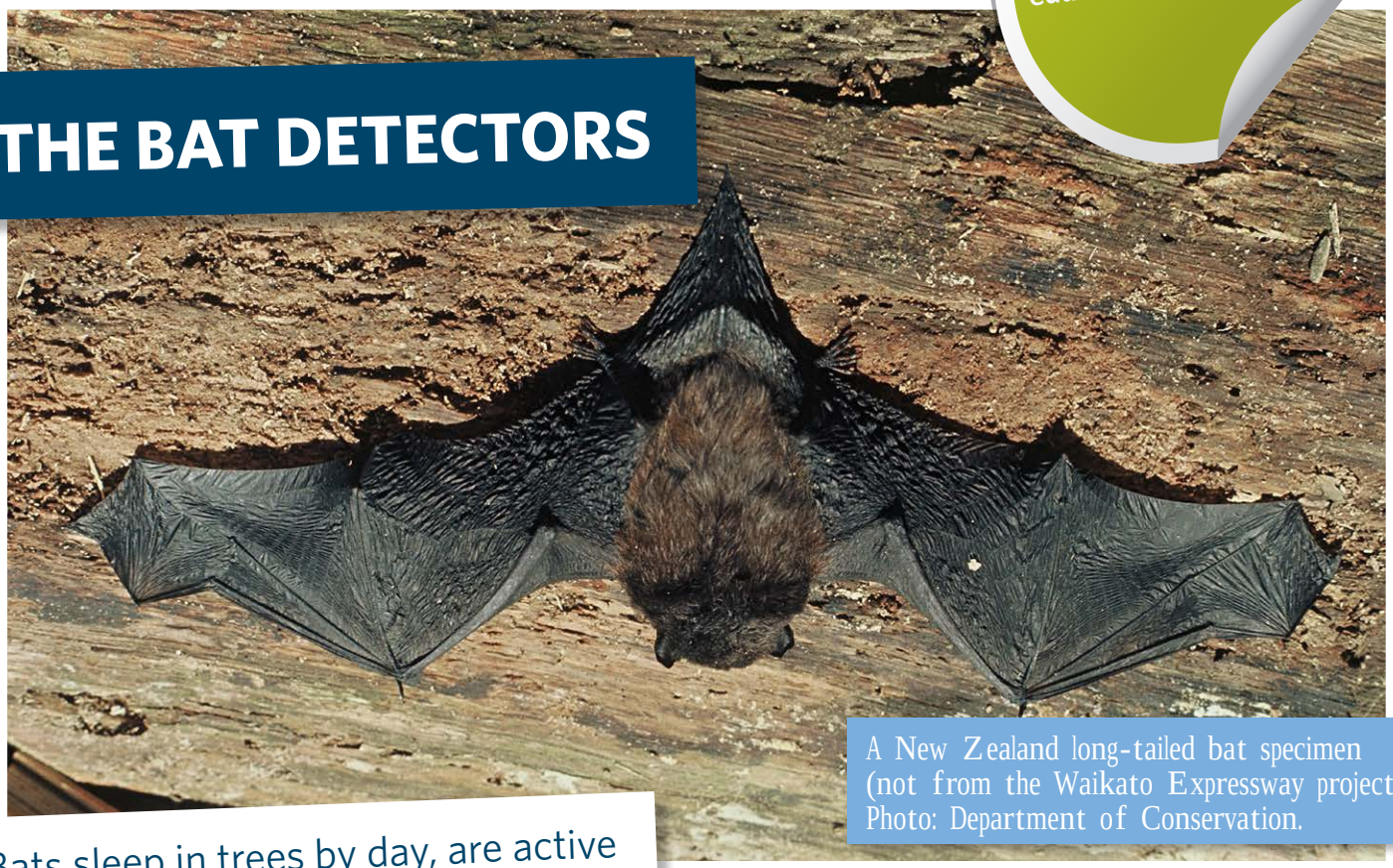
THE BAT DETECTORS



A New Zealand long-tailed bat specimen (not from the Waikato Expressway project). Photo: Department of Conservation.

Bats sleep in trees by day, are active at night and are very hard to find. How could a highway get built without hurting any bats?

Simon Cathcart

Night falls. It's warm and cloudy. There's not much of a moon. It's the perfect time to wake up and head out for a feed. In trees around the Waikato region, little creatures stretch their leathery wings, blink their eyes and fly off into the dark.

These long-tailed bats flap and dart about in the air, eating moths and mosquitos. After an hour or so on a good night like this, the bats are full and may return to their roosts, their homes in the trees. Some cosy down together, some sleep alone. Each bat has several good sleeping places to choose from.

