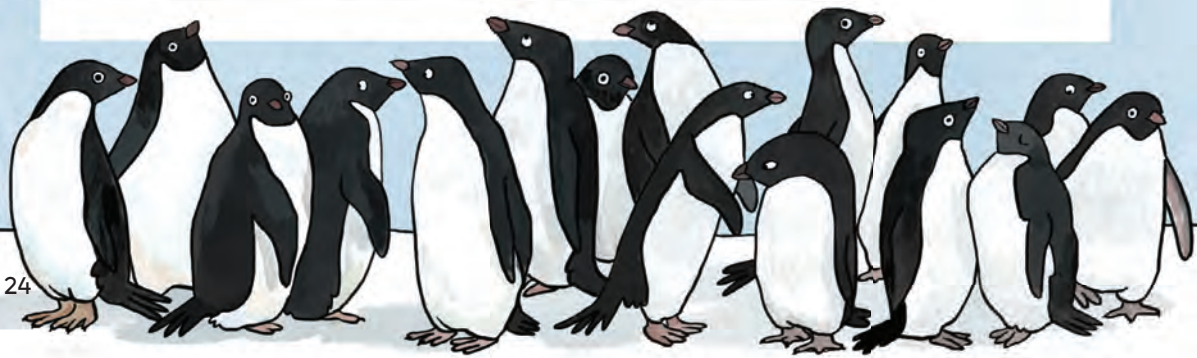


FANTASTIC PENGUINS

BY GISELLE CLARKSON

Most people picture penguins in Antarctica, hanging about on the ice. We don't imagine them zipping across waves or scaling sea cliffs like mountaineers. And we're even less likely to imagine them living in rainforests or the tropics. Yet penguins do all these things – they're unlike any other birds on the planet.

Penguins arrived on the scene around 60 million years ago. Some species, like the kumimanu, came and went. Fossilised remains of this huge penguin tell us it was over 160 centimetres tall. That's as tall as some people (even the emperor penguin – our largest living species – is 40 centimetres shorter).



A PENGUIN'S PLACE

Penguins are found only in the Southern Hemisphere. Sometimes, Galapagos penguins swim across the equator when they're out fishing – but they always return south. So what do penguins have against the Northern Hemisphere? Predators. There are far too many of them for a flightless seabird. In the Southern Hemisphere, there's a lot less to worry about – except seals, sharks, orca... and of course people, the biggest threat of all.



Penguins can survive all kinds of habitats. Emperor penguins raise their chicks in Antarctic blizzards, where temperatures can drop to minus 40 degrees Celsius.

