



THE PAST BENEATH OUR FEET

BY ROSS CALMAN

There are thousands of clues about the past buried in the earth. Some may be right beneath your feet. Ngāi Tahu archaeologist Atholl Anderson has spent his life excavating these clues and working out what they tell us. For him, it all started with dinosaurs.

“When I was a boy, I loved dinosaurs, but we didn't have much information about them back then. Palaeontologists sometimes wrote stories, and there was a man whose books I was mad about – Roy Chapman Andrews. He worked at the American Museum of Natural History in New York. During the 1920s, Andrews led an expedition to Mongolia to dig up dinosaur fossils. He wrote about his amazing adventures: being chased by bandits across the Gobi Desert, shooting from the back of the car ... that kind of thing. It was like cowboys and Indians and, of course, that suited me. I thought, 'I'll be a palaeontologist and dig up dinosaurs in remote places, too.'”

There was one snag. Dinosaurs had yet to be discovered in New Zealand. (Joan Wiffen didn't find New Zealand's first dinosaur fossil – a **vertebra** from a theropod – until 1975.) It was a big snag, so Atholl thought maybe he wouldn't be a palaeontologist after all. Luckily, he was also interested in history. He could be an archaeologist!

“Palaeontologists and archaeologists do pretty much the same thing. We excavate material that gives us information about the past. The main difference is that palaeontologists want to learn about animals and plants, whereas archaeologists are interested in people. We want to know how people lived, what they ate, what they did each day. To find answers, we dig at the sites where people once lived. We also look for middens. These ancient rubbish dumps contain fish bones, bird bones, shells, broken tools – all kinds of treasure!”



A midden unearthed in Takapuna

Atholl's main focus has been tracking early human **migration** across the oceans and finding the sites where people landed. These sites were the beginnings of new societies, and this idea has always been of great interest to Atholl. He studies how these new societies changed over time. Atholl's great-great-great-grandmother was a Ngāi Tahu woman who married a sealer living on Whenuahou (also known as Codfish Island), a small island off the west coast of Rakiura/Stewart Island. Because of Atholl's Ngāi Tahu whakapapa, learning about the first Māori in Aotearoa has special significance for him.

Among the earliest sites of human habitation in Aotearoa, Wairau Bar near Blenheim is the best known. The first people arrived there from East Polynesia around 1270 to 1300. We know this because archaeologists have used radiocarbon dating to work out the age of **artefacts** found at the Wairau Bar site.



Two fish-hooks found in the middens at Wairau Bar

Archaeologists digging at Wairau Bar in the 1960s



WHAT IS RADIOCARBON DATING?

Radiocarbon dating is a method scientists use to estimate the age of biological material – something many artefacts are made of. This material, such as wood, shell, and bone, was once part of a living thing, so it contains an **element** called carbon. As they grow, living things absorb a form of carbon from the atmosphere known as radioactive carbon. When an animal or a plant dies, it stops absorbing radioactive carbon. Because radioactive carbon decays at a known rate, scientists can work out when the living thing died. They can tell how old an artefact is by the amount of radioactive carbon it contains.

Radiocarbon dating can tell us when the first people arrived, but it can't tell us where they came from. So how do we know the first New Zealanders came from East Polynesia? Again, Atholl says that artefacts provide an important link.

“Some of the things found at Wairau Bar were very similar to artefacts of the same age from Tahiti and the Cook Islands. The stone adzes, for example, were exactly the same shape in all three places. The whale-tooth necklaces were also very alike, made in the same way. Artefacts are often the connection across different societies. They are like clues from the past.”

