



# SCHOOL JOURNAL

— MAY 2019 —



<b>TITLE</b>	<b>READING YEAR LEVEL</b>
Harwoods Hole	4
The Striped Invader	4
Why Is the Wasp a Pest?	4
Cave	4
Stung!	4
Where's Toki?	4

This Journal supports learning across the New Zealand Curriculum at level 2. It supports literacy learning by providing opportunities for students to develop the knowledge and skills they need to meet the reading demands of the curriculum at this level. Each text has been carefully levelled in relation to these demands; its reading year level is indicated above.

Published 2019 by the Ministry of Education  
PO Box 1666, Wellington 6140, New Zealand  
[www.education.govt.nz](http://www.education.govt.nz)

All rights reserved.

Enquiries should be made to the publisher.

Publishing services: Lift Education E Tū

ISBN 978 1 77669 576 8 (print)

ISBN 978 1 77669 577 5 (online PDF)

ISSN 0111 6355 (print)

ISSN 2624 3636 (online PDF)

Replacement copies may be ordered from Ministry of Education Customer Services,  
online at [www.thechair.minedu.govt.nz](http://www.thechair.minedu.govt.nz)

by email: [orders@thechair.minedu.govt.nz](mailto:orders@thechair.minedu.govt.nz)

or freephone 0800 660 662, freefax 0800 660 663

Please quote item number 69576.



# SCHOOL JOURNAL

— LEVEL 2 MAY 2019 —

## CONTENTS

### ARTICLES

**2 Harwoods Hole**

*by Marcus Thomas*

**18 The Striped Invader**

*by Phil Lester*

**24 Why Is the Wasp a Pest?**

*by Phil Lester*

### POEM

**10 Cave**

*by Selina Powell*

### STORIES

**12 Stung!**

*by Phil Lester*

**26 Where's Toki?**

*by André Ngāpō*

# Harwoods Hole

by Marcus Thomas

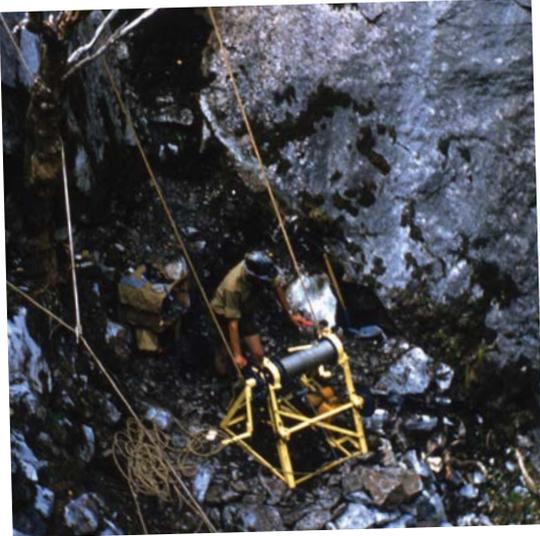
In 1958, a group of people stood on the edge of a huge hole in the ground. The hole, on Takaka Hill near Nelson, was known as Harwoods Hole. It dropped straight down into darkness. What was at the bottom? The group wanted to find out.

## Going down

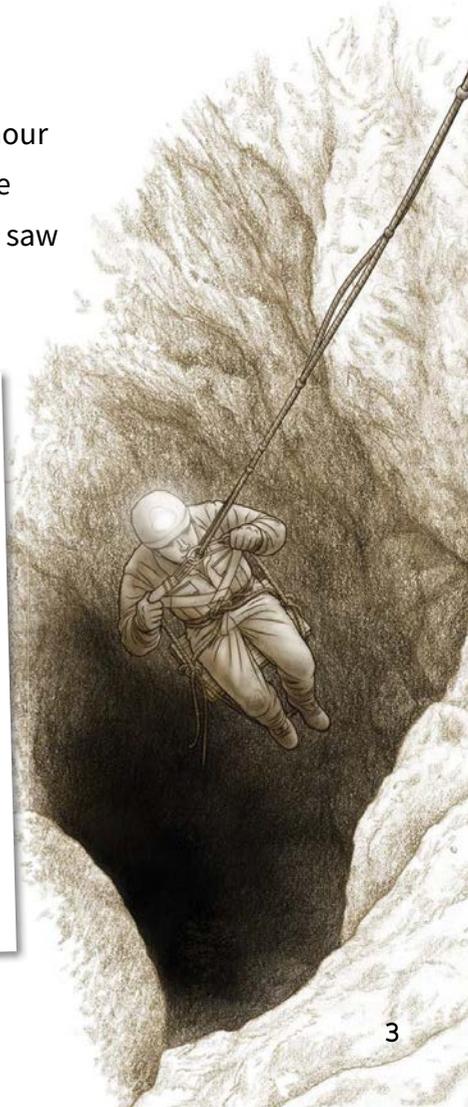
The group were cavers – people who like exploring caves. One of them dropped a rock into the hole, and they listened until they heard it hit the ground. By counting how long the rock took to fall, the cavers worked out that the hole was about 200 metres deep. They decided to go down – but there were no ledges or any easy ways to climb into the hole. How could they get to the cave floor?

The best option was to use a **winch**.

Each caver was tied to a wire cable and lowered slowly into the hole. It took an hour and a half for the first person to reach the bottom. When they got down there, they saw a world nobody had ever seen before.



The winch ▲



At the bottom of the hole, a large cave led deep into the mountain. It followed the path of an ancient underground river. As the group went through the cave, they saw beautiful **stalactites** and waterfalls.

