



SONOROUS ANTARCTICA

Andrea Navarro • Carlos Denis





Hi, I'm Willy! Welcome to *Sonorous Antarctica!*

On this adventure you will not only explore the fascinating “white continent,” but you will also hear some of its sounds. For this, make sure you have a mobile phone that allows you to scan QR codes.

Remember that you are not alone on this journey - let's see if you can find me!



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First edition: August, 2024

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Printed in Chile.

ISBN: 978-956-418-350-3

Edition of 1.000 copies.

Translation: Diego Filún, Ilse van Opzeeland and Simon Morley.

Line Editing: Francisca Bitsch.

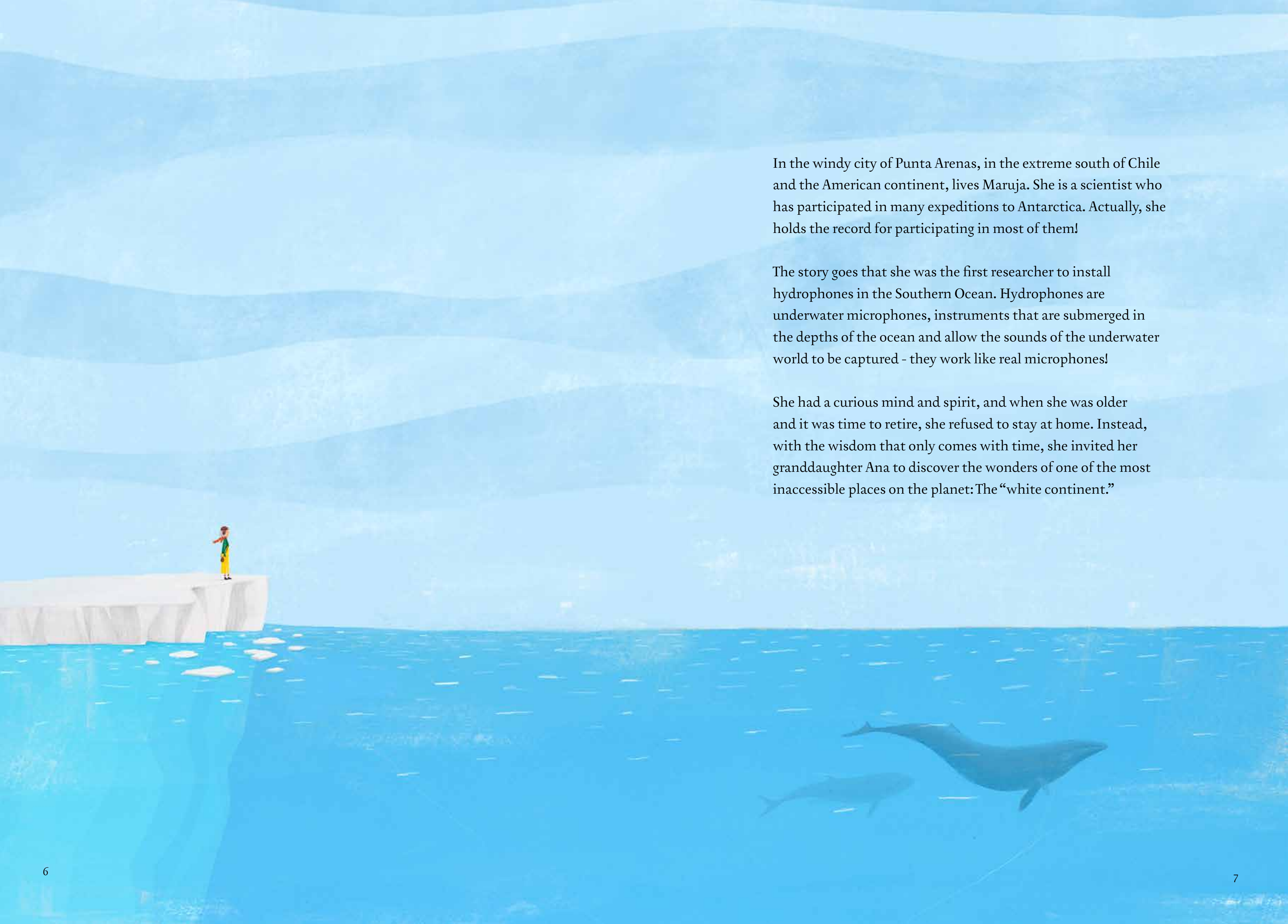
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In the windy city of Punta Arenas, in the extreme south of Chile and the American continent, lives Maruja. She is a scientist who has participated in many expeditions to Antarctica. Actually, she holds the record for participating in most of them!