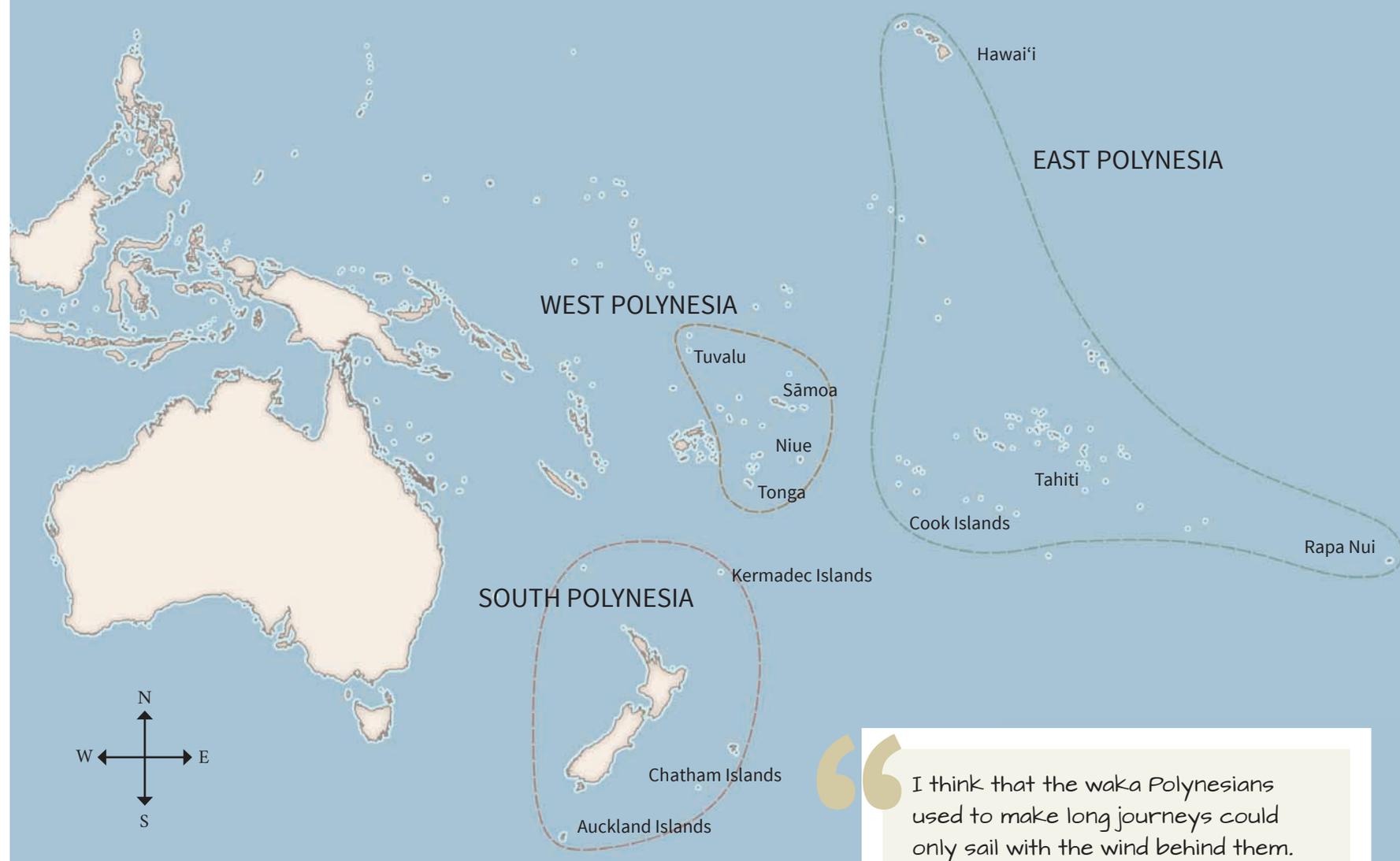


A whale-tooth necklace found in a midden at Wairau Bar

Atholl says that archaeologists have lots of ways to establish connections between societies, such as looking at language. Among East Polynesian languages, te reo Māori is closest to Tahitian and Cook Islands Māori. Atholl has a story about this:

When Captain Cook visited New Zealand in 1769, he brought with him a Tahitian named Tupaia. Tupaia had no problem communicating with Māori, despite the fact he'd never been here before. So that definitely tells us something.