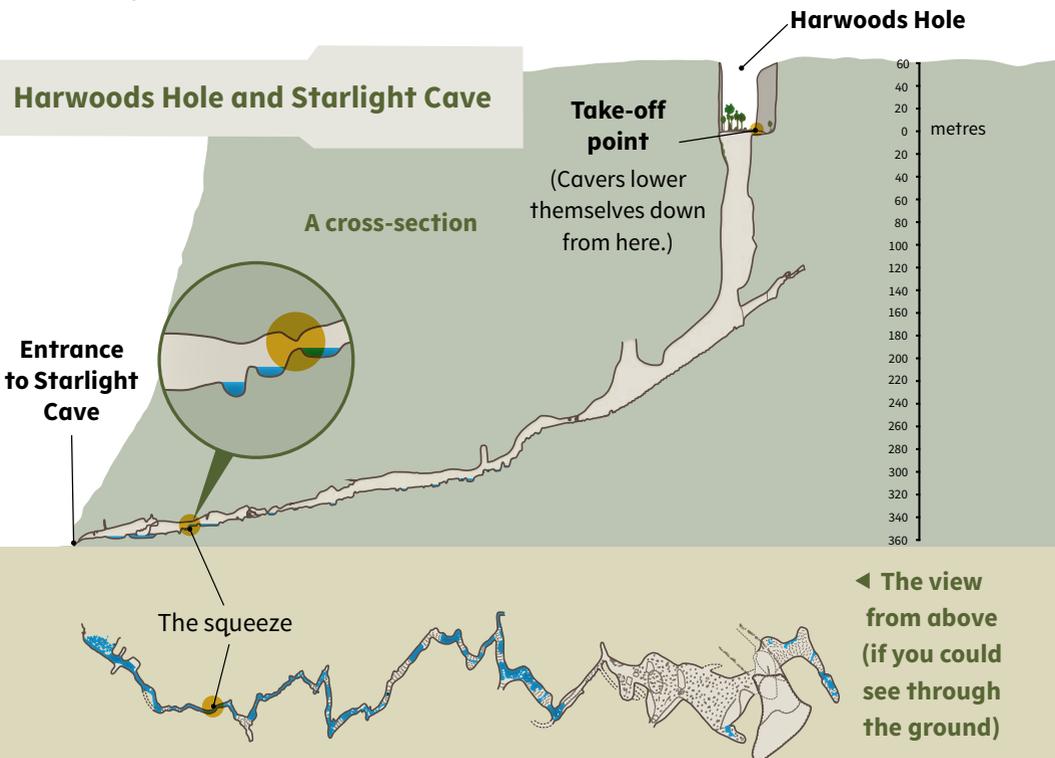


A recent photo of a caver in Harwoods Hole ▲

# Starlight Cave

The following month, the cavers found another cave on Takaka Hill. When they first explored the cave, the light from their lamps reflected off the walls. It looked so beautiful one of the cavers named it Starlight Cave. People wondered if Harwoods Hole and Starlight Cave might join up. To find out, some cavers put a bright green dye into the stream in Harwoods Hole. A little while later, the green dye appeared in the stream in Starlight Cave. This proved that the two caves were connected.

After searching, the cavers eventually found a very small gap (called a “squeeze”) between the two caves. They dug away the rock and made the gap bigger. Now they were able to travel right through both caves.

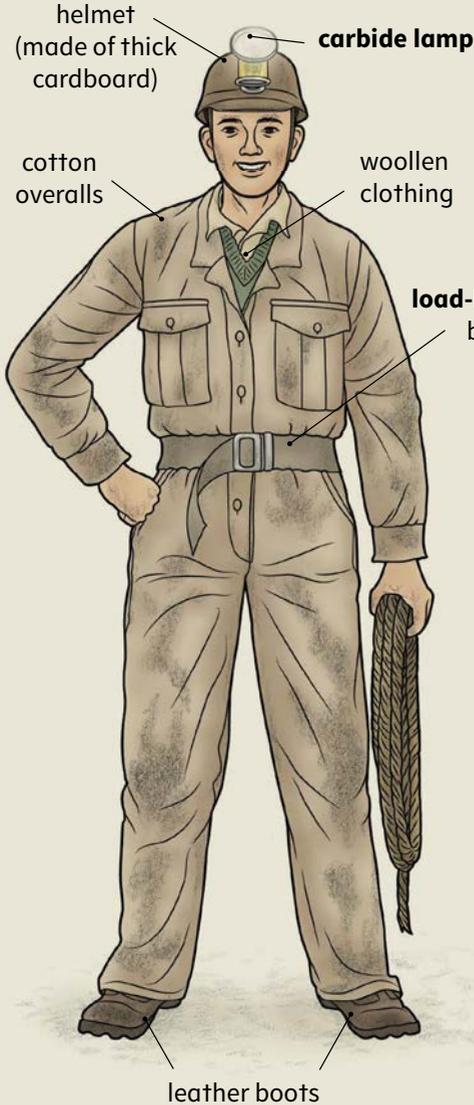


# Caving gear then and now

Caving gear in 1958 was very different from the gear used today.

1958

Today



# How was Harwoods Hole formed?

Harwoods Hole was made by an ancient river. Millions of years ago, the main **shaft** would have been a huge, roaring waterfall giving off spray and mist as it tumbled into the passages below. Today, the shaft is dry and silent. Only the deepest parts of the cave still have flowing water.

## Solution caves

Caves made by water are known as “solution caves”. A solution is a mixture that is made when a substance dissolves in a liquid.

Solution caves can form in **marble** or **limestone**. All that’s needed is water – usually in the form of rain. The rainwater absorbs carbon dioxide from the air and soil. This makes the water a little bit acidic. Very slowly, the water dissolves the limestone and marble and makes holes. Over millions of years, these holes can become deep caves. Some can be kilometres long.





## Harwoods Hole today

Although there are deeper caves in New Zealand, Harwoods Hole is still one of the deepest shafts ever found here. These days, it's a popular place for experienced cavers to explore. But today's cavers don't use a winch to go into the hole – they **abseil**.

Harwoods Hole is an exciting journey for cavers, who follow in the footsteps of those first explorers.

## Glossary

**abseil:** to lower yourself down a cliff or rock face by using a rope

**carbide lamp:** a lamp that gives off light by burning gas

**limestone:** a rock made over millions of years from the shells and skeletons of sea creatures

**load-bearing:** designed to take weight without breaking

## Life in caves

Caves are cold and very dark, so not many kinds of creatures live in them. Here are some that do.



### Inside

glow-worms (titiwai)

### Near the entrance

● cave wētā (tokoriro)

● spiders (pūngāwere)

● native bats (pekapeka)



### In water

● eels (tuna)

● freshwater crayfish  
(koura)



**marble:** a type of rock similar to limestone but harder and much older

**shaft:** an opening or hole that goes straight up or down

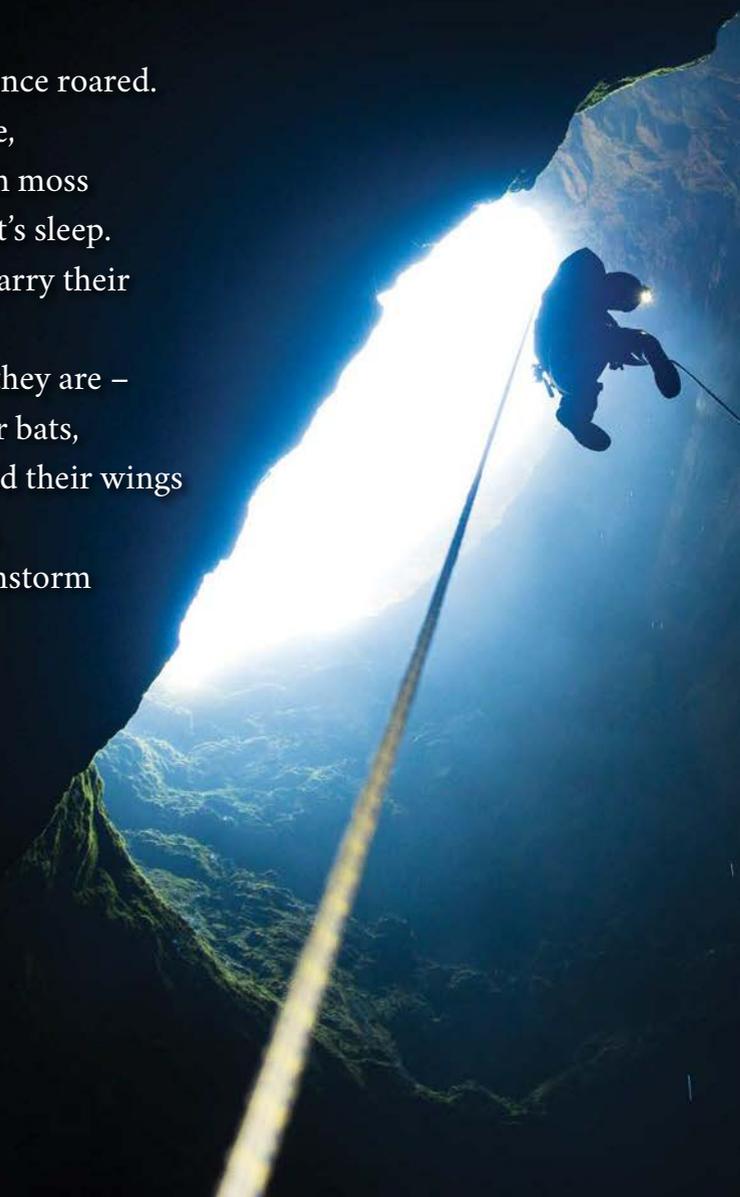
**stalactite:** a formation of minerals shaped like an icicle that hangs from the roof of a cave