The story goes that she was the first researcher to install hydrophones in the Southern Ocean. Hydrophones are underwater microphones, instruments that are submerged in the depths of the ocean and allow the sounds of the underwater world to be captured - they work like real microphones!

She had a curious mind and spirit, and when she was older and it was time to retire, she refused to stay at home. Instead, with the wisdom that only comes with time, she invited her granddaughter Ana to discover the wonders of one of the most inaccessible places on the planet: The “white continent.”

Maruja has a very special object, so special it becomes magical!
It's a gold ring with an amethyst stone that allows her to teleport anywhere in the world.

Every time she touches the ring, she closes her eyes and thinks of the place she wants to go... ZAP! In the blink of an eye, she arrives in the Namib Desert or at the top of a mountain in the Himalayas. But that's not all: She can invite anyone she wants to travel with her.





“Wake up Ana, we’re going to Antarctica!”

“Maru, is that you?” She asked with half-open eyes.

“It’s me! Get your backpack ready! We’re leaving in a few minutes!”

“I’ve never been to Antarctica. It is so white there...”

Before Maruja puts on the ring, she tells her granddaughter: “You will get to know Antarctica, and its sounds. Let the adventure begin!”

“What was the lowest temperature ever recorded in Antarctica?”

“In 2013, NASA’s Landsat 8 Earth observation satellite measured 93 °C along a mountain ridge in eastern Antarctica. It was not only the lowest recorded temperature in Antarctica, but also on our planet. Look, Ana!”

Ana quickly turns her face in the direction where Maruja is pointing. “Do you see that ship? That’s the German icebreaker Polarstern. On board, we prepare the hydrophones to install them under the frozen ocean. With the sounds we record, we can fill an acoustic library of underwater sounds.”

“Wow! I thought there were only libraries of books.”





Can you hear this mysterious sound?

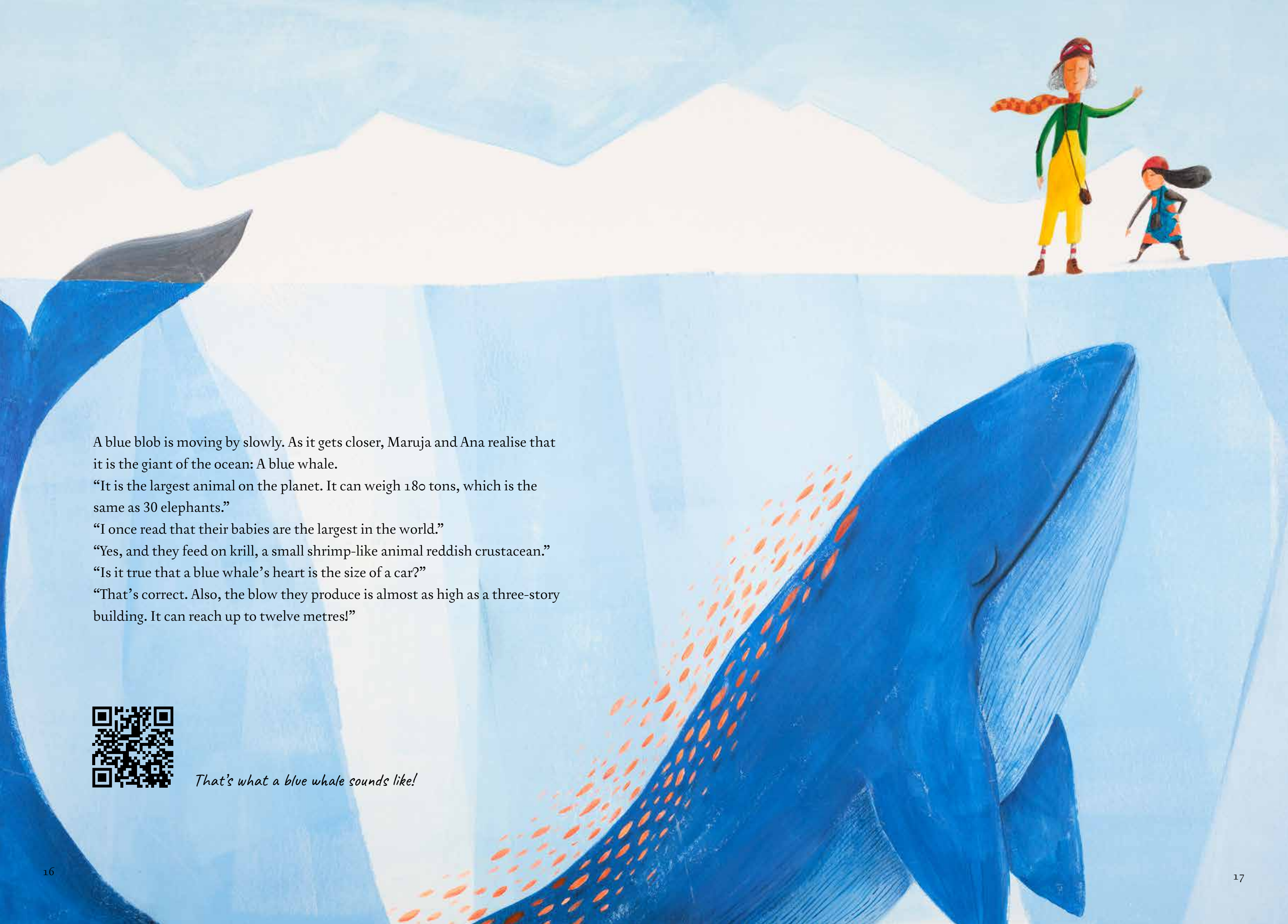
“What’s that noise? I can’t hear well!”