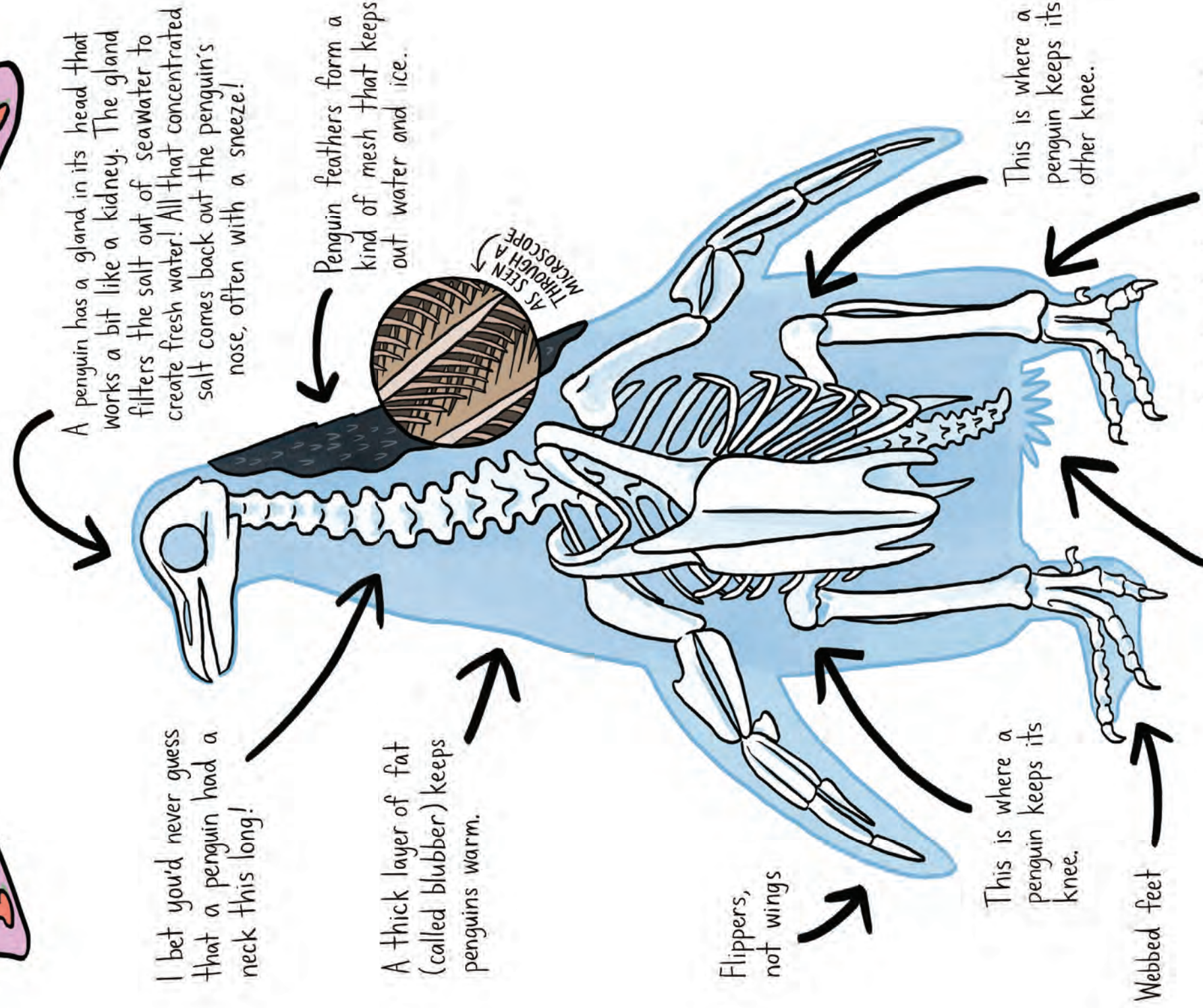


Meanwhile, African penguins need to keep their eggs cool. Along the coast of Namibia and South Africa, where African penguins live, the temperature can climb above 40 degrees Celsius.

Penguins need dry land to raise chicks and to moult. The rest of the time, the sea is their home. Some stay in the water for so long that barnacles grow on their tails! Because penguins are built to stay snug in the water, it's easy for them to overheat on land. Luckily they have very clever ways to keep cool. This includes making their blood flow closer to the skin so it can be cooled down by the air (you can tell when a penguin is hot – it has very pink feet). Another cooling trick is to face the sun. The white feathers on a penguin's front don't absorb as much heat as the black feathers on its back.



PARTS OF A PENGUIN



A penguin has a gland in its head that works a bit like a kidney. The gland filters the salt out of seawater to create fresh water! All that concentrated salt comes back out the penguin's nose, often with a sneeze!

Penguin feathers form a kind of mesh that keeps out water and ice.

AS SEEN THROUGH A MICROSCOPE

I bet you'd never guess that a penguin had a neck this long!

A thick layer of fat (called blubber) keeps penguins warm.

Flippers, not wings

This is where a penguin keeps its knee.

Webbed feet

This is where a penguin keeps its other knee.

Tail feathers help penguins balance on land and steer accurately in the water.

Birds that fly have light, flexible bones, but penguins need dense, rigid bones. This helps them dive deeper and cope with water pressure.

PREENING

Like all seabirds, penguins spend a lot of time nibbling the base of their tails – but it's nothing to do with being itchy or dirty. This is where they have a little nozzle called a preen gland. Nibbling releases oil that the bird then spreads over its feathers to keep them waterproof and in good condition.



* NOT TO SCALE

CATASTROPHE!

Most birds lose a few feathers at a time when they moult, but penguins lose all their feathers at once over a few weeks, called a catastrophic moult. Penguins can't swim during this time, which means no food. To prepare for a moult, a penguin spends weeks overeating.