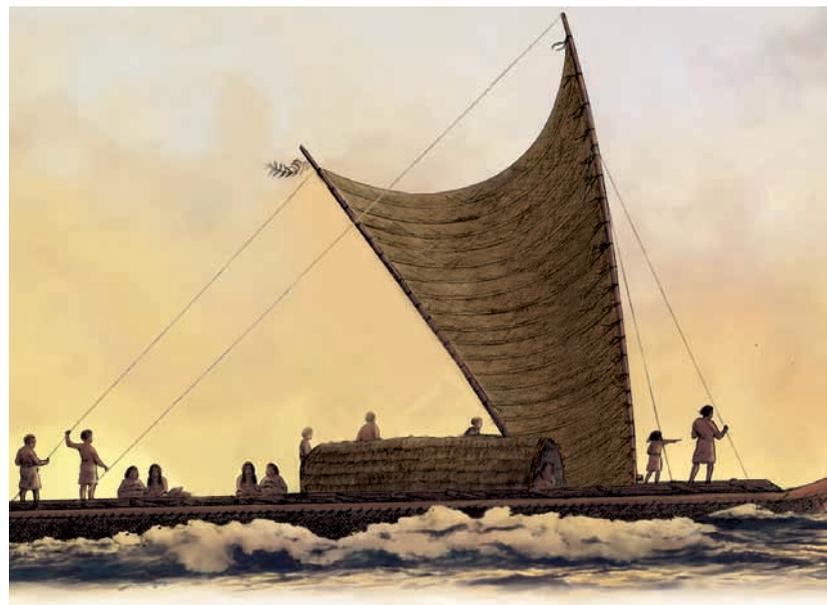
In the same way, te reo Māori is similar to the language spoken by Moriori on the Chatham Islands. These languages - Tahitian, Cook Islands Māori, te reo Māori, and Moriori - are so similar it suggests the people who speak them must share common ancestors.



I think that the waka Polynesians used to make long journeys could only sail with the wind behind them. This was unlike European sailing ships, which could sail to a limited extent against the wind. During the 1200s, the wind blew mostly from the north-east, down from East Polynesia towards New Zealand. That's the time we believe settlement occurred here. By the late fourteenth century, the wind patterns had changed. There were more westerlies. That's the wrong direction if you're trying to get here from the north-east! After that, New Zealand became a lot more isolated for a time.

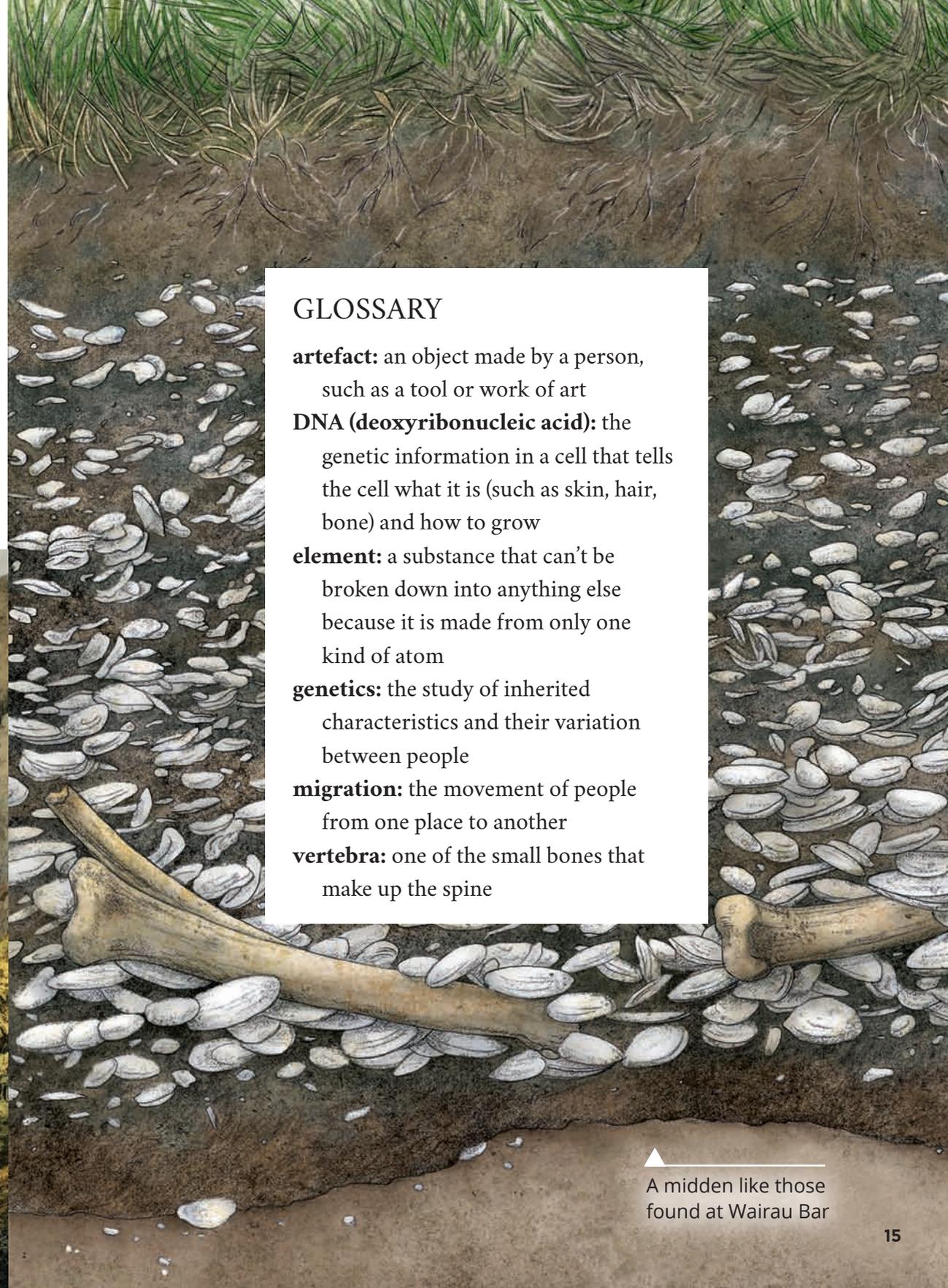
Archaeologists also use **genetics** to prove connections between different groups of people. They are especially interested in dentine, a source of **DNA** found in human teeth. They compare DNA from teeth found in archaeological sites in Aotearoa with DNA from sites in East Polynesia. Genetic similarities can prove that people were related.

