

NATGEO.ORG/EXPLORERMAG | VOL. 20 NO. 4



NATIONAL  
GEOGRAPHIC



# Explorer

ADVENTURER



A close-up photograph of a platypus's head and front paws. The platypus has dark brown fur, a large, leathery bill, and webbed feet. It is resting on a wet, mossy log.

## Platypus 8

Newfoundland Wildlife 2

Iguazú Falls 16

# Wildlife and Wild Places

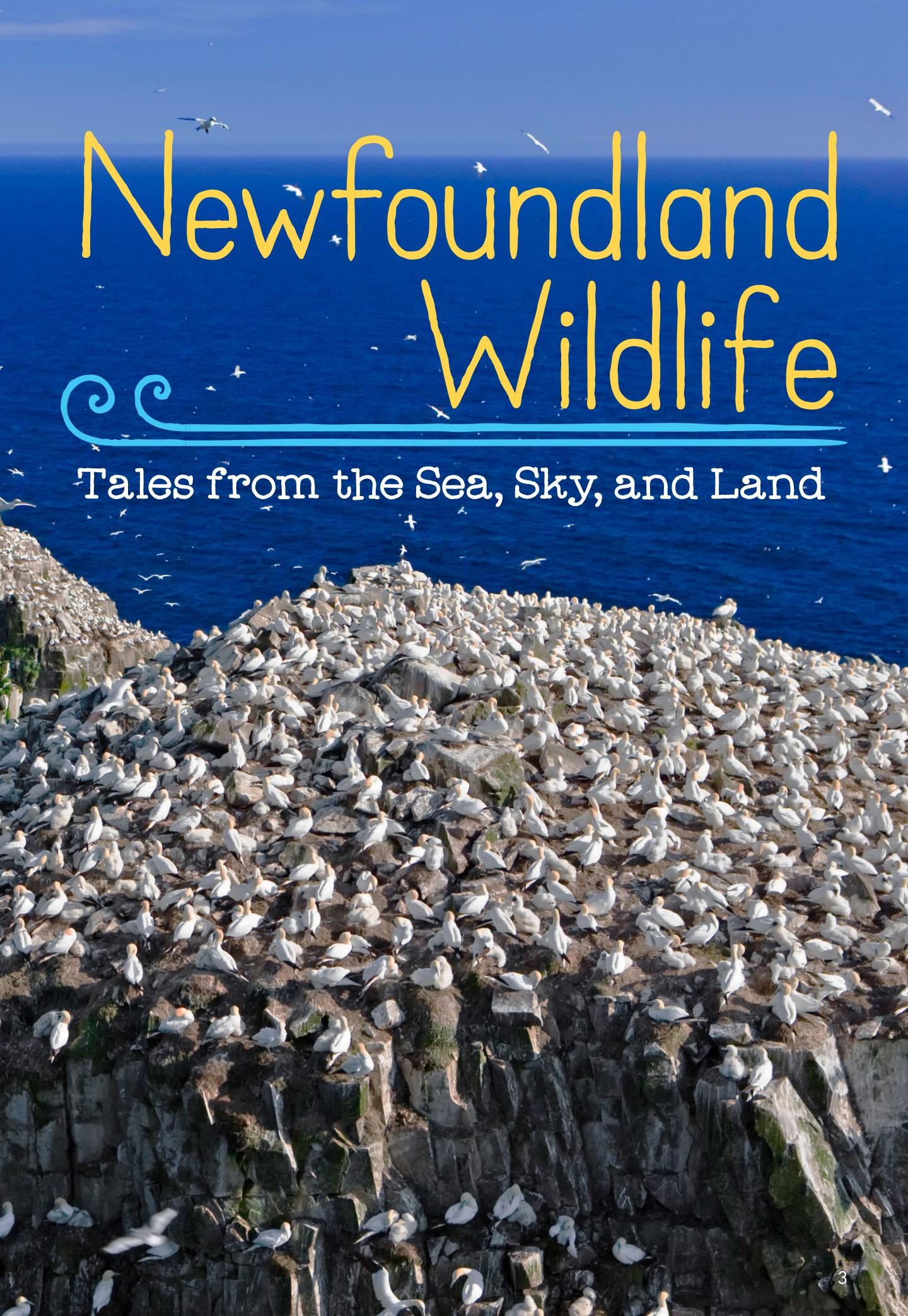
## LIFE SCIENCE

As you read, think about how a healthy ecosystem relies on multiple species of different types to meet each other's needs.



by Justine Ammendolia

# Newfoundland Wildlife



A photograph showing a massive colony of white seabirds, possibly Gannets, perched on a dark, craggy cliff face. The birds are densely packed, covering most of the visible rock. They are white with dark wing tips and some have orange patches on their heads. Below the cliff, the deep blue ocean stretches to the horizon, with many more birds flying in the sky.

Tales from the Sea, Sky, and Land

**Let's get one thing straight:** I know that caribou do not live in the ocean. As a marine biologist, I study ocean animals. I live on an island called Newfoundland. It's part of the province Newfoundland and Labrador in eastern Canada. My research takes place in the North Atlantic Ocean.

Of course, there are no caribou floating around in the ocean. But, here's what happened. I was visiting the historic Port au Choix lighthouse. The view of the ocean is incredible there. As I walked around the lighthouse, I nearly ran into a small herd of caribou! They were calmly grazing on the lighthouse grounds.

I'm not embarrassed to admit it: I geeked out. Caribou are hard to see in the wild. They are "shy," and they avoid people. To see so many at once was a big deal.



I dropped to the ground in front of the lighthouse and inched forward on my stomach. There was no way I was going to miss this. With my heart racing, I fumbled for my camera and took as many photos as I could before the caribou got wise to me and moved off.

I may be a marine biologist, but here on this island, I get a lot of chances to see amazing animals from the sea, sky, and land. Let me tell you about a few of them.





The waters around Newfoundland are full of anemones and other life.

## The Sea

It's the sea creatures that I know the best. The North Atlantic is very cold, and its waters can get pretty rough. Even though it isn't the easiest place to live, you wouldn't believe how many animals call these waters home.

The seafloor is littered with sea anemones. These colorful **invertebrates** have squishy bodies. They can be as small as a button or the size of a teacup, and they cement themselves to rocks with a wide base like a sticky foot. That keeps them in place despite choppy waves. Their bodies are surrounded by long, sensitive tentacles. The tentacles sting and grab helpless prey that get too close.

The tail of a humpback whale sticks out above the water's surface as the whale dives.