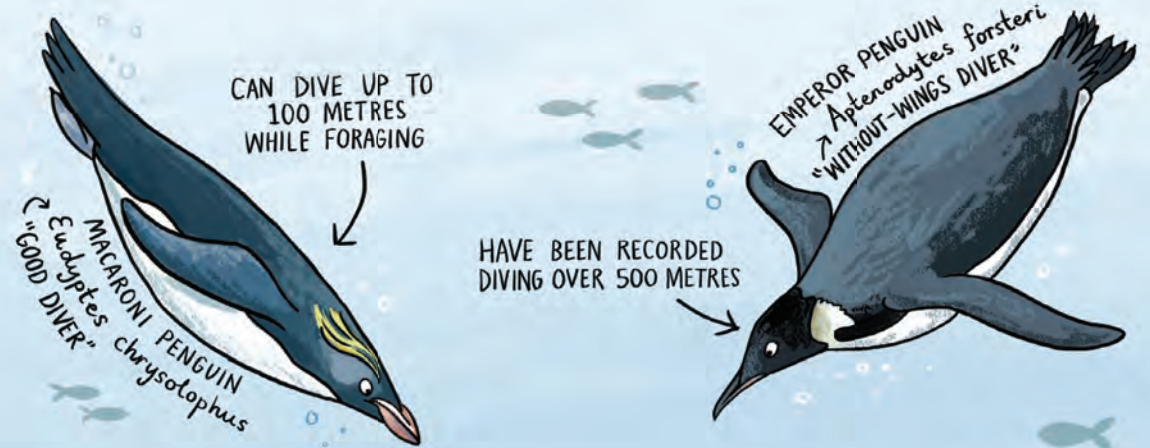
PENGUIN BILLS

Penguin bills – they're worth a closer look! Emperor penguins and king penguins have long, slender bills, an excellent tool for catching small prey, such as krill and lantern fish. They're like the difference between picking up peas with tweezers and picking them up with barbecue tongs. Many penguins, however, do have the barbecue tongs! Crested penguins have a big, hooked bill that's good for tasks like crushing fish skulls. These thicker bills work very well out of the water too. Crested penguins that live on steep, rocky coastlines use their bills to balance and climb. They're also useful for wrestling rivals.

If you ever get the chance, look inside a penguin's bill. It's freaky in there! A penguin eats seriously slippery food, which explains the thick, spiky bristles that cover its tongue. The bristles help a penguin hold on to its food long enough to swallow it.

DIVERS and GREAT DIVERS

You might have noticed the scientific names for penguin species. A lot of them end in -dyptes or something similar. "Dyptes" means "diver" in ancient Greek. (Megadyptes means "great diver".) I love the way these names tell us something special about penguins.

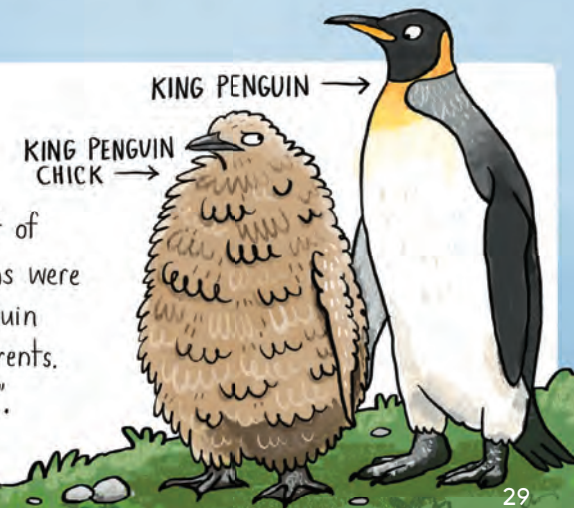


Scientists estimate there are between seventeen and twenty species of penguin in the world. New Zealand has six, which is more than anywhere else. We also have the most penguin fossils. Sometimes other kinds of penguins show up on our shores, but they're considered vagrant. This means they arrived by accident and probably won't breed here.

Nobody knows for sure how many species of penguin there are. Sometimes one species ends up living in two different places. Eventually, as these two groups evolve, they become different species of penguin, but you can only tell them apart by looking at their DNA.

Woolly Geese

The first Europeans to see penguins got a lot of things wrong. They thought Magellanic penguins were a kind of goose, and they decided king penguin chicks were a different species from their parents. They named these chicks the "woolly penguin".



