Rats eat and damage pretty much all agricultural crops in the field. By gaining access to food stores, they can contaminate food with their faeces and urine and transmit diseases. Research at NRI aims to understand rodents through research on their biology, behaviours and ecology.

Nose
The rat's sense of smell registers not only average scents, but also the presence of chemicals that denote a change in atmosphere or the emotional state of other rats. Rats breathe through their noses where air passes past a patch of skin rich with smell receptors and olfactory neurons, which are tipped with hair-like structures called cilia.

Ears
Rats can hear ultrasound, detecting noises up to 90,000Hz, that's twice as much as dogs, and 4 times as much as humans. To communicate to one another, they also produce squeaks, whines and clicks unheard by the human ear.

Whiskers
The rat's whiskers are the first step in a highly sensitive sense of touch. Whiskers brush over the ground, obstacles, food, and other rats. When a whisker touches an object it bends the follicle which sends a message to the rat's brain.

Tail
Rats use their tails for balance. They climb ropes and anchor chains, they walk along fences and telephone wires and branches, and their tails help them balance. Their tails also keep them cool by expanding and contracting blood vessels to regulate body temperature.

Reproduction
The brown rat can breed throughout the year if conditions are suitable, with a female producing multiple litters a year. They reach sexual maturity in about five weeks.

Legs
Brown rats are powerful swimmers and strong burrowers. Rats can swim underwater for up to 30 seconds, and above water for 72 hours. Rats can also jump 2 feet high and 4 feet to the side.

General Rat Facts

THE AVERAGE BROWN RAT CAN GROW UP TO 28cm

A rat can enter any opening that's half inch / 1cm or more

Amount of food that is eaten or contaminated by rats stands at **20%** PER YEAR

The average brown rat weighs between 140g and 500g

30 Nobel prizes were based on research with rats

THERE ARE MORE THAN **1500** TYPES OF RODENT IN THE WORLD

RATS ARE LITTLE ADVENTURERS
They were one of the first animals to make the trip to outer space!

Biological Differences

Ship rat - *Rattus rattus*

Brown rat - *Rattus norvegicus*

Body
Slender body
Length: 15-22cm long
Weight: 200-300gms

Ears
Large with no fur

Eyes
Large and prominent

Tail
Longer than body and head
Length: 15-22cm

Fur colour
Colour of wild animals range from black, brown and tan

Nose
Pointed nose and muzzle

Eyes
Quite small

Ears
Small and covered with short fur

Body
Heavy and thick
Length: 18-25cm long
Weight: 300-400gms

Nose
Blunt nose and muzzle

Fur
Coarse and shaggy
Colour: Greyish brown

Tail
Shorter than body and head
Length: 15-22cm

Scary Rat Facts

Rats can swim underwater for 30 seconds, long enough to enter through drains and toilets

Approx number of droppings of a single rat is **25,000** per year, **68** per day

BREEDING 3-6 LITTERS PER YEAR
GESTATION 22 DAYS
7-8 PER LITTER

DISEASE CARRIERS
Rats carry at least 60 communicable diseases. Rats can transmit disease through their urine, faeces or dead carcasses including:
Rat-Bite Fever, Plague, Leptospirosis, Salmonellosis, Hantavirus Pulmonary Syndrome, Tularemia and Lassa Fever

Friendly Rat Facts

The African giant rat has been trained to use their acute sense of smell to detect landmines

Rats can be very clean and groom for 20% of the day

Rats have very poor eyesight and are colour blind

MOST RAT SPECIES CAN SURVIVE LONGER THAN A CAMEL WITHOUT WATER



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