**winch:** a device with a rope or wire cable that winds around a drum and is used for lifting or pulling

# CAVE

In the centre  
of a single strip of light,  
a caver dangles,  
bathed in silence,  
where a waterfall once roared.  
Beneath the surface,  
boulders covered in moss  
could soften a giant's sleep.  
The glow-worms carry their  
swaying lamps.  
Look how patient they are –  
lighting the way for bats,  
who fold and unfold their wings  
like tiny umbrellas,  
preparing for a rainstorm  
that never arrives.

*Selina Powell*







# Stung!

by Phil Lester

It was a warm summer day when Janet went out to check the fences. She rode to a far corner of her farm, parked her quad bike, and began walking through the paddocks. The sheep watched as she climbed the hill. Birds sang in the native forest. The sun shone, and a light breeze stirred the leaves of the trees. It was a great day to be alive.

Then, suddenly, Janet's foot sank into a hole. She had stepped into a wasps' nest! At once she heard a loud buzzing and felt a sharp pain in her leg. In a matter of seconds, thousands of wasps were all around her.

The noise was incredible. The furious insects covered her clothes and crawled under her shirt and shorts, and all the time, they were stinging. Each sting felt like a burning-hot needle jabbing deep into her skin. Janet pulled handfuls of wasps from her hair and clothes, but there was no let-up. The stinging went on and on and on. She felt like she was on fire.



Janet ran, but the swarm of wasps followed. She rolled on the ground, trying to squash them, but it didn't help. She was desperate. Maybe the wasps were attracted to her T-shirt. She pulled it off and threw it away. It made no difference. Still the wasps kept stinging and stinging.

Finally, she ran down the hill and threw herself into a small stream. It was only then that the wasps gave up their attack.



Janet knew she had to get help fast. She had been stung hundreds of times all over her head and body. She pulled out her phone. Her heart sank – no signal!

At that moment, she felt horribly isolated and alone. Her quad bike was a long way away. She would have to walk for forty minutes to reach it and then ride for another fifteen minutes to get to the farmhouse.

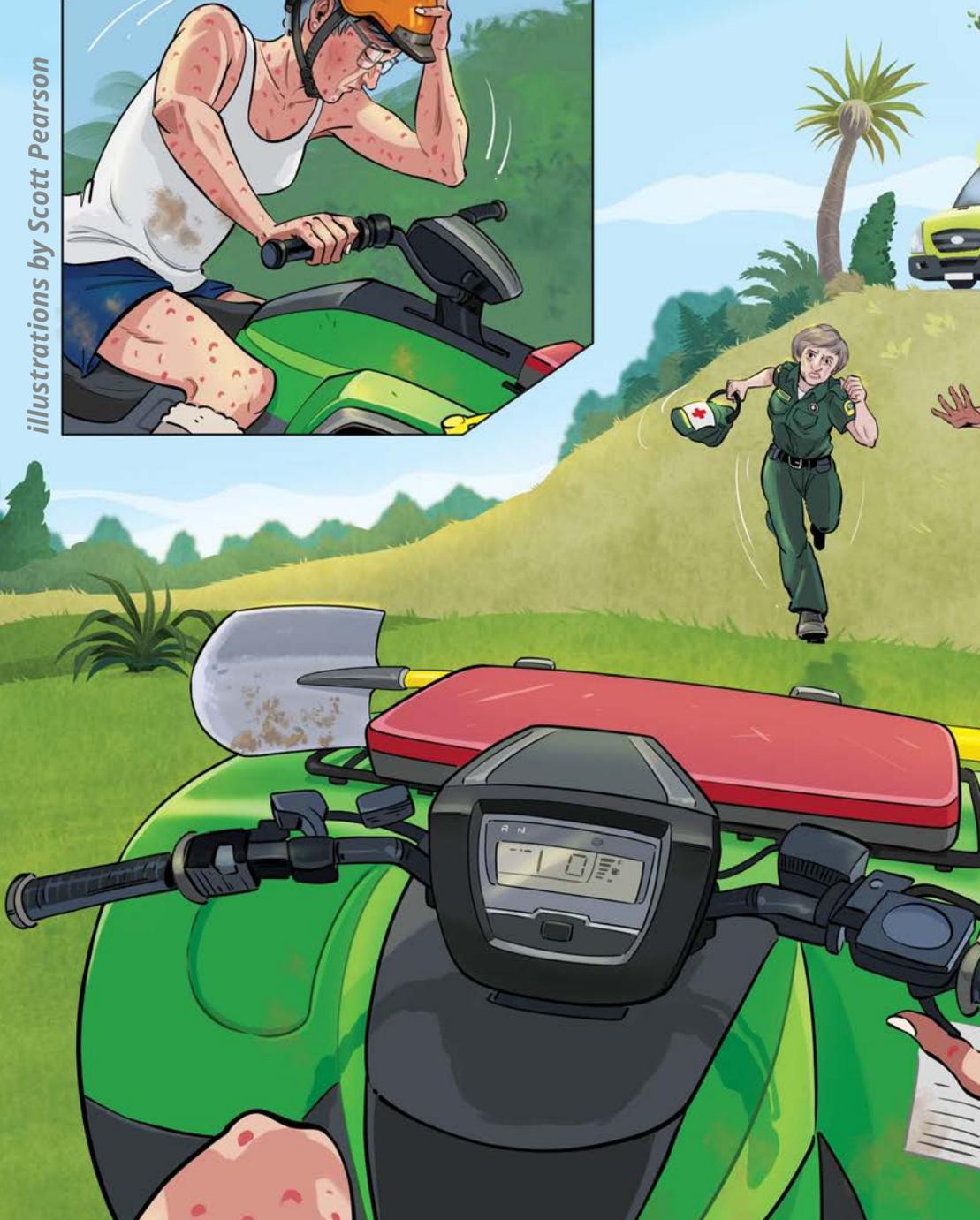
There was no option. Janet began walking. The pain was intense. After a while, her legs hurt so much that she had to stop.