'New Zealand's long-tail bats are nocturnal, they're nomadic and they're fast,' says Simon Cathcart. As a scientist and the environmental manager for a construction company, Simon ensured bats were kept safe during construction of the Cambridge section of the Waikato Expressway.

His work came in two stages. The first job was to avoid bats getting hurt when removing stands of trees on the expressway route. The second stage was improving the environment for bats to live in.

YOU NEED TO LISTEN FOR BATS

Simon says people in the Cambridge area never see bats. This is usually the case around the country. Bats are small, fast and only active at night. They're hard to see. But if you use special equipment, you can hear them.

Bats have eyes, but they also use sound to build up a picture of what is around them. They make very high-pitch sounds with their vocal chords. These sounds bounce back from things like trees or insects, letting the bat hear what is there. This clever trick is called echo-location. These bat sounds are beyond the range of human hearing.

First of all, Simon worked with scientists who know about bats. They went along the whole 16 km Expressway route, looking for the type of trees where bats live. They found 26 places where it would be good to listen out for bats.

'Bats like big old trees with crevices and cracks – places to hide in. Cambridge has the big oak trees that bats love,' says Simon.

At each place, the scientists set up automatic bat monitors, which are electronic devices the size of your lunchbox. These devices record the sounds made by bats and play it back at a frequency we can hear. The sound is like a series of fast clickety-plips.

Simon says at each place, if the team didn't hear any bats, they'd need to figure out if this meant there were no bats or if the bats were not active that night.

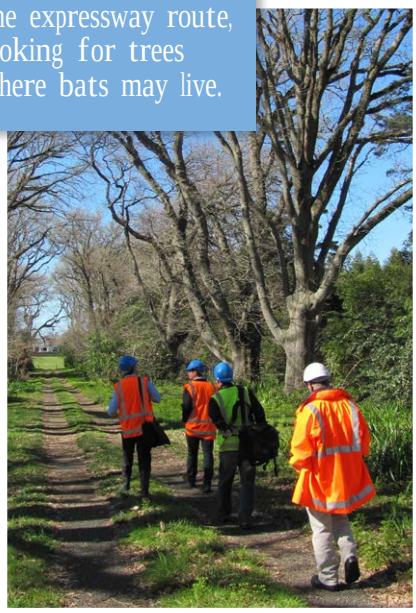
'Bats are affected by climate. They're just not interested in coming out of their roosts if the temperature doesn't get up to the right level. Rain can affect them. And they don't like the full moon, because they're more visible. Their natural predator is the morepork, which can catch them in the air.'

The team was confident that if they used the monitors over two to three nights in good conditions and heard nothing, bats were probably not there.

The result? They only heard bats in three of the locations. These were the Karapiro Gully, a deer farm, and the trees around an old country home that was being removed.

An automatic bat monitor set up in a tree along the expressway route.

A team of workers walk through part of the expressway route, looking for trees where bats may live.



Automatic bat monitors are portable equipment, about the size of a lunch box, which record the sounds made by bats.

THE 'BAT TREE'

The scientists spent more time investigating the three sites, looking for places up in trees where bats sleep during the day. Bats sleep in groups or on their own, even in a space as small as the gap behind a loose piece of totara bark.

There was no sign of roosts at the gully or around the country home. Bats probably only visited these places to feed.

At the deer farm, a big oak tree looked like it could be home to bats. Simon says it was standing just to the side of where the road would be built, so he hoped to leave it standing. But once other oak trees around were cut down, it became unstable.

'Oaks grow together as a group, they have strength in numbers. Once we took out the other trees, it started to lean over, which wasn't safe.'

He brought in arborists, people who work with trees. They harnessed themselves to ropes and climbed high into the oak, looking for bats. They found none, and the tree was cut down. The Expressway could be built without any bats getting hurt.

MAKING MORE HOMES FOR BATS

The construction company also needed to improve the environment for bats. Workers planted trees that will grow big enough to become homes for bats. Local people got involved. Students at Tamahere Model Country School grew oak trees, and students at Hautapu School, Te Miro School and Cambridge Primary School grew native trees.

Simon says getting a good mix of trees will help bats long into the future. Poplar trees are fast growing and have a tendency to break branches, leaving places for bats to roost. Oaks grow very large and will provide more homes for bats. Native trees support lots of insects, which in turn become dinner for the bats.

The construction company has set traps to kill animals such as rats and possums that attack bats. The NZ Transport Agency will use bat monitors to see if this leads to increased bat activity over the next few years. No-one knows just how many bats live around Cambridge, says Simon.

'I've heard the bat signals. They're definitely around, there's no question, and they're probably more widespread than we realise.'

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