## Sea Snacks

While the anemones hold fast to rocks, tiny, shimmering fish flit about in these waters: capelin. No bigger than a hot dog, these fish are special because they come to the coasts of Newfoundland by the millions. They are famous for putting on a show. Thousands of them will "jump" onto the rocky beaches to lay their eggs.

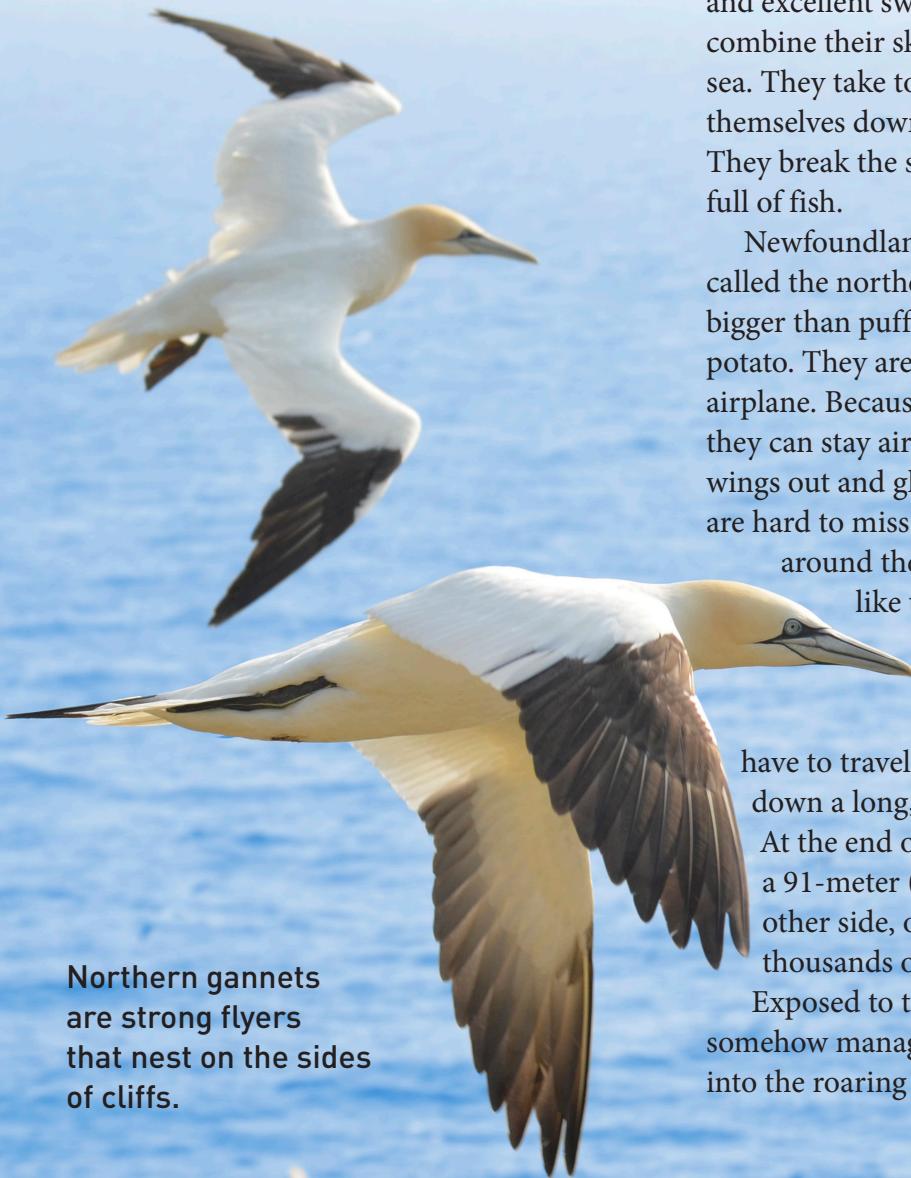
Many other species find capelin delicious. Humpback whales are big fans. Humpbacks travel to Newfoundland on summer vacations. They travel thousands and thousands of kilometers from tropical waters because food is so plentiful here. They intentionally eat a lot so they gain and store lots of healthy fat (blubber) during their vacation in Newfoundland.

These whales can be hard to spot, though. It's only when they come close to the surface that you can make out the small, hook-like fins on their backs. If you're really lucky, you can catch sight of a whale tail, or fluke, pop out of the water before a humpback dives.

If the humpbacks don't scarf down all the capelin, then the Atlantic cod will. I admire cod because they are excellent predators. They have big eyes and a long chin "whisker" called a barbel. The barbel helps cod sense food in murky waters. I'll be honest: My introduction to cod was not in my role as a biologist. When you live on an island, you often go fishing to catch your dinner. I first learned about cod on a fishing boat on Fogo Island.



Puffins are a familiar sight on Gull Island.



Northern gannets are strong flyers that nest on the sides of cliffs.

## The Sky

I'm not always looking down into the water, though. The skies above Newfoundland are speckled with many types of seabirds. They, too, are looking for capelin. Seabirds form massive colonies of thousands of birds. Here, parent birds raise their chicks on land until they can all fly together to the ocean.

The best-known birds on the island are Atlantic puffins. It's hard not to notice their bright orange-red bills and feet. But you'd be surprised what they do with them! Puffins use them to dig underground burrows in the grassy areas of Gull Island in Witless Bay. There, puffin parents raise a single chick, protected from predators.

These potato-shaped birds are strong flyers and excellent swimmers, and they like to combine their skills into one assault on the sea. They take to the sky and then catapult themselves downward, straight into the water. They break the surface of the water with beaks full of fish.

Newfoundland has another winged visitor called the northern gannet. They are much bigger than puffins and look nothing like a potato. They are slender and shaped like an airplane. Because of the design of their body, they can stay airborne just by holding their wings out and gliding with the wind. They are hard to miss because the special markings around their blue eyes make them look like they are wearing makeup.

I've traveled to a place called Cape St. Mary's to see these fancy birds. You have to travel on long dirt roads and hike down a long, steep trail toward the ocean. At the end of the trail, there's a cliff with a 91-meter (300-foot) drop. Just on the other side, out of jumping reach, there are thousands of gannets nesting in the open.

Exposed to the harsh elements, these birds somehow manage to stay put without falling into the roaring ocean. It's spectacular!



Our moose  
“mascots”  
often munch  
on native  
plants.

## The Land

I told you about my encounter with the caribou at the lighthouse. Newfoundland also has its share of moose. They are something of a mascot here. But they didn't come from here. People introduced a handful of these animals to the island more than a hundred years ago.