Another area that provides valuable information is palaeoclimatology. This is looking at climate change over the centuries. Because the first migrants arrived here by boat, studying wind patterns is especially valuable. It can tell us where people came from as well as when.



Archaeology has given Atholl the opportunity to visit lots of interesting places. He's been to Madagascar, off the east coast of Africa, and the Galapagos Islands, off the west coast of South America. But no matter where the work has taken him, Atholl says it's all been about building a picture of the past. He believes that learning about our past is essential because it helps us to understand the present.

“To know ourselves properly, we need to think about where we've come from. We need to understand how our different societies have changed. Take Māori, for example. How have their beliefs, customs, and language changed over the decades and centuries? Then you need to think about why these things have changed. You have to know where Māori have come from – in the broadest possible sense – to understand Māori today.”



GLOSSARY

artefact: an object made by a person, such as a tool or work of art

DNA (deoxyribonucleic acid): the genetic information in a cell that tells the cell what it is (such as skin, hair, bone) and how to grow

element: a substance that can't be broken down into anything else because it is made from only one kind of atom

genetics: the study of inherited characteristics and their variation between people

migration: the movement of people from one place to another

vertebra: one of the small bones that make up the spine

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A midden like those found at Wairau Bar

The Past beneath Our Feet

by Ross Calman

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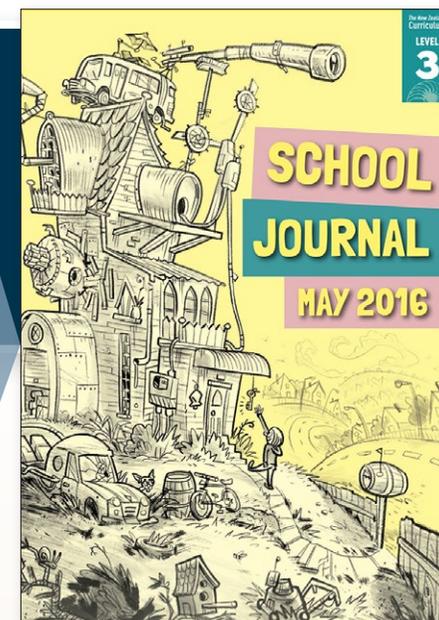
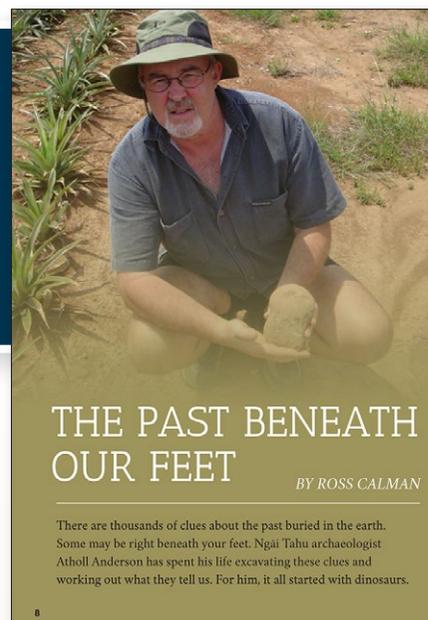
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