

The Brown Rat



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THE LIFE CYCLE

When a rat is born it is pink and hairless and very tiny -- about the size of a grape. It cannot see or hear or walk. All it can do is wiggle around, squeal and nurse from its mother when she pulls it close to her body. Soon it learns to go to her and nurse when hungry.

A female brown rat becomes a mother when she herself is only about three months old. Her litter of helpless pups may number anywhere from four to twelve, although seven is most usual. During the year of her life she may have three or four litters.

Baby rats have no fur to keep them warm, and their bodies cannot keep a steady temperature when the air around them is cold. But the mother has done several things to keep her pups from dying from the cold, all without understanding why she does them. Before they are born, she finds a good spot to build a nest where they will be warm and protected at birth. She lives in a colony made up of a number of adult rats, but she looks for a private nesting place because other rats might harm the infants. The nest must be near food and water, but hidden from predators -- cats and dogs, owls and hawks, and man.

A NEST FOR NEWBORN PUPS

All adult rats can weave nests to sleep in. They may use grass, flower stalks, hay, paper, rags, someone's favorite necktie. Rats manage with whatever is available. The nest a mother builds for pups is a special kind. It keeps them safer and warmer than an ordinary sleeping nest would because it is usually covered on top and has an opening in one side just big enough for the mother to squeeze through.

Very often rat colonies live in underground tunnels called burrows. The female may build her nest in an extension she digs to the tunnel, or she may find part of the burrow that is not being used. Then again, she may build her nest in a private corner of a country barn, between the double walls of a city home, or maybe even unseen among the leaves high in a tree. Again, rats manage with what is available.

The nest is usually enough to keep the pups warm, but sometimes she covers the pups with leaves or other nesting material, like a blanket. She may plug the entrances to the burrow with grass or loosely packed dirt, keeping out the cold, the snow and possible enemies.

Most rat mothers are very protective. If a young pup feels cold or hungry, it squeaks louder than usual, and this brings the mother quickly. When the pup is a few days old, it can wobble around enough to stumble out of the nest. The mother will carry her squeaking, wandering pup in her mouth right back to the safety of the nest.

But the rat mother is only following an urge to bring into the nest any small, squealing animal that she finds nearby, without knowing who or what they are. In an experiment, scientists placed fifty pups outside one rat mother's nest. She dragged in as many pups as she could fit. Another time, the scientists placed young kittens outside the entrance. Again the mother carried them into the nest until she ran out of space.

If the nest is disturbed, she may build a new one and carry her pups to it in her mouth, one by one. A mother follows her instinct to build a new nest without thinking about whether or not it will help her pups survive. In one case, a mother rat was caught in a trap by one of her front legs. She then used her other three legs and mouth to build a grass nest for her six newly born pups, though there was little else she could do for them.

Perhaps only one out of ten rats lives long enough to reproduce. There are accidents, disease, predators and bad weather, and there are very few perfect mothers. Survival is often a matter of luck. If a mother leaves her pups alone at an unlucky moment, another rat may pass by and eat the infants.

GROWING UP

When they are ten days old, the pink pups begin to grow light brown coats of fine hair. By three weeks of age, their eyes and ears have opened. Now the mother allows them to leave

the nest and explore the area outside, but they do not leave the burrow for a few more days.

At first, the pups spend a lot of time playing with their litter mates near the home burrow. By following their mother and making short trips on their own, they begin to learn where food and water are. (The mother certainly does not guide them to food and water on purpose; if the mother is eating and her pups get in the way, she will push them away from the food.) By exploring, the pups also learn which trails lead back to their burrow and what dangers to avoid -- like traps baited with cheese.

LEAVING THE MOTHER

When they are about a month old, rats no longer nurse. They may follow their mother around, nudging under her and trying to nurse, but she does not let them. As they follow her around, they start learning about their environment. When they begin eating solid food, they spill nearly all of it, but after a few weeks of practice they get most of their food into their mouths.

The gray-furred rat now makes independent trips around the entire colony. It meets the adult rats who live in the area. If an adult and a young rat meet eye to eye on a narrow trail, the adult ignores the younger rat. The adult keeps on going, either crowding the young rat off the trail, or walking right over it.

Young rats spend a lot of time play-fighting with each other. They go through all the movements of a serious adult fight, but they never hurt each other. Two young rats face each other, standing on their hind legs and balancing with their tails. Then they "box" with their front legs. They may roll and tumble around and grasp each other with their teeth and feet. There may be a chase. And suddenly, one of the rats may simply walk away, no longer interested in playing.