Moose quickly **adapted** to this environment. Thousands of them live in the forests and wetlands, grazing on grasses and other plants. I've spotted them on Gros Morne mountain, the second-tallest mountain in Newfoundland. Their outsized appetite is actually becoming a problem. The moose are munching on all the native plants and changing the plant **ecosystem**. It's something we need to pay attention to.

## The Full Picture

You might be wondering: Why is it important for a marine biologist to pay attention to land and sky creatures? Newfoundland has taught me about the connections that exist between sea, sky, and land. I've learned that all of the living things in an ecosystem rely on each other. For the birds in the sky to prosper, they need the fish in the ocean. For land animals to prosper, they need plants and other animals to eat.

As a scientist, it's important for me to **observe** all aspects of an ecosystem. To me, Newfoundland is a special place. How is where you live special to you? I hope that you go out in your part of the world and fully experience it. Take a look at the wildlife around you. See if you can find the connections between the plants and animals. By thinking critically about our world, we can start to see how everything fits together.

## WORDWISE

**adapt:** to change your behavior so that it is easier to live in a particular place

**ecosystem:** a community of interacting living and nonliving things and their environment

**invertebrate:** an animal that lacks a backbone

**observe:** to look at something or someone carefully in order to gain information



Newfoundland's sea, sky, and land are filled with life!

With the **bill** of a duck,  
the **bones** of a lizard,  
the **feet** of a pelican,  
the **tail** of a beaver,  
and the **coat** of an otter,  
this egg-laying mammal  
is full of surprises.

By Lynn Brunelle



## Wildlife and Wild Places

### LIFE SCIENCE

As you read, think about  
how the platypus's physical  
characteristics help it survive  
in its environment.

# Mishmas M



h  
animal

The late afternoon sun filters through the leaves on the edge of a river in Australia. A worm wriggles along the murky bottom and comes to rest under a small pile of pebbles. The light fades, and the worm is well out of sight from hungry predators.

A small splash ripples near the riverbank. A web-footed hunter has emerged from its den. It closes its eyes and seals its ears and nostrils against the water. With a kick of its powerful front legs, it zips through the water looking for food. The worm cannot be seen, but this hunter can sense it.

Waving its sensitive duckbill-shaped snout back and forth, the hunter picks up a slight electric pulse of energy within the worm and zeroes in. Suddenly, it opens its toothless mouth, scoops up the pebbles and the worm, and darts up to the surface where it takes a deep breath then grinds the whole thing into a mush. The stones dribble out of its mouth, and the hunter swallows the soft wormy mush.

This amazing predator is a platypus, and it is one weird-looking creature. But the sum is greater than its parts, and it is one of the most unique animals on the planet. Platypuses have some amazing body-design features that set them apart from your average **mammal**. It starts from birth.

## Platypus Parenting

It's early morning and the inky darkness is lifting over the river. A platypus uses her webbed front feet to paddle to the bank. She pulls herself out of the water and shakes briefly. Her coat is practically dry already. Once on land, she retracts the webbing in her feet and waddles to her den. She wriggles through the opening. It is warm and dry. She begins to dig soil loose with her sharp claws to create a new chamber off the main burrow.

**With eyes closed, this platypus dives underwater and finds a tasty worm to eat.**

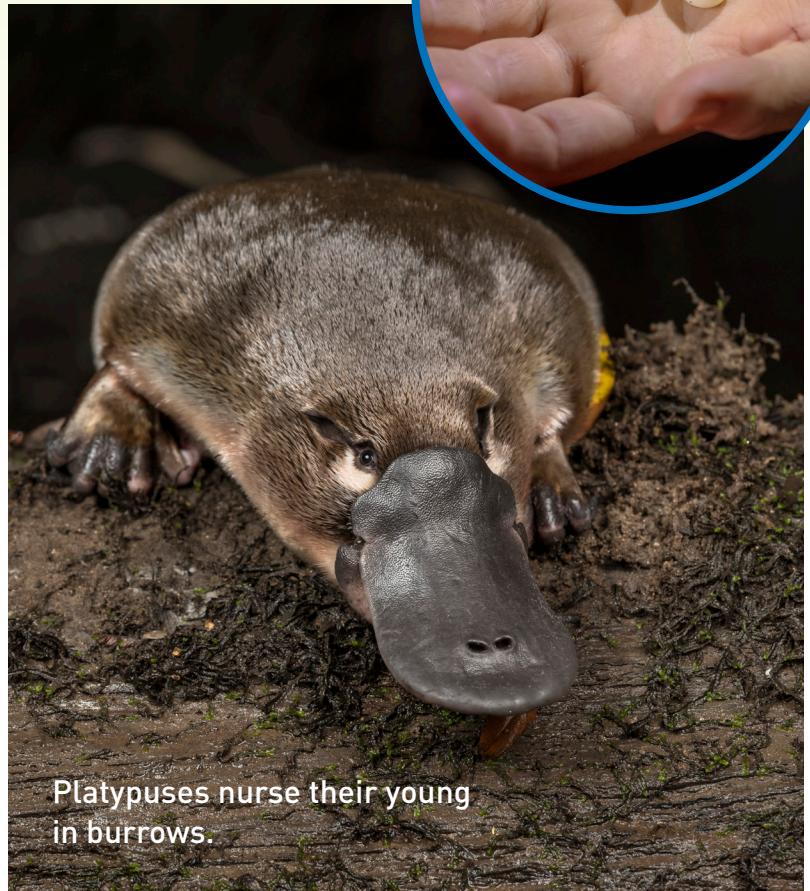


Snout first, she enters the chamber and kicks the soil with her back feet to seal herself off. Once settled, she lays one leathery egg. Then she lays a second egg. They are small—the size of marbles. She holds the eggs between her body and tail to keep them warm.

After about two weeks, the marble-sized eggs tremble and tear. Out of each egg emerges a bean-size, pink platypus. They are hairless, blind, and helpless as they undertake the long journey of a few inches to their mother's belly. When they reach the spot, they latch onto her fur and wait to be fed.

Like all mammals, platypuses nurse their babies after they hatch. But unlike other mammals, they nurse them in a unique way. Milk leaks from openings between the folds of her belly skin. The babies suck the milk up through her fur.

The babies live on milk for three to four months. When they are able to swim and eat by themselves, they are ready for life on their own.



