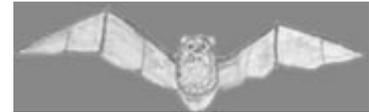


All about...Bats



Although New Zealand was once home to four species of bat, only two survive today: the long-tailed bat and the lesser short-tailed bat. Differences between these are obvious in the tail length, size, and the wing-like skin between the hind legs of the long-tailed bat. Of the two extinct species, both short-tailed bats, one is only known from some recently discovered remains, while the other has not been seen since 1965.

It is believed that the long-tailed bat was blown across from Australia about two million years ago, however it is a mystery as to why more of the sixty species of bat found in Australia have not also settled in New Zealand by this method. The short-tailed bats are much older- probably 30-65 million years have passed since they came to New Zealand, although their origins are uncertain. The short-tailed bat is one of the world's more unusual species, due to the features developed during its long isolation.

Bat Facts...

Sonar

The term “blind as a bat” is not entirely correct, as bats can see – but they are very shortsighted. To “see” accurately they use sonar. Bats send out very high-pitched squeaks from their nostrils and half-opened mouths (too high for humans to hear, but within the range of scientific instruments). Special muscles disconnect the ear-bones while the squeaks are emitted, and then reconnect them between squeaks to listen for the returning echo. A fast return means that an object (such as a cave wall or tree) is nearby, while a slow return means a far away object. The bat can turn its ears in different directions to track the movement of an object (such as other bats), just as we follow things with our eyes. Bats know the sound of their own squeak so that they are not confused by other bat squeaks when flying in large groups.

Hibernation

Flying about to hunt for food is a very high energy activity. In winter there is not enough food around for bats to match the energy lost during hunting, so they hibernate. In summer, when food is plentiful, the bats will often double their weight with extra fat. This is used as an energy store for winter hibernation. During hibernation, the bat uses as little energy as possible. They achieve this by-

- Slowing their heart rate to 10/15 beats per minute (during flight it can beat up to 700 times per minute).
- Lowering their body temperature to the surrounding air temperature, so that no energy is needed for staying warm.

When the bat reawakens, it shivers and yawns to raise its temperature and heartbeat, before flying off to look for food again.

Flying and roosting

Bats are the only mammals capable of flight. Their wings are made up of a very fine membrane stretched across delicate ‘finger bones’. This skin contains nerves and blood vessels, as it is like an extension of the bat’s back and stomach skin. Sometimes because of their flight pattern, long-tailed bats are mistaken for moths. They are more

agile than birds, have excellent control of their flight, and can brake and turn quite sharply when hunting for insects.

When the time comes to rest, they hang upside down by their claws. This roosting uses no energy at all – the weight of the bat pulls down on the tendons in the leg. The tightened tendons pull the claws into a completely locked position. They fold their wings across their body when roosting, but leave eyes and ears uncovered to detect approaching danger. Bats are very easily disturbed in their roosts.

Reproduction

The female bat gives birth to tiny hairless young, weighing up to a quarter of their mother's weight. They feed from nipples near the mother's armpit and are carried by her during flight. The mother makes a huge weight gain due to the quantity of milk needed to feed the baby bat. After a period of rapid growth, the young bat becomes too heavy to carry, and is left to roost while the mother feeds.

Bats can live for up to 20 years, unusual for a mammal of this size (for example, mice seldom live more than a year). The death rate of the young is high because many young fall from the roost, and reproduction is only at the rate of one baby per year. A twenty-year life span makes sure that at least two offspring survive to replace the parents.

The Long-tailed Bat

The long-tailed bat (*Chalinobilus tuberculatus*), about the size of a mouse, and weighing around 8-10 grams, is quite common throughout New Zealand. It roosts in large native trees (such as rimu and kauri), deserted farm buildings and occasionally in exotic pine trees, but unlike bats overseas, it seldom roosts in caves – only three caves in the Waitomo area are known to contain long-tailed bat roosts.



Hibernation over winter lasts up to 4 or 5 months in the colder parts of the country, but probably less in warmer areas, as it is sometimes seen feeding during winter in warmer areas. Like most bats of the world, it only gives birth to one offspring, during the summer. The long-tailed bat is often seen around dusk, hunting on forest margins and over swamps and streams. It only eats flying insects, which are scooped up with the tail during flight.



The Short-tailed Bat

Of the three species of short-tailed bat once found in New Zealand, only the lesser short-tailed (*Mystacina tuberculata*) still survives (the greater short-tailed bat has not been seen since 1965). The short-tailed bat weighs about 12-15 grams, and eats insects, nectar, fruits, and pollen.

It is rarely seen as it flies at night, and is only found in the depths of a few large native forests, living in large native trees or in ground tunnels – the short-tailed bat is unusually well adapted to living on the ground. Its

wings fold away allowing it to run along the ground, while strong feet and claws let it run along branches as well.

As with many ground-dwelling species that evolved in a land once free from predators, the lesser short-tailed bat is in danger of extinction. Predation by cats, rats and stoats, and the

destruction of native forests are the main reason that two species of short-tailed bats are extinct, and the lesser short-tailed is now an endangered species.