“Keep calm,” she told herself. “Focus on breathing slowly.”

She tried her phone again – still no reception. Janet knew she had to keep moving. If she lay down, she might never get up again. Somehow she willed herself to start walking once more.



illustrations by Scott Pearson





Janet staggered on until at last she reached her quad bike. She tried her phone again, and this time she got through. An ambulance was on its way!

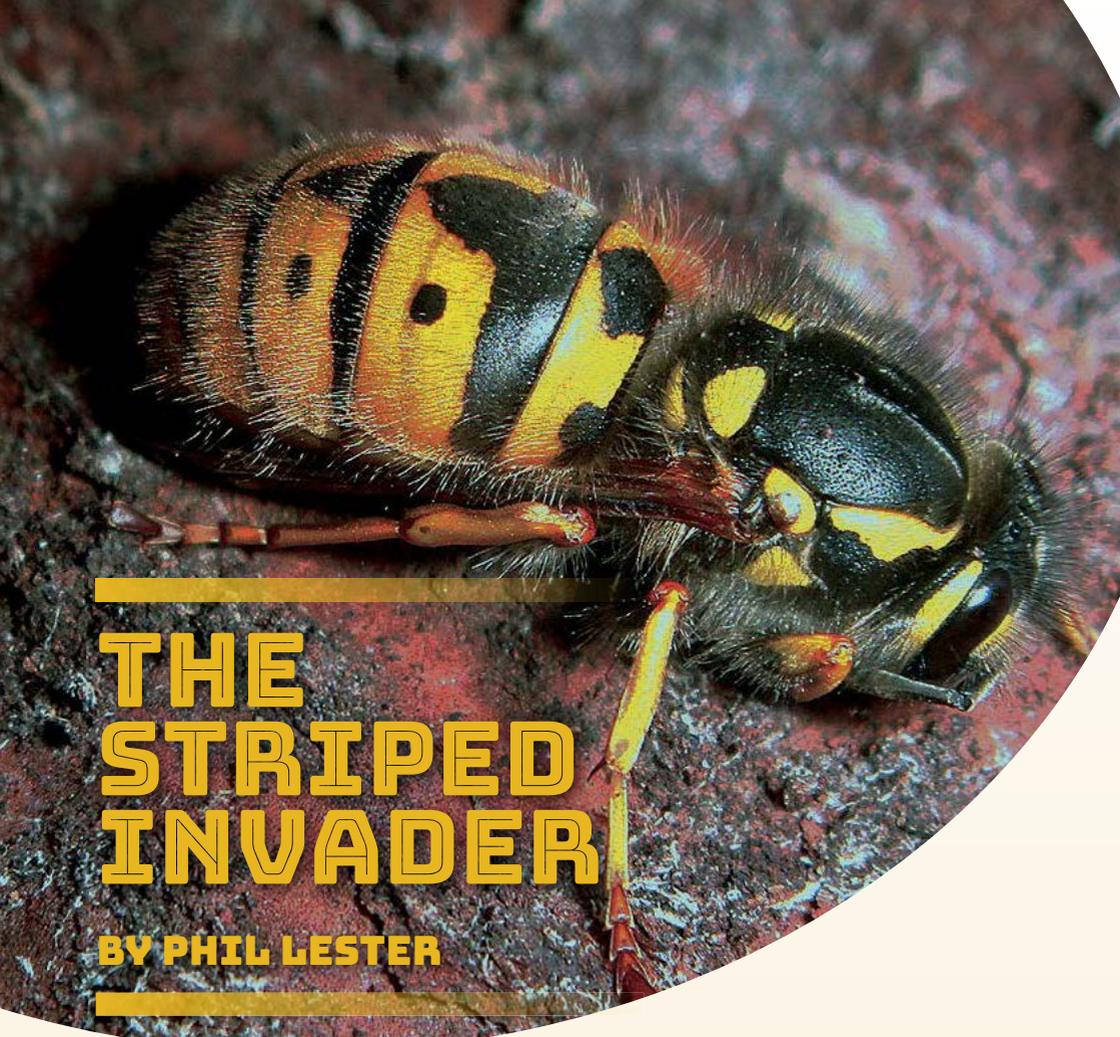
Janet rode the last few kilometres to the farmhouse, getting there just as the ambulance arrived. The paramedics jumped out and ran towards her. They covered her with cold, wet towels and injected her with medicine to relieve the pain and fight the effects of the wasp venom.

Some time later, Janet heard the sound of a helicopter. It landed in a paddock nearby. The helicopter flew Janet to hospital. She had received hundreds of stings. It took months for some of the scars on her back to heal. She was lucky – she had survived. But today, Janet still shivers when she hears the buzz of an insect nearby.



#### **AUTHOR'S NOTE**

“Stung!” is based on the true story of Janet Kelland, who stepped in a wasp nest on her sheep farm near Taumarunui in March 2014.



---

# THE STRIPED INVADER

BY PHIL LESTER

---

A queen wasp is hiding under the bark of a tree. She is still and cold. It looks like she's fast asleep, but in fact, she's **hibernating**. For months, she hasn't eaten any food. Instead, she has been living on fat stored in her body.

Her hiding place is warm and dry. Rats and birds would eat her if they found her, but she's been lucky. Now it's spring, and it's time to wake up.

## MAKING A NEST

The young queen looks for a good, safe place to make a nest. It has to be dry and have lots of space. She finds an old mouse nest in the ground and starts digging out the soil. Then she flies to a fence post, chews off some wood, and mixes the wood with her saliva. She will use this mixture to make the nest.

Slowly the nest takes shape. The queen makes a few small, **hexagonal** cells and lays an egg in each cell. After two or three days, the eggs hatch into **larvae**. The larvae hang upside down in their nest. They need food and attention. It's dark in the nest, so each little larva scratches its **mandibles** on the side of its cell. This scratching tells the queen that the larva is hungry. The queen has to leave her nest to find food for her growing family.



## DANGER

After three or four weeks, some of the larvae turn into **pupae** and then into worker wasps. Once this happens, the queen doesn't leave the nest again. She spends the rest of her life laying eggs. The workers do all the **foraging** for food. They also look after the larvae, make the nest bigger, and defend the nest against **predators**.

The nest can be in great danger when it's new and small.

Other queen wasps are looking for places to build their nests. They won't think twice about trying to move in.

If that happens, the two queens will fight to the death. Scientists have found up to six dead queens in some nests. Rats or mice will also attack and eat a young nest.





## MORE AND MORE WASPS

As the **colony** grows, the wasps make their nest bigger. Some nests can contain many thousands of wasps. A big nest is safe from most dangers, but a summer flood or a careless animal standing on it might still destroy it. And of course, people could find it and get rid of it.

