

Penguins

A Reading A-Z Level S Leveled Book

Word Count: 1,466



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Glossary

algae (<i>n.</i>)	living organisms that grow in water and make their own food but are not plants (p. 19)
conservation (<i>n.</i>)	the protection and preservation of natural resources (p. 17)
insulation (<i>n.</i>)	material that holds in heat, preventing warmth from escaping or cold from entering (p. 8)
pollution (<i>n.</i>)	the act of putting harmful substances into the air, water, or soil (p. 18)
species (<i>n.</i>)	a group of living things that are similar to one another and able to have babies together (p. 5)
streamlined (<i>adj.</i>)	having a design that allows for smooth movement through water or air (p. 7)
waddle (<i>n.</i>)	a clumsy way of walking with short, swaying steps (p. 4)

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Penguins



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Front cover: A group of king penguins on Macquarie Island

Back cover: An emperor penguin chick huddles for warmth on its parent's feet.

Title page: A gentoo penguin takes a drink.

Table of Contents: An Adelie penguin gives a warning call when it feels threatened.

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Correlation

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Warmer ocean temperatures have caused the food supply of black-footed penguins to move south. The penguins must swim farther to get food, and fewer survive.

Global warming is creating new dangers for penguins. As the air and water in the Antarctic region warm up, the ice mass shrinks. Normally, **algae** build up on the ice in winter. When spring comes, the ice melts and krill eat the algae. Less ice means less algae and less food for krill. With less krill to eat, fewer Antarctic penguins survive. Scientists are also studying other ways that global warming is affecting penguins. They have seen the numbers of many penguin species drop by nearly half in the past fifty years.

The effects of global warming are most easily seen in polar regions. Like polar bears in the northern hemisphere, penguins are messengers of a planet in trouble. Penguins, like all birds—and all wildlife—need our help to survive.

Oil **pollution** is another threat to penguins' safety. Because they spend so much of their time swimming in the water, penguins are at greater risk than most other birds of coming in contact with an oil spill. They can't fly above a polluted area to see and avoid it.

When oil from a spill coats birds' feathers, it prevents their natural insulation from working properly, causing them to quickly get too cold. Penguins have a thick layer of fat beneath their skin that gives them extra protection against the cold. When penguins are rescued and cleaned, their fat layer helps them to survive more often than other birds. Still, many more penguins die than can be rescued and cleaned.



This Magellanic penguin is scrubbed clean after an oil spill.



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No Ordinary Bird

What type of bird cannot fly and has strong flippers instead of wings? What type of bird spends its whole life swimming or walking? It's no ordinary bird, that's for sure—it's a penguin!

Penguins are amusing to watch. Their dark backs and white bellies make them look as if they are dressed up for a fancy party. On land, most are clumsy and walk with a strange **waddle**. But in water, they are swift and graceful.

The movie *March of the Penguins* sparked great interest in emperor penguins. There are also sixteen other types of penguins. Read on to learn more about these amazing birds.



Where do you think these gentoo penguins are going?

Penguins and People

Because penguins can't fly, they have no way to escape people who hunt them. Long ago, sailors hunted penguins for food, and the practice continues in some areas. Penguins are

also killed and used for fishing bait.

Huge numbers of penguins gather to breed in certain areas, and they need

a plentiful food supply. Penguins compete for ocean food with people who conduct large fishing operations in many of the same areas. Without a dependable food source, fewer adult penguins survive, so fewer chicks survive.

Penguins also get tangled in fishing nets and die. **Conservation**

groups are working to convince large fishing companies to limit their fishing near penguin rookery sites during the breeding season.



Do You Know?

The great auk, a flightless penguinlike bird in the northern hemisphere, became extinct in the 1800s because of hunting.



Penguins are the main source of food for leopard seals.

Penguins are hunted by sharks and orcas, but their worst enemies are leopard seals, which can swim very fast. To escape, penguins must get out of the water quickly. They gain speed by swimming deep; then they paddle very fast, shooting up onto land as if they've been shot from a cannon. Safe on land, adult penguins have few enemies, so they don't need to fly to escape.

Antarctic penguins must keep their chicks safe from other birds. Smaller birds will eat penguin eggs, and larger seabirds may eat the eggs and attack the chicks. But no birds hunt healthy adult penguins.