## ANIMAL HOAX?

When the first platypus was sent to scientists in England in 1799, it caused quite a stir. Most were convinced it was a hoax. They thought someone had sewn together bits of animals to play a joke. How could a mammal have a beak, webbed feet, and lay eggs? For that matter, how could a bird have fur and nurse babies? Because the platypus was so different, no one could believe it was real.

Platypus eggs  
are the size of marbles.



## All in the Family

Found only in Australia, platypuses are a part of a group of egg-laying mammals called **monotremes**.

Millions of years ago, there were quite a few species of reptile-like mammals. They had characteristics of today's reptiles, birds, and mammals.

They had fur and nursed their babies like mammals. Their faces had bird beaks. Their skeletons had the shape and stance of lizards, and like lizards and birds, they laid eggs. Hundreds of millions of years ago, these animal species began to divide into three groups: mammals, birds, and reptiles.

Over time, most egg-laying mammals died off. Today, there are only two egg-laying mammals left in the world: the platypus and the echidna. The echidna, a distant cousin of the anteater, is found in Australia and New Guinea.

**Platypuses are found only in Australia.**



## Duck Face

The first thing you notice about the platypus is that it has the face of a duck. Yet, its bill is unlike any bird beak out there. It is flexible and spongy and covered with smooth, suede-like skin. Packed with three kinds of nerve cells to sense pressure, movement, and electricity, this bill is a super sensory organ that helps the platypus feel its way around the murky underwater world.

The bill has tens of thousands of sensory receptors known as push rods that are activated by pressure or touch. They are so sensitive that they can detect the slightest movements in the water, such as when insect larvae or shrimps move from 20 centimeters (7.8 inches) away.

In addition to the push rods, the platypus bill is heavily speckled with two more types of nerve receptors. They are fine-tuned to detect tiny electrical signals produced by the muscles in the bodies of their prey. So, even if larvae or shrimps are hiding, they don't stand a chance. A platypus can find them.



**The sensitive bill on the platypus looks like a duck's bill.**



## Toothless Work-Around

A platypus has no teeth, but that doesn't stop it from crunching up its food. It scoops up a meal with a mouthful of river-bottom gravel. It swims to the surface to grind it all together. The pebbles help crush the food into a tasty mash. It swallows the food and spits out the stones.

Stomachs are acidic pouches in the gut that help animals digest their food. Weirdly, platypuses do not have a functioning stomach. They aren't the only ones without a stomach. About a quarter of all fish have a throat that connects directly to their intestines.



Webbed toes help form a paddle for propelling the platypus through the water.

## Waterproof and Warm

Being waterproof and warm is necessary for the platypus's survival. Every day—even in cold winter—the platypus goes diving for food. The cold water might soak through an animal's fur and take away their body heat. But not for the platypus. It has a handy hairy adaptation. It is covered head-to-toe in thick, two-layered fur that keeps heat in and water out.

Fine hairs are jam-packed together to make up a woolly undercoat. On top of this dense layer is a second layer made up of longer, flat guard hairs. Air is trapped between the layers. This traps heat next to the skin, keeping the animal warm and surprisingly dry, even underwater.



The platypus's tail helps it swim. It also stores fat.



The platypus's skeleton is similar to a lizard's.

The platypus may feel most at home in the water.



The platypus's versatile feet help it both on land and in water.

## In the Swim

Shaped kind of like a furry football, the platypus is a skilled swimmer. Its shape helps it dive deep and slice through the water quickly, in search of shellfish, worms, and small insects.

A platypus is powered by rapid paddling, using its front webbed feet. The back feet are used, along with the flat, beaver-like tail, for steering and braking. The combination of body shape, webbed feet, slick fur, and flat tail allow the pudgy platypus to move gracefully underwater.

## Transformer Toes

The front feet of a platypus are built for both water and land. In the water, extra skin between the sharp-clawed toes stretches out to create a broad paddle. The extra surface area gives the animal a powerful push in the water.

On land, the feet transform. The webbing is retracted. The sharp toes stretch beyond the skin. This allows the platypus to walk on land and dig its claws into dirt.



The back feet are not convertible like the front ones, but they are remarkable. They have webbing that allows the platypus to steer and brake in the water. On land, they use their back toes and claws for grooming.

Male platypuses have an extra surprise in their back feet. Hollow heel spikes are loaded with a painful venom! They use these poisonous weapons when fighting for females and for territory. Though not deadly, the venom can cause the unlucky recipient wicked pain and swelling for weeks.

## Tale of a Tail

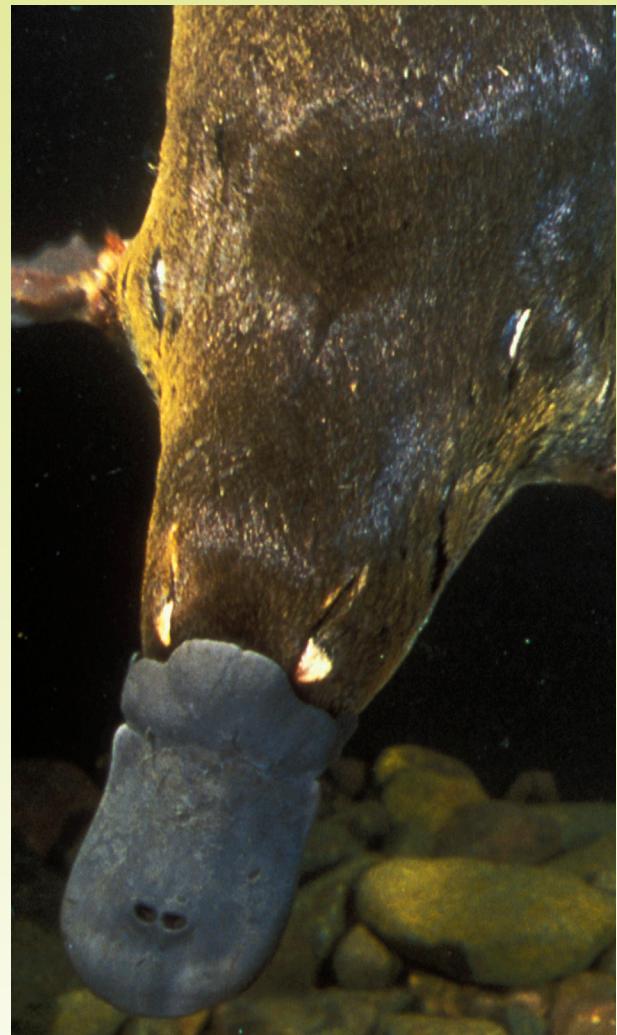
Though it looks like a beaver tail, a platypus tail is not used for paddling or communication. The flat tail is really a body fat storage tank. When food is hard to come by, the fatty tail, which can hold almost half of the animal's body fat, can be a lifesaver.