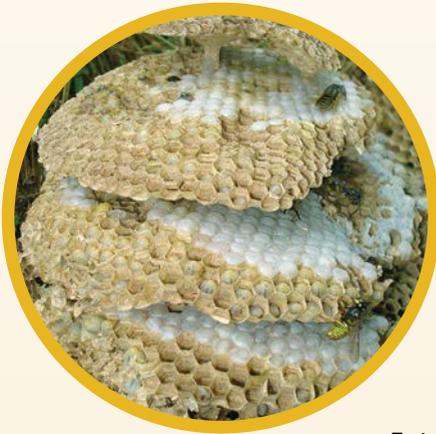
Over summer, the wasps will gather several kilograms of insects to feed their young. Spiders, flies, and caterpillars are all on the menu. The workers also gather fruit and nectar from plants. They use this food to help raise more and more worker wasps.

## NEW QUEENS

Then, in late summer, the workers build new, large cells. These are for new queens and male wasps (called drones). The new queens are about twice the size of the workers. They must be well fed and fat if they are to live through the coming winter. Each nest produces thousands of new queens, but only a handful will survive until the following spring.

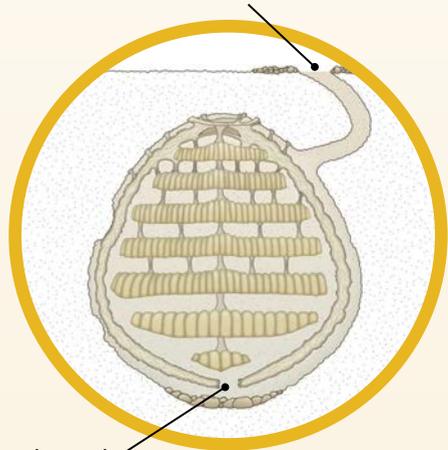
In autumn, the males and new queens leave the nest to mate. After they mate, the males die and the queens fly off to look for hiding places for the winter.

**A wasp nest that has been dug up**



**Inside the nest**

Entrance to nest tunnel

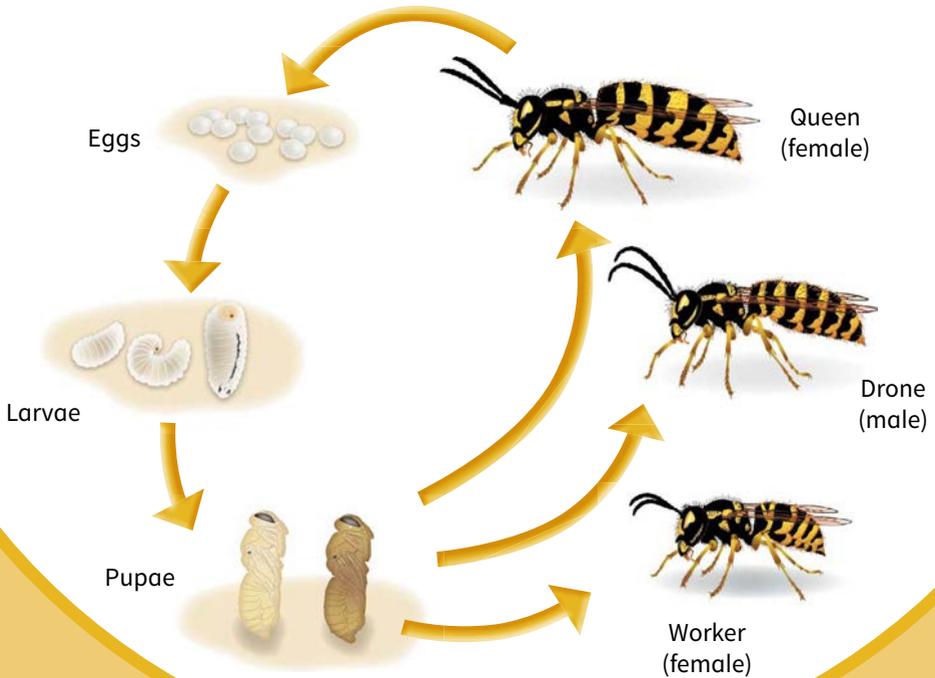


Entrance to nest

As winter arrives, the old nest falls to pieces and the workers and the old queen, who started the nest, die. But the new queens are hibernating in their hiding places. They will make sure that the wasps return in spring.

Then, the cycle will begin again.

## THE LIFE CYCLE OF THE WASP



## GLOSSARY

**colony:** a group of creatures living together

**foraging:** searching for food

**hexagonal:** six-sided

**hibernating:** inactive over winter (creatures that hibernate appear to be in a very deep sleep - their temperature drops and their breathing slows down)

**larvae:** the immature, wingless forms of insects (such as caterpillars)

**mandibles:** jaws

**predators:** creatures that eat other creatures

**pupae:** the stage between larvae and adult, when the insects are in cocoons

# Why Is the Wasp a Pest?

by Phil Lester

*If you've ever stood on a wasp, you'll know they have a very painful sting. But bees can sting, too, and we don't think of bees as a problem. So why do most people think of the wasp as a pest? There are several reasons.*

## **There are lots of them.**

In many of our native forests, there are about twenty wasp nests per hectare. Each nest is home to around five thousand wasps. If you could weigh all the wasps in a native forest in autumn, scientists think they would weigh four times the weight of all the birds, mice, rats, and stoats together!



## **They eat all kinds of things.**

Wasps collect nectar from flowers (and chase away other creatures that eat nectar, too). They also attack bees, rob bee hives of honey, and kill and eat bee larvae. Some beekeepers have lost 30 percent of their hives to wasps in a year. Wasps kill and eat many other kinds of insects as well, including beetles and butterflies. Some types of butterflies have completely disappeared from our forests as a result. Wasps have even been known to attack birds' nests and eat the chicks.