“We don’t know. The hydrophones have recorded mysterious sounds and we don’t know what they come from. It could be an iceberg scraping the sea floor.”

“Maru, why are there so many colours?”

“Aha! Above water, Antarctica is predominantly white. However, there are so many colours underwater in Antarctica, as there are so many species living here!”





A blue blob is moving by slowly. As it gets closer, Maruja and Ana realise that it is the giant of the ocean: A blue whale.

“It is the largest animal on the planet. It can weigh 180 tons, which is the same as 30 elephants.”

“I once read that their babies are the largest in the world.”

“Yes, and they feed on krill, a small shrimp-like animal reddish crustacean.”

“Is it true that a blue whale’s heart is the size of a car?”

“That’s correct. Also, the blow they produce is almost as high as a three-story building. It can reach up to twelve metres!”



That’s what a blue whale sounds like!



*Turn on the audio of
the emperor penguin!*



The explorers arrive at a colony of emperor penguins. There are so so so many, that it is impossible to count them. They walk upright and gracefully.

“Look, look, look, look Maru! They look like kings and queens.”

“And they are almost your size. On average, they are one metre and 15 centimetres tall.”

“No, Maru. I’m one metre and 23 centimetres tall. Are they the largest penguins that exist?”

“That’s right. They spend their whole life in the Antarctica and can dive up to 500 metres deep. They can stay underwater for up to 22 minutes.”

“I can’t dive that long!”

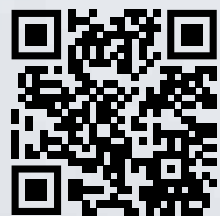
On the sea ice lies a very furry animal. The Weddell seal has just woken up from a nap.

“It looks like a one of the toy animals I have in my room!”

“It’s absolutely adorable. These seals live in the Antarctic pack ice and have thick layers of fat under their fur to protect them from the cold.”

“How do they survive all year round here?”

“They can open the ice with their teeth and make holes. That’s how they can breathe.”



*Scan the code and listen
to the Weddell seal!*



In a huge colony of small animals dressed in black tuxedos and white shirts, there is a nest built of rocks with little Adélie penguin chicks inside.
“I thought nests were made of twigs.”
“Adélie penguin males build nests out of rocks.”
“Maru, they walk very fast, as if they were in a hurry,” says Ana, imitating the movement of the animals.
“Yes, and they feed mainly on krill, fish and squid.”
“Phew! It seems that all the animals in Antarctica eat krill... Poor krill!”
“That’s why krill is so important as a food source for marine mammals and birds, although it is only a few centimeters long, it occurs in huge shoals, that can feed a leviathon.”



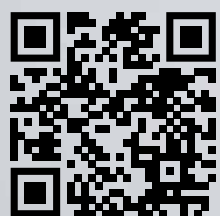
So far, Ana has been able to see two types of birds, but they both cannot fly. Suddenly, she comes across a skua stealing a fish from a blue eyed shag.

“Antarctic skuas are excellent fliers, and have even been observed deep in the mountains of Antarctica.”

“They like to take food from others.”

“Yes, they do. They eat fish and krill, but they also eat penguin eggs and chicks.”

“So it’s best to stay away from them. Let’s go Maru!”



Listen to the skua's sound!





A seal with powerful jaws like a leopard approaches the surface.
It is alone and makes a ghostly sound.

“Researchers believe that leopard seals make this sound to find other leopard seals over long distances.”

“And will they hear them from so far away?”

“Possibly. Did you know they are the largest Antarctic seals? Guess what they eat?”

“Krill.”

“Yes, but also a lot of penguins, fish, squid and even other seal pups.”



What does the leopard seal sound like?



Ana hears a strange noise. She doesn't know what it is, but she thinks it might be a duck.