## Now See This

A platypus's eyes are loaded with extra color receptors. Yet, it does not use its eyes for hunting. These receptors are needed at the water's surface or on land to better spot predators.

When it dives deep, it closes its eyes tightly. The fur on its eyelids is much lighter than the brown fur covering the rest of its body. This gives the appearance that its eyes glow in the dark!

With sensitive duck-billed schnozzes, retractable toe webbing, and poisonous heel spikes, the platypus has many adaptations that have been shaped over millions of years. Though these traits may seem like an odd combination to us, this mishmash mammal is a survival success story.



Lighter fur on its eyelids make this platypus's eyes seem to glow when closed underwater.



## WORDWISE

**mammal:** an animal that breathes air, has a backbone, and grows hair; female mammals have glands that can produce milk

**monotreme:** a mammal that lays eggs, and also feeds its babies with milk

Male platypuses have hollow spikes on their back heels. They are filled with venom. The males fight each other over females and territory.



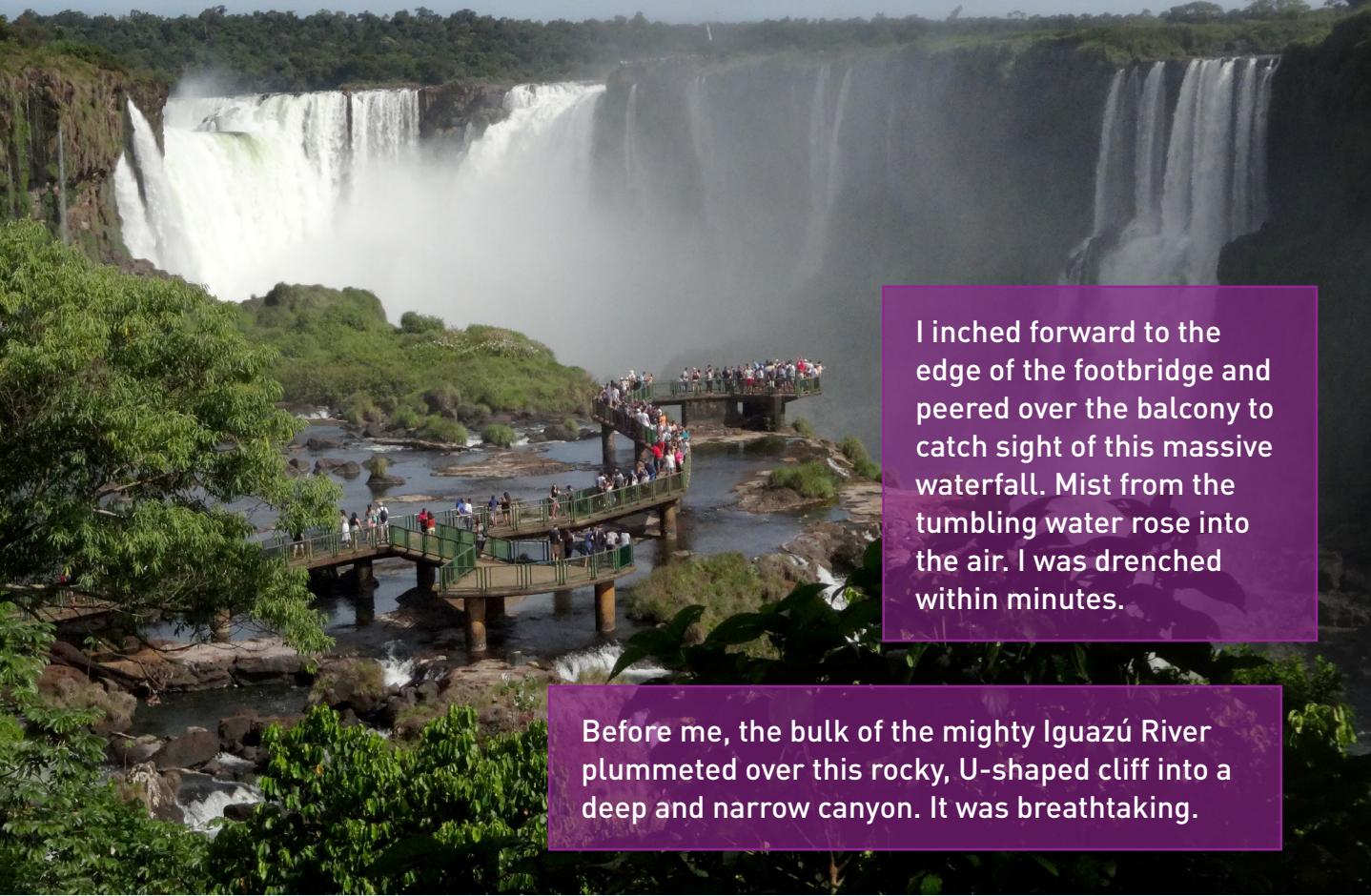
The Wonder of

# the Falls

Travel to South America to experience one of the natural wonders of the world.

By Libby Romero

After walking through the hot and humid rainforest, I had finally reached the last, long footbridge. Just ahead of me lay the Devil's Throat. I could hear its steady roar. The closer I got, the louder it became.



I inched forward to the edge of the footbridge and peered over the balcony to catch sight of this massive waterfall. Mist from the tumbling water rose into the air. I was drenched within minutes.

Before me, the bulk of the mighty Iguazú River plummeted over this rocky, U-shaped cliff into a deep and narrow canyon. It was breathtaking.

## Great Water

Like the river that feeds it, Iguazú Falls got its name from the indigenous Guaraní people. Its name means “great water.” That’s a fitting description because the amount of water the river carries over the falls is astounding.

On average, the Iguazú River flows at a rapid rate. During the rainy season, it can carry more than seven times that much. That’s enough water to fill five Olympic-size swimming pools a second!

Iguazú Falls is one of the largest waterfall systems in the world. It straddles the border of Argentina and Brazil and is almost 2.7 kilometers (1.7 miles) wide. During the rainy season, up to 275 different waterfalls can form. In the dry season, there are only 150.

About two-thirds of the falls are on the Argentinian side of the river. I crossed the border into Brazil. For a good view, I raced up the churning river in a speedboat. The boat slowed at the foot of several waterfalls. Talk about a powerful shower!