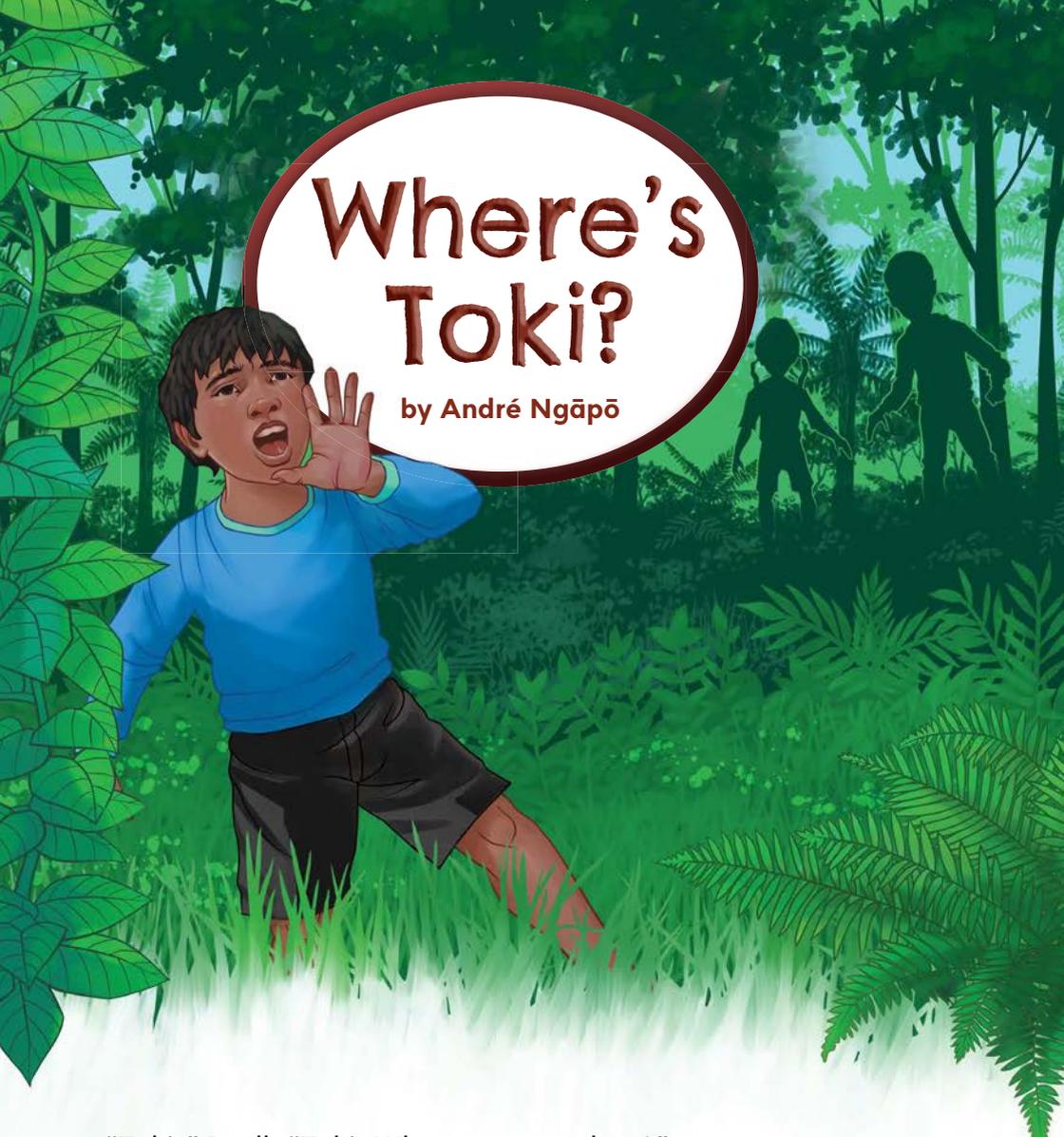
## **They don't have many enemies.**

Wasps that live in colonies are not native to New Zealand. They came here from overseas. Like some other animals that have been introduced, such as rats and possums, wasps have few predators in New Zealand.

## **They are smart.**

Wasps have amazing senses. They use their vision, hearing, and sense of smell to find food. They can also learn. Wasps remember where the food is so they can make trips back and forth to their nests. Scientists have found that wasps can recognise the faces of other wasps. Not only that – wasps can even be taught to recognise different human faces!





# Where's Toki?

by André Ngāpō

"Toki!" I call. "Toki! Where are you, boy?"

I'm really worried. This is all my fault. I let Toki go, and he sprinted off into the bush.

Usually, he never goes far, and when we call, he barks to let us know where he is. This time, he's been missing for nearly an hour. I can hear Mitch and Leilani, my cousins, calling him, too ...



Mitch and Leilani come back to the clearing.

“We need to go home,” says Mitch. “It’s getting late. It’ll be dark soon.”

Leilani shakes her head. “We can’t leave him. He’s only a puppy.”

“I’m not going back,” I say. “I’m going to stay here till I find him.”

Leilani wipes away a tear. “Me too,” she says. “I’m staying with Hoani.”

But we both know Mitch is in charge. He’s fourteen. Uncle said Mitch was “the boss”.

“Toki might have gone back to the marae anyway,” Mitch says. He’s about to say something else when we hear a long howl.

“Oooooooooohhhhhhh!”

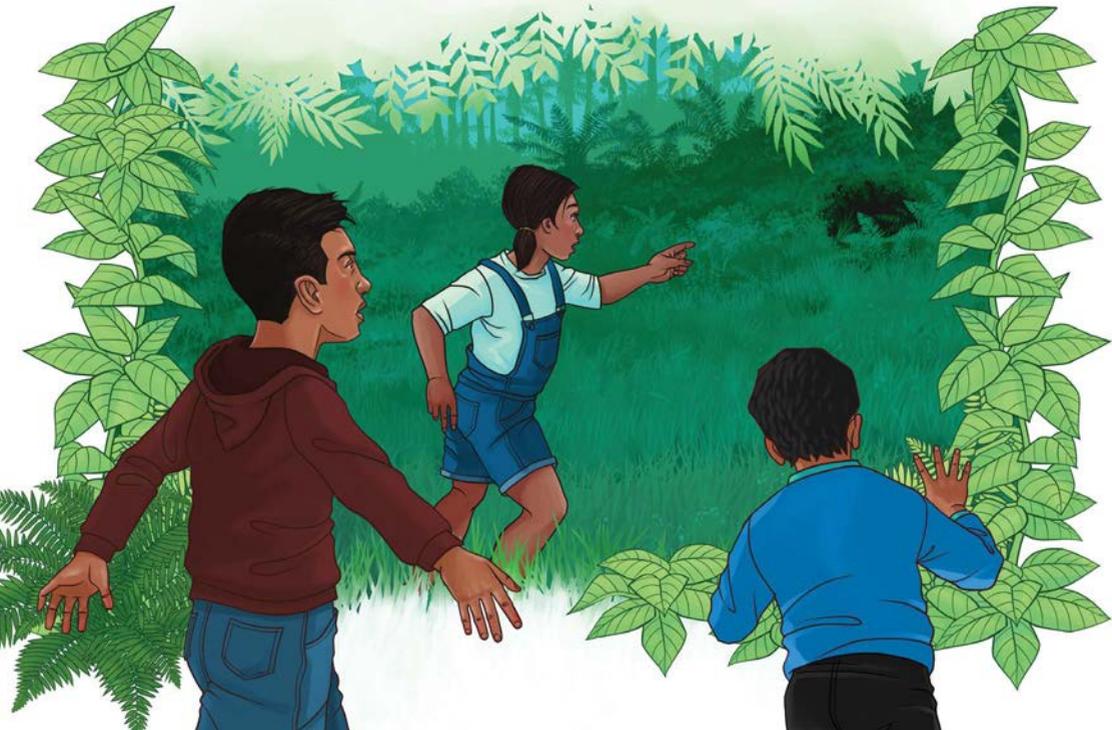
“Toki!” We look at each other, confused.

“That came from down there,” says Leilani, looking at the ground. “But ...”

“It sounded like it came from over there as well.”

Mitch finishes her sentence.

Then we hear Toki bark. He barks again, but it’s a bit muffled. His barks seem to rise out of the ground, yet they’re coming from straight ahead too, from a thicket of bush. We move towards it. “Look,” says Leilani, pointing. “It’s a cave!”





We can make out the cave entrance, covered by ferns.

“We can’t leave him down there,” says Leilani, running towards it.