AOTEAROA'S LOCALS



SNARES CRESTED PENGUIN

Snares crested penguins live only on the Snares, a small group of islands south-west of Rakiura/Stewart Island. The coolest thing about this species is that they climb trees. Penguins have been spotted on branches up to 2 metres off the ground!

HOIHO / YELLOW-EYED PENGUIN

Hoiho are very shy birds. While many species will happily mingle, most hoiho prefer a peaceful life, without the hustle and bustle of a colony. But don't be fooled - "hoiho" in te reo Māori means "noise shouter"! Hoiho build their nests in coastal scrub, so we need to make sure this scrub is protected. You'll find hoiho on the east coast of the South Island, on Rakiura/Stewart Island, and on the subantarctic Auckland Islands. And on one other place: the five-dollar note!

SHHH!



EASTERN ROCKHOPPER PENGUIN

Eastern rockhoppers have the funkiest eyebrows in the penguin world. They're also fantastic climbers. They live on steep, bouldery subantarctic islands.



TAWAKI / FIORDLAND CRESTED PENGUIN

Tawaki are New Zealand's best-kept penguin secret. They live mostly in Fiordland, where few people see them. If you visit Piopiotahi/Milford Sound, look out for one whizzing across the water! Tawaki also live on Rakiura/Stewart Island. They nest in lush, coastal rainforest under tree roots and boulders. Tawaki are champion swimmers. Some swim up to 7,000 kilometres to find food, even though there's good stuff to eat closer to land. This behaviour might be because their subantarctic penguin ancestors hunted in these places, so their instinct is to do the same. The name tawaki comes from the legendary being Tāwhaki, who was associated with thunder and lightning. The feathers on these penguins' heads look like bolts of lightning.



ERECT CRESTED PENGUIN

It's easy to recognise an erect crested penguin: they have yellow feathers that stick straight up on their heads. They live alongside eastern rockhoppers in the subantarctic.

KORORĀ / LITTLE BLUE PENGUIN

Kororā are found all around New Zealand's coast. Because they live close to people, they get into trouble on our roads. Dogs are a danger, too.



PENGUINS IN THE FUTURE

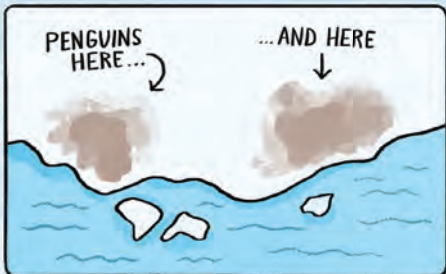
Every year, scientists discover new facts about penguins. New technology gives them ways to collect information that was impossible - until now ...

Tiny cameras worn by hoiho and tawaki provide a penguin's-eye view underwater, showing us what they eat and how they hunt.



Tiny devices attached to a penguin's leg can tell us where they go when they're out at sea. GPS units with depth sensors tell us how deep they dive and for how long.

Remote-controlled robot penguins with cameras are used by researchers to study penguin behaviour without disturbing the colony.



Satellite photos help scientists study the population and movement of penguin colonies in Antarctica. There are so many penguins you can see their poo from space! Different diets give different penguin species different-coloured poo.

When we know where penguins feed and breed, we can establish predator-free sanctuaries and marine reserves. And the better we understand how our changing climate and warming seas affect penguins, the better we can fight for their survival. There's still so much to learn about penguins. I don't think they'll ever stop surprising us.



Fantastic Penguins

by Giselle Clarkson

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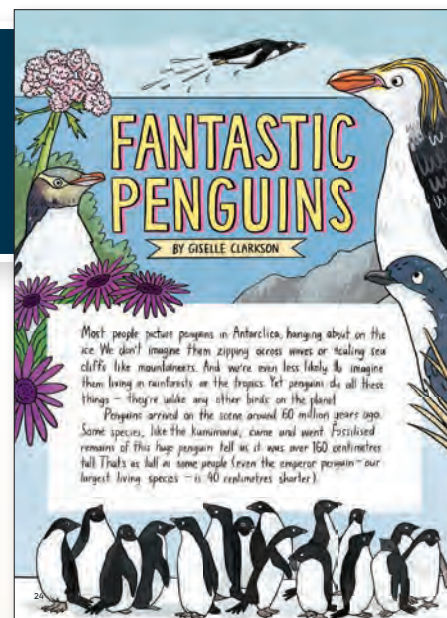
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