It’s hard to appreciate how spectacular something like this is until you have experienced it for yourself. When Eleanor Roosevelt visited the falls as first lady of the United States she supposedly said, “Poor Niagara.” Niagara Falls, which lies between the U.S. and Canada, is one of the world’s more impressive waterfall systems. But Iguazú Falls is almost twice as tall and more than twice as wide.



## Legend of the Falls

Like many natural features, the Iguazú Falls has a legend that tells how it came to be. According to the Guaraní tale, the serpent god M'Boi lived in the Iguazú River. M'Boi was an angry god. Each year, the Guaraní people made a sacrifice to keep him from being angry. They threw a young woman into the water.

One year, the tribe chose Naipi. Naipi had planned to marry a warrior from another tribe, named Tarobá. The night before she was to be sacrificed, she and Tarobá tried to escape in a canoe. But, M'Boi saw them. Tarobá paddled as hard as he could, but the serpent god was too powerful. He slithered and squirmed, causing the river to form new curves.

This slowed the pair down. When Tarobá wouldn't give up, M'Boi got even angrier. He split the earth, creating a rocky gorge known as Devil's Throat.

Naipi was thrown to one side of the gorge and Tarobá to the other. As water flowed into the gorge, M'Boi changed the young woman into a rock so she wouldn't get washed away.

When Tarobá tried to help her, M'Boi pulled the young warrior's hands into the earth. Tarobá's fingers turned into roots, and his body became a palm tree. The young couple would never be together again. But on sunny days, the legend says, they meet over a rainbow to show their love for one another.

A rainbow bridges the falls.



## Eruption and Erosion

Science tells us a different story of the Iguazú Falls. The falls started to form about 130 million years ago when the **supercontinent** Gondwana broke apart. South America separated from Africa. This triggered one of the largest volcanic events in Earth's history.

At the time, the area where the Iguazú Falls is located was a giant desert. Lava poured from volcanoes and other openings in Earth's crust. It covered the desert. Then the lava cooled and hardened. It built up a plateau made of three, massive flat layers of basalt rock.

But Earth's plates kept moving. The layers were lifted into a high plateau. **Faults**, or cracks, appeared in them. Water started to run down the faults and eroded, or wore away, the land. The mighty Paraná riverbed formed. Much later, the Iguazú River appeared and started to feed into it.

The falls started to form at the site where these two rivers meet. But today, they are about 23 kilometers (14 miles) upstream. **Erosion**, once again, gets the credit. As water fell into the Paraná River from the Iguazú's plateau, it **weathered** away the layers of rock on the bottom. The upper layers had nothing to support them, so they crumbled.

Today, the layers of Iguazú Falls look like a giant staircase. And a long, narrow canyon with scores of rocky islands leads the way to the Paraná River. Erosion continues, and the canyon gets about 3 millimeters (0.1 inches) longer each year.



The Iguazú River empties into the Paraná River where the borders of Brazil, Argentina, and Paraguay meet. This area is known as the Triple Frontier.



Beware of the coatis! They can easily bite your hand when they try to grab your food.



black capuchin monkey



toucan



## Into the Rainforest

As amazing as the waterfalls are, the water is just part of the beauty that surrounds Iguazú Falls. They exist in the subtropical Atlantic Forest, one of the most biodiverse ecosystems in South America. It is home to more than 2,000 plant species, 68 mammals, 422 birds, more than 40 reptiles, 18 amphibians, and 250 types of butterflies. Many of the plants and animals that live here aren't found anywhere else in the world.

As I walked through the rainforest, I saw tall palm trees and even taller laurels and rosewoods. Papaya fruit hung from small trees under the umbrellas of huge leaves.

Flashes of blue fluttered through the air. Your eye had to be quick to spot these blue morpho butterflies. I also caught a glimpse of a toucan in flight. I saw capybaras sunning themselves on the riverbank. I also got a good view of a young caiman resting in shallow water. Raccoon-like coatis seemed to be everywhere! I kept an eye out for tapirs, monkeys, giant anteaters, or jaguars. Those animals live here, too.

## People and the Falls

People have lived in the area around Iguazú Falls for more than 10,000 years. First were the Kaingang, followed by the Guarani. In 1541, Spanish explorer Álvar Núñez Cabeza de Vaca became the first European to see the falls. He came across them when he was searching for a river route to Paraguay.

Religious missionaries arrived in 1609, but the Spanish forced them to leave in 1767. It wasn't until the early 1880s that Western interest in the area surfaced again.

Following a scientific expedition of the area, the first tourist trip was organized in 1901. One year later, plans were underway to create the first national park in Argentina. Iguazú National Park opened in 1934.

Five years later, its sister park, Iguaçu National Park, opened across the river in Brazil. Both parks have since been identified as UNESCO World Heritage sites. Iguazú Falls was also selected as one of the "New Seven Wonders of Nature."

In Argentina, people speak Spanish, so the falls are called the **Iguazú** Falls. In Brazil, they speak Portuguese and call them the **Iguaçu** Falls.