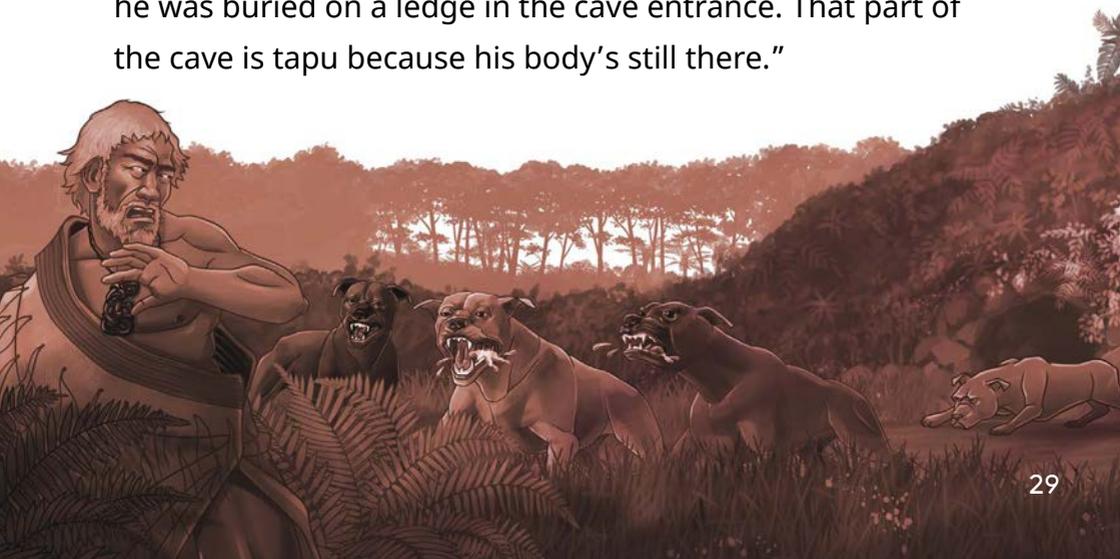
“Stop!” Mitch and I both shout at the same time.

“It might be dangerous,” says Mitch.

“And it might be a tapu cave like Ruakuri,” I add.

“Ruakuri?” says Leilani. “Where’s that?”

“Near Waitomo. Koro told me that long ago, a chief found a cave there, guarded by wild dogs. The dogs were protecting their pups inside the cave, and they attacked the chief. So he went and got some warriors, and they returned and cleared out the dogs. After that, the people used the cave as a sacred burial place. When the chief passed away many years later, he was buried on a ledge in the cave entrance. That part of the cave is tapu because his body’s still there.”



Leilani looks frozen in fear. “So, there might be people buried here?”

“Probably not,” says Mitch. “The entrance is too small.”

Toki whines and whimpers. “He sounds really scared,” says Leilani. “We should go in.”

“We better say a karakia first,” I tell them. “Dad taught me one about respect. It lets Tāne-mahuta and the creatures of the forest know we don’t mean any harm. And it will help to bring good luck to our mahi.”

“Say it now,” says Leilani.

“No,” says Mitch. “We need to get help.”

But I begin the karakia anyway. As I say each word, I try to imagine Toki in the cave. On the walls, tiny glow-worms sparkle like beautiful stars. But the rock is cold and wet, and there are stalactites and stalagmites looking like giant teeth, ready to snap shut.

In my mind, I can see Toki alone and scared in the jaws of the cave.



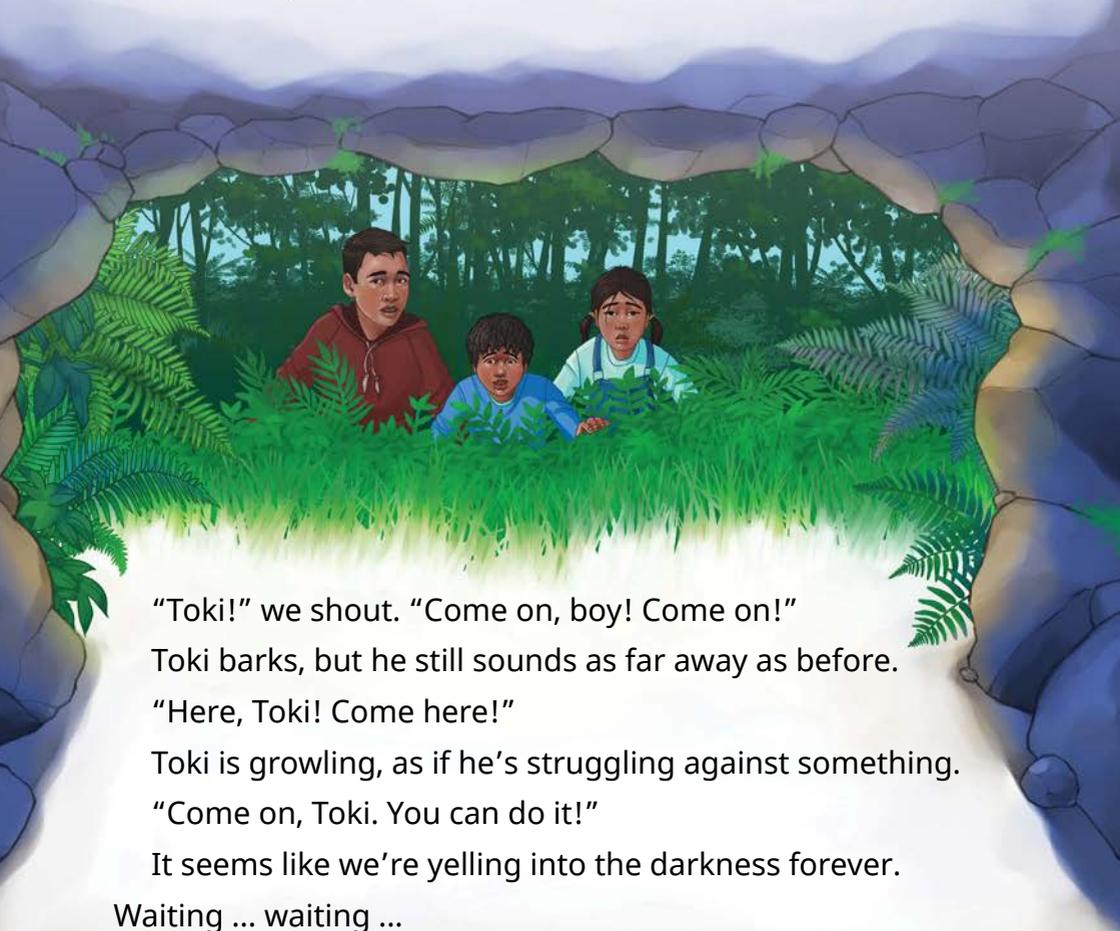
I open my eyes and look up at the darkening sky. It's like Leilani is reading my mind when she says, "Actually, you know, Mitch is right – I reckon it's too dangerous to go in."

Mitch and I nod. It's true – it's not safe.

I imagine Tāne-mahuta looking on. Didn't he hear my karakia? Can't he help Toki escape from the cave?

"Let's try calling again," says Mitch. "It might give him the energy to escape if he's hurt or stuck."

Cautiously, we move closer to the cave entrance.



"Toki!" we shout. "Come on, boy! Come on!"