LEAVING THE BURROW

At two months, a rat is able to take care of itself. The mother rat's behavior encourages her offspring to be independent. She chases them out of the home burrow and into the world. Sometimes she even attacks the older ones and knocks them down. (With a mother like that, what young rat would hang around home very much?) The young in a litter may make a sleeping nest of their own, probably not too far from the birth nest. Some may migrate to another colony.

The three-month-old rats are dark brown adults, ready to mate for the first time. They weigh about a half of a pound, but they may gain another ounce or two before they die because they continue to grow and to gain weight their entire lives.

RAT COLONIES IN BURROWS

A colony in a burrow usually has fifteen to thirty adult rats, male and female, who spend nearly all their time with each other. They build a system of tunnels that connect underground.



Rats' teeth and claws are so powerful that they can dig their burrows in hard earth and even gnaw through a lead water pipe if it is in the way. The rat's mouth is adapted for gnawing. A rat can shut off the back part of its mouth from the front part by moving its lower jaw forward and sucking in its cheeks. By closing off the back part, it can gnaw for a long time with its large front teeth without swallowing chips of wood or lumps of earth.

The members of the colony sleep in the burrows, store food there and sometimes eat there. The females usually raise their litters close by. There is an advantage to living in one area all the time rather than moving around. If a rat knows every bush, hole and hiding place in the area, it can escape its enemies more easily.

A group of rats who lives together in one colony may be very different from the group in a neighboring colony. Instead of a combination of males and females in a colony, there may be a lone powerful male with his own piece of land or territory and a half-dozen females all for himself. This male must fight all the males he meets as he grows up -- and win. He still fights any strange male who sets foot in his territory, although he may be friendly toward the same male somewhere else.

A scientist studying the behavior of brown rats observed a powerful male who often stored food in his territory. On one trip he was carrying a large piece of cake, but before he reached his territory, the cake crumbled into pieces. He made several trips back to get these pieces. While he was in his territory, another adult male entered the area and was immediately chased out. But when the first male returned to the spot where the cake lay crumbled, both rats sat peacefully side by side and ate the remaining cake.

Outcast males also form colonies. The same scientist put boxes underground for rats to build nests in. One rat he studied was an outcast. In winter this rat was found all alone in the worst box with one side mostly rotted away letting the weather in. At this time the other rats were living together in groups to keep warm. The outcast was disturbed and ran to a burrow but was chased out. He ran into another burrow and there was a squealing fight and he

again was chased out. Later in the winter he moved into a collapsing burrow with other male outcasts. There were no females in the group.

POWERFUL RATS AND OUTCASTS

What makes one male powerful and another an outcast? As a rat grows up, the experiences it has with other rats make a difference in how it will act for the rest of its life. For example, if a young male rat going from his nest to find food day after day must pass an especially powerful male, or a mother defending her nest, he is often threatened, chased, perhaps knocked around. Such a rat may learn to be afraid of other rats while he is growing up, and he may easily become a frightened, nervous adult. He will always expect to be attacked by other rats and will run away before they notice him. Rats such as these do not grow as large as other rats, and their chances of winning fights are few.

Rats are, as a rule, more active during the night than in the daytime. But rats who are trying to avoid meeting more powerful rats may sleep at night and leave their burrows during the day. In this way, the rat adapts to his special situation.

ADAPTABLE RATS

In fact, the one word that we can best use to describe the brown rat is "adaptable." That means that the brown rats behave in different ways in different situations. Most ani-

mals need a special climate and a special diet to survive. But the brown rat adapts to environments as different as the Arctic tundra and the African jungle. Brown rats can live anywhere in the world except the desert where there is not enough water.

They eat just about anything any other animals can eat. A brown rat's diet may include garbage, worms, small birds, fruit, fish, a fellow rat, strawberry shortcake, or, in a pinch, bark from a tree. It all depends on what the environment offers.

Such a tiny animal makes a tasty snack for a number of predators -- if they can catch it. But the rat's means of escape are almost as varied as its diet. At the sound of any strange noise, the brown rat instantly flees. It may duck down the closest burrow hole, but it may just as well scoot up a telephone pole and walk across the wire like a tight-rope artist. The rat may hide in a bush. Or jump in a lake.

MAN'S RAT PROBLEM

Rats destroy property with their powerful teeth, they eat food meant for farm animals and people, and they carry disease. For hundreds of years man has been trying to destroy the rat. He has tried traps, poisons, even guns; he has tried to kill the pups and starve the adults. Yet the rat population of the United States is about equal to the human population.

About 200 million rats! Try as he may, man cannot get rid of the rats. Why does this little creature pose such a big problem?

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