"Are there ducks in Antarctica?" she asks Maru surprised.

"Believe it or not, that sound comes from an Antarctic minke whale. Scientists call it a 'bio-duck' because it sounds precisely like a..."

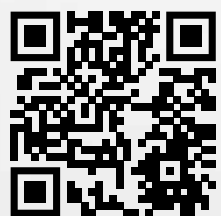
"Quack, quack!"

"The Antarctica minke whale is the smallest of all baleen whales in Antarctic and has a very special feature: It is the only one that can break the ice using its head, so it can surface to breathe even when there is a lot of ice on the ocean."

"But are there ducks in Antarctica?"

"There are records, but they have been occasional."

"Cool!"



Here is the sound of the Antarctic minke whale!



It has a face that is easy to recognize. Maruja and Ana come face to face with a Ross seal.

“What is its scientific name?”

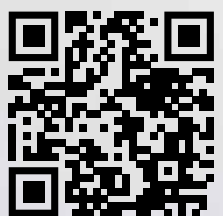
“*Ommatophoca rossii*. Ommato means ‘eye’ and phoca means ‘seal’. Rossii refers to the explorer James Clark Ross, who was the person to document this species.”

“And does Sir James look like a Ross seal?”

Maruja laughs and then continues her explanation.

“Ross seals make their sounds without opening their mouths.”

“Wow, how difficult!”



*Ears open for the
sound of Ross's seal!*



*This is what an iceberg
collision sounds like!*

About 500 metres away, Maruja and Ana see two large masses of ice slowly approaching.

“Wow Maru, it looks like they will collide.”

“It happens. Have you ever heard of the expression ‘it’s the tip of the iceberg?’”

“Mmm... Maybe.”

“It means that we only see a small part and that the rest is hidden.”

“I imagined that Antarctica was totally white because I was looking from the surface. I was seeing only ‘the tip of the iceberg’”.

“Exactly.”





Hey crabeater seal!

Ana’s mouth falls open when she sees hundreds of crabeater seals approaching.

“They are very social. They gather in groups of up to 1,000 individuals.”

“Are they called crabeater seals because they eat crabs?”

“No, they feed mainly on krill and are thought to be the most abundant carnivorous mammalian species in the world. It is estimated that there could be between 7 and 75 million of them. It is also one of the fastest seals: It can swim at around 25 kilometres per hour.”

“Like a scooter!”



Having travelled through some of the “white continent’s” landscapes, the journey begins to come to an end.
“Sometimes people have ideas of places that turn out not not to be true. For example, you thought Antarctica was only white, but you saw a universe of colours in its ocean.”
“That’s true. And you decided not to stay at home and didn’t even try.”
“Aha. It’s time to go back to Punta Arenas.”
Maruja is about to touch the ring to return home, but realises that she doesn’t have it with her. Seeing this, Ana smiles and asks her:
“What if we stay in Antarctica?”





Authors' Words

Marine acoustics is a science that began many years ago... Many years! Its origins date back to World War I. At that time, submarines could easily destroy ships because they couldn't be detected; nobody saw them coming!

But then, how could ships protect themselves from submarines? The solution found to identify them was to introduce a sort of microphone into the ocean, yes, an underwater microphone! That instrument was called a "hydrophone," and its creation allowed the capture of sounds from the depths.

Today, marine acoustics is not only used for military purposes. There are scientists working on creating libraries of ocean sounds! In fact, all the recordings you heard in this book were provided by the Marine Acoustics Laboratory of the Alfred Wegener Institute (AWI) in Germany.

Acknowledgement

This editorial project would not have been possible without the valuable contributions of Diego Filún, Kerstin Jerosch, Ilse van Opzeeland, Claudio Aravena, Sebastián Bórquez, Felipe Cabello, Jorge Gronemeyer, Mónica Nyrar, José Manuel Contreras, Simon Morley, Hendrik Pehlke, Diego Hernández, Camilo Corvera, Birte Kiesé, Francisca Bistch, Norinna Carapelle, Hugo Silva, Cecilia Frías, Marco Lorca, Ignacio Garrido, Ricardo Giesecke, Jorge Navarro, Jaime Pizarro, Bernd Krock and Jorge Ruiz.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 872690.



Thank you for joining Maruja and Ana on this journey
through the sounds of Antarctica!

Forward to seeing you on another adventure very soon!



Can you imagine teleporting to Antarctica and hearing its sounds?

Join Maruja and Ana on a journey to the southernmost part of the planet, where you can not only explore the “white continent” and its biodiversity but also listen to fascinating sound recordings. Immerse yourself in a journey where science and adventure meet!

ISBN: 978-956-418-350-3



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