Toki barks, but he still sounds as far away as before.

"Here, Toki! Come here!"

Toki is growling, as if he's struggling against something.

"Come on, Toki. You can do it!"

It seems like we're yelling into the darkness forever.

Waiting ... waiting ...

Then we hear Toki barking, but this time, it sounds like he's moving towards us, through the trees. We turn around, just as his face explodes through a fern bush. He's all over us with his paws and soft, warm coat. He's yelping with excitement.

"Toki!"

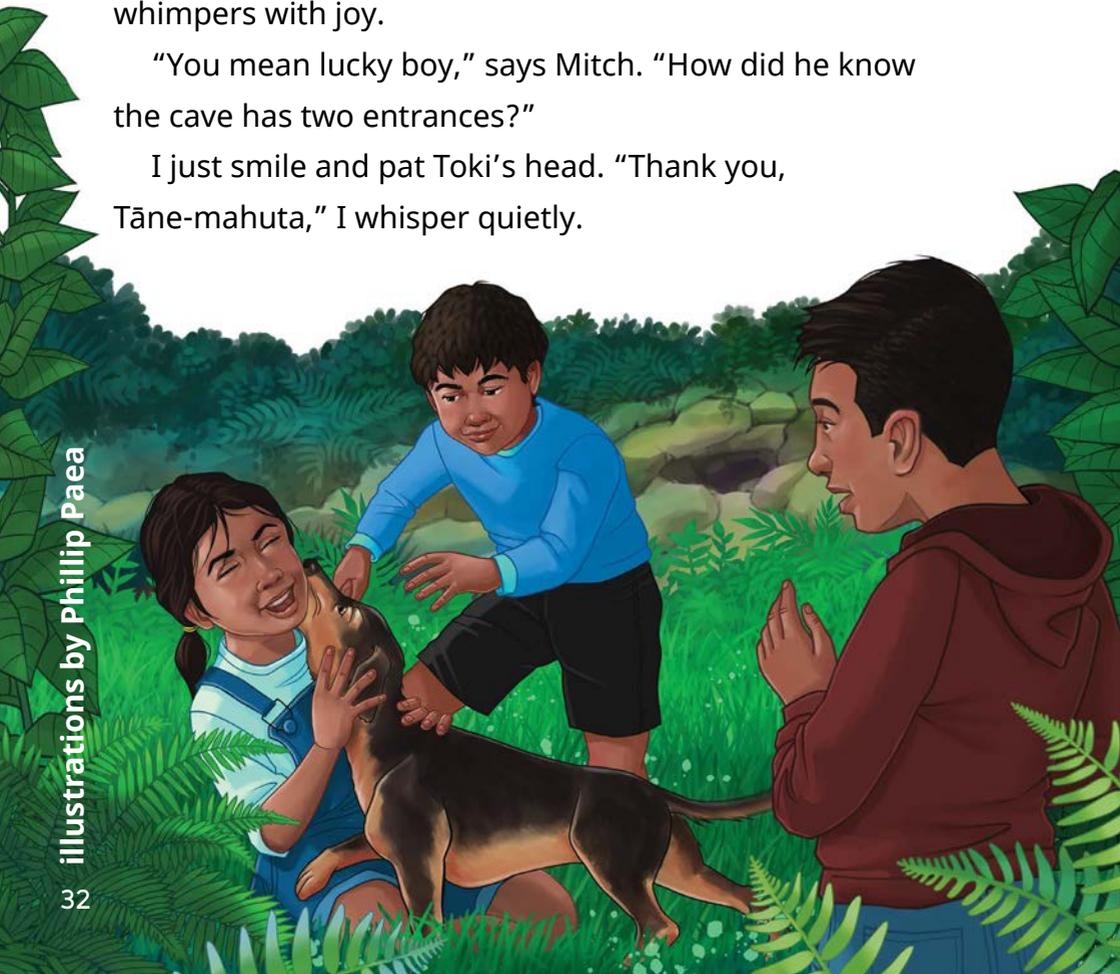
"Where did you come from?" Leilani asks. We follow his path through the ferns and there, underneath a small rocky overhang, is another hole.

"He found another way out," says Mitch.

"Clever boy, Toki!" says Leilani. Toki licks her face and whimpers with joy.

"You mean lucky boy," says Mitch. "How did he know the cave has two entrances?"

I just smile and pat Toki's head. "Thank you, Tāne-mahuta," I whisper quietly.



## ACKNOWLEDGMENTS

The Ministry of Education and Lift Education would like to thank Janet Kelland for allowing us to share her story in “Stung!” and Dr. Simon Pollard, Adjunct Professor of Science Communication, University of Canterbury, for checking “The Striped Invader” and the Life in Caves section (page 9) of “Harwoods Hole”.

All text copyright © Crown 2019

The images on the following pages are copyright © Crown 2019:

3 (bottom right), 5, 6, 9 (cave background), 22 (diagram), and 23 by Elspeth Alix Batt  
12–17 (except photo page 17) by Scott Pearson  
26–32 by Phillip Paea

The image of the eel on page 9 by Gusmonkeyboy from [goo.gl/uER8UB](http://goo.gl/uER8UB) is in the public domain.

The image on page 20 by Bob Peterson from [goo.gl/aU2TYc](http://goo.gl/aU2TYc) is used under a Creative Commons licence (CC BY 2.0).

The images on the following pages are used with permission:

Cover, 1, 2, 4, 8, 9 (glow-worm), and 10–11 copyright © Neil Silverwood  
3 (winch) copyright © John Pybus, courtesy of Waitomo Museum of Caves (acc. no. 19831)  
7 copyright © Paco Murray  
9 (cave wētā), 18, 19, 22 (photo), 24, and 25 copyright © Phil Bendle, courtesy of T.E.R.:R.A.I.N  
9 (cave spider) copyright © Rhiannon McKinstry, courtesy of T.E.R.:R.A.I.N  
9 (bat) copyright © Colin O’Donnell, Department of Conservation *Te Papa Atawhai*  
9 (crayfish) copyright © James Cooper, courtesy of T.E.R.:R.A.I.N  
17 (portrait photo) copyright © Janet Kelland  
21 copyright © Andy Edwards, courtesy of T.E.R.:R.A.I.N

Editor: David Chadwick

Designer: Liz Tui Morris

Literacy Consultant: Melanie Winthrop

Consulting Editors: Hōne Apanui and Emeli Sione



Go to [www.schooljournal.tki.org.nz](http://www.schooljournal.tki.org.nz)

for PDFs of all the texts in this issue of the *School Journal* as well as teacher support material (TSM) and audio for the following:

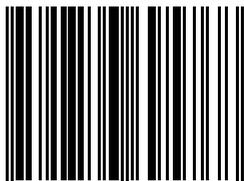
	TSM	Audio
Harwoods Hole	✓	
Stung!	✓	✓
Where's Toki?	✓	✓



MINISTRY OF EDUCATION  
TE TĀHUHU O TE MĀTAURANGA

[New Zealand Government](http://www.schooljournal.tki.org.nz)

ISBN 978-1-77669-576-8



9 781776 695768