## Trouble in Paradise

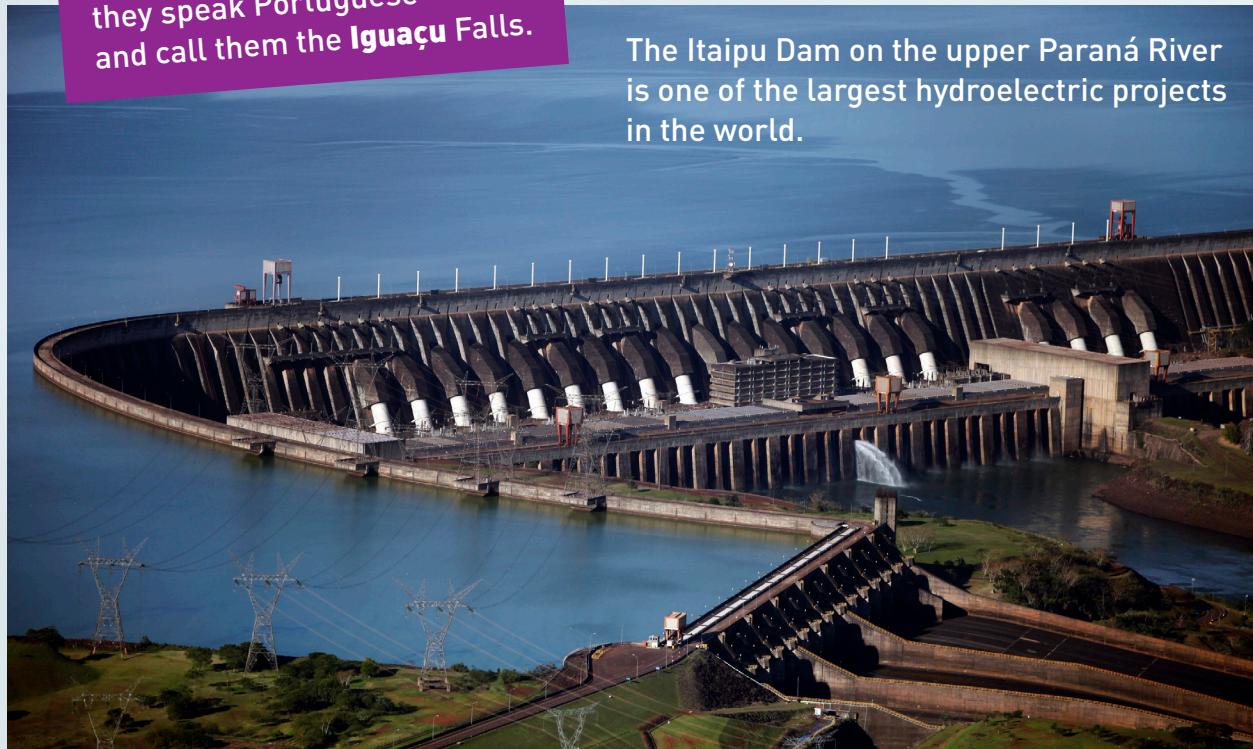
As much as people want to protect the Iguazú area, people are also its biggest problem. Poachers come into the park illegally to take trees and animals. People accidentally injure or kill animals while driving through the parks.

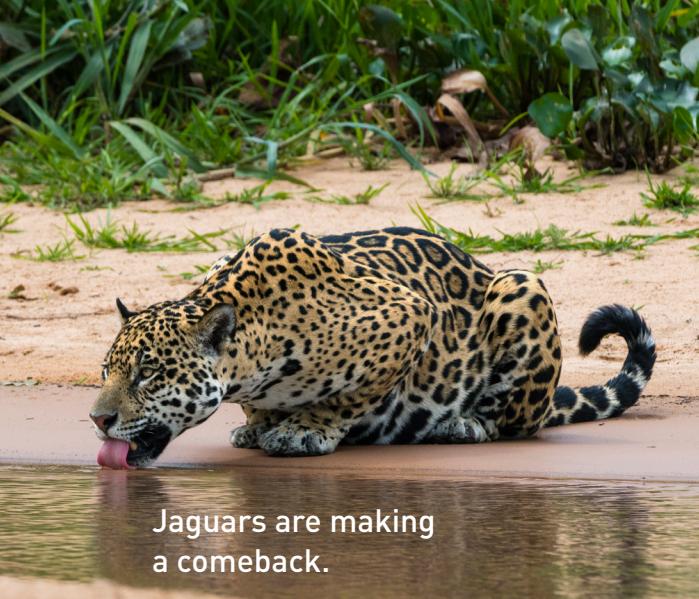
Outside the parks, logging and clearing land for farms are two of the biggest problems. When trees disappear, plants and animals lose their homes. Some species go extinct. Water sources like Iguazú Falls are affected, too.

When forests are destroyed, there are fewer trees to absorb carbon dioxide. When there is more carbon dioxide in the air, temperatures rise. Rising temperatures can lead to less rain. And when there's less rain, there is less water to flow over the falls.

People also built hydroelectric dams on the area's rivers. The dams help supply electricity to the area, but they also affect the level of water in the rivers. Plants that need a constant humid environment are harmed each time a dam is opened. More than 1.5 million tourists go see the falls each year. The region depends on the tourists to survive. If the falls run dry or plants and animals disappear, people may no longer come.

The Itaipu Dam on the upper Paraná River is one of the largest hydroelectric projects in the world.





Jaguars are making a comeback.

## Working Together

One of the biggest challenges in preserving the Iguazú Falls region is its location. The falls are near the borders of three countries that each have their own ideas on how to manage the land. Argentina and Brazil, for example, established national parks in the 1930s. Paraguay never did.

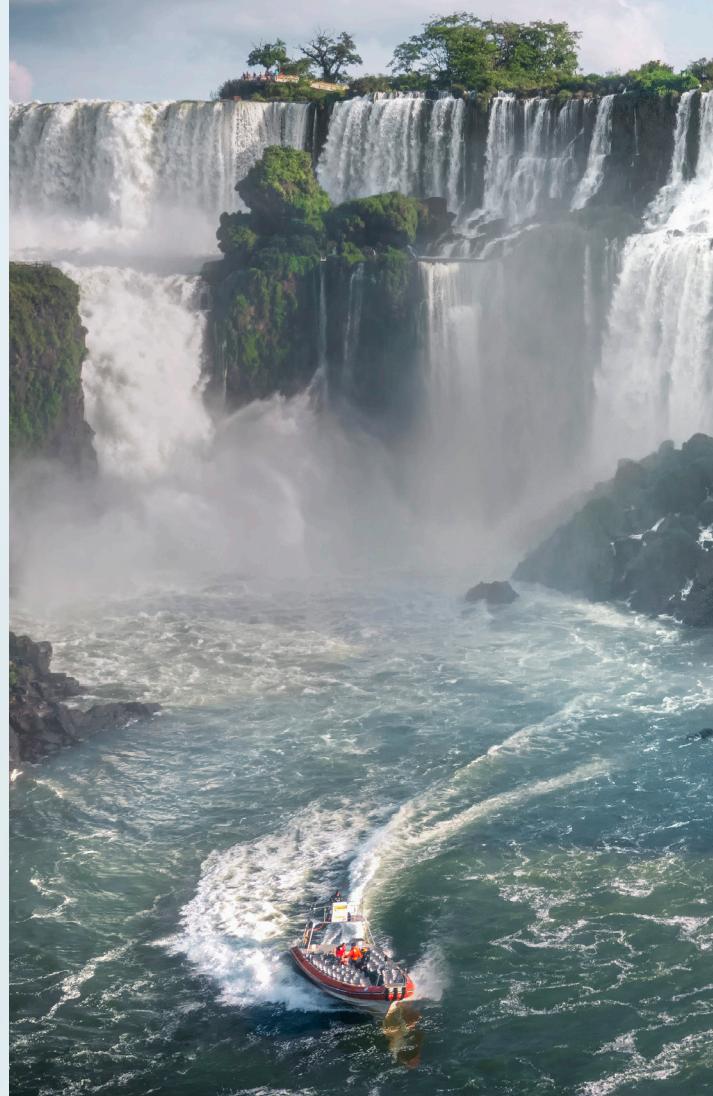
These countries have had disagreements, particularly when it comes to dams. Yet in recent years, they have come together to create a long-term plan on how to conserve and manage the land. Important parts of this plan include more patrols, species monitoring, education, and research.

Recently, jaguars became a sign that the plan is working. In the early 2000s, jaguars had nearly disappeared from the Iguazú region. The countries increased patrols. Researchers planted camera traps to deter poachers. Farmers who used to kill jaguars that preyed on their livestock started planting corn and soybeans instead.

As a result of these actions, the number of jaguars has doubled. And this part of South America is the only place in the world with a growing jaguar population. I didn't see any jaguars on my tour of the park, but that's not to say that a jaguar didn't see me!

People's efforts to make the parks better are working. The beautiful falls and other Iguazú splendors are worth seeing. But more importantly, they are worth fighting for.

This view from above shows part of the spectacular falls.



## WORDWISE

**erosion:** when rocks and sediments are picked up and moved to another place by ice, water, wind, or gravity

**fault:** a crack in Earth's crust

**supercontinent:** one of several large landmasses thought to have divided in the geological past to form the present continents

**weather:** when rocks are broken down by mechanical or chemical processes

**DEVELOPMENT**

Senior Director, Curriculum &amp; Content Innovation:

Suzanne Simons

Senior Manager, Content Design: Karen Thompson

Manager, Content, *Explorer*: Brenna MaloneyManager, Content, *Young Explorer* and digital magazines: Corinne Rucker

Manager, Editorial Rights &amp; Research: Jay Sumner

Specialist, Program Support: Jean Cantu

Specialist, Content Design: Patrick Cavanagh

Digital Design: Schuttelaar &amp; Partners

**BUSINESS AND OPERATIONS**

Senior Manager, Cross Cutting: Emily Malozzi

Manager: Erin West Kephart

**NATIONAL GEOGRAPHIC EDUCATION**

VP, Educator Initiatives: Jennifer Aguilar

VP, Youth Initiatives: Lina Gomez

VP, Education Content: Kim Hulse

VP, Global Delivery: Sandra Licon

**PUBLISHED BY NATIONAL GEOGRAPHIC SOCIETY**

CEO: Jill Tiefenthaler

President &amp; COO: Mike Ulica

EVP, General Counsel &amp; Corporate Secretary: Angelo Grima

EVP, Chief Education Officer: Dr. Vicki Phillips

Chief Administrative Officer: Tara Bunch

SVP, Chief Storytelling Officer: Kaitlin Yarnall

Chief Human Resources Officer: Mara Dell

**NATIONAL GEOGRAPHIC EXPLORER**

(ISSN 1541-3357) is published five times during the school year—September–October, November–December, January–February, March, and April

—by National Geographic Society, 1145 17th Street NW, Washington, D.C. 20036.

Copyright © 2021 National Geographic Society. All Rights Reserved. Reproduction

of the whole or any part of the contents of NATIONAL GEOGRAPHIC EXPLORER without written permission is prohibited. National

Geographic, NATIONAL GEOGRAPHIC EXPLORER, and the Yellow Border are trademarks of the

National Geographic Society.

Cover: a platypus

MARCH 2021

**COVER:** © DOUG GIMESY/NATUREPL.COM. NEWFOUNDLAND WILDLIFE: PAGES 2-3 [CAPE ST MARY'S] ROLF HICKER PHOTOGRAPHY/ALAMY STOCK PHOTO; [INSET] JACQUELYN SATURNO; PAGES 4-5 (LIGHTHOUSE) JUSTINE AMMENDOLIA; [MAPS/GLOBE] NATIONAL GEOGRAPHIC MAPS; [UNDERWATER] JUSTINE AMMENDOLIA; [WHALE] JULIANA BALLUFFI-FRY; PAGES 6-7 (PUFFIN) JULIANA CARNEMOLLA/ISTOCK/GETTY IMAGES PLUS; [ON LOG, HAND WITH EGGS] © DOUG GIMESY/NATUREPL.COM; PAGES 12-13 [MAP/GLOBE] NATIONAL GEOGRAPHIC MAPS; [FOOT, TAIL] © DOUG GIMESY/NATUREPL.COM; [SKELETON] DORLING KINDERSLEY LTD/ALAMY STOCK PHOTO; [FULL BODY] LEONELLO CALVETTI/ALAMY STOCK PHOTO; PAGES 14-15 [SWIMMING] ROBIN SMITH/THE IMAGE BANK/GETTY IMAGES; [FRONT FOOT] © JEAN-PAUL FERRERO/MARY EVANS PICTURE LIBRARY LTD/AGE FOTOSTOCK; [HIND SPUR] © JEAN-PAUL FERRERO/AUSCAPE/MINDEN PICTURES; [SPUR INSET] © D. PARER AND E. PARER-COOK/MINDEN PICTURES; [SWIMMING EYES CLOSED] © DAVE WATTS/NATUREPL.COM. THE WONDER OF THE FALLS: PAGES 16-17 ARCO IMAGES GMBH/ALAMY STOCK PHOTO; PAGES 18-19 [FOOTBRIDGE] LIBBY ROMERO; [MAP] MAPPING SPECIALISTS, LTD; [DEVIL'S THROAT] MIKE THEISS/NATIONAL GEOGRAPHIC IMAGE COLLECTION; [RAINBOW] INGE JOHNSSON/ALAMY STOCK PHOTO; PAGES 20-21 [SIGNS] LU\_SEA/SHUTTERSTOCK; [THREE FRONTIERS] JAN SCHNECKENHAUS/ALAMY STOCK PHOTO; [COATI] KAROL KOZLOWSKI/SHUTTERSTOCK; [MONKEY] ROBERT HARDING PICTURE LIBRARY/NATIONAL GEOGRAPHIC IMAGE COLLECTION; [TOUCAN] MARTIN PELANEK/SHUTTERSTOCK; PAGES 22-23 [DAM] DADO GALDIERI/BLOOMBERG VIA GETTY IMAGES; [JAGUAR] SERGIO PITAMITZ/NATIONAL GEOGRAPHIC IMAGE COLLECTION; [FALLS & BOAT] MEKDET/MOMENT/GETTY IMAGES.

To find your Explorer Magazine online resources or for questions visit:

[NatGeo.org/ExplorerMag](http://NatGeo.org/ExplorerMag)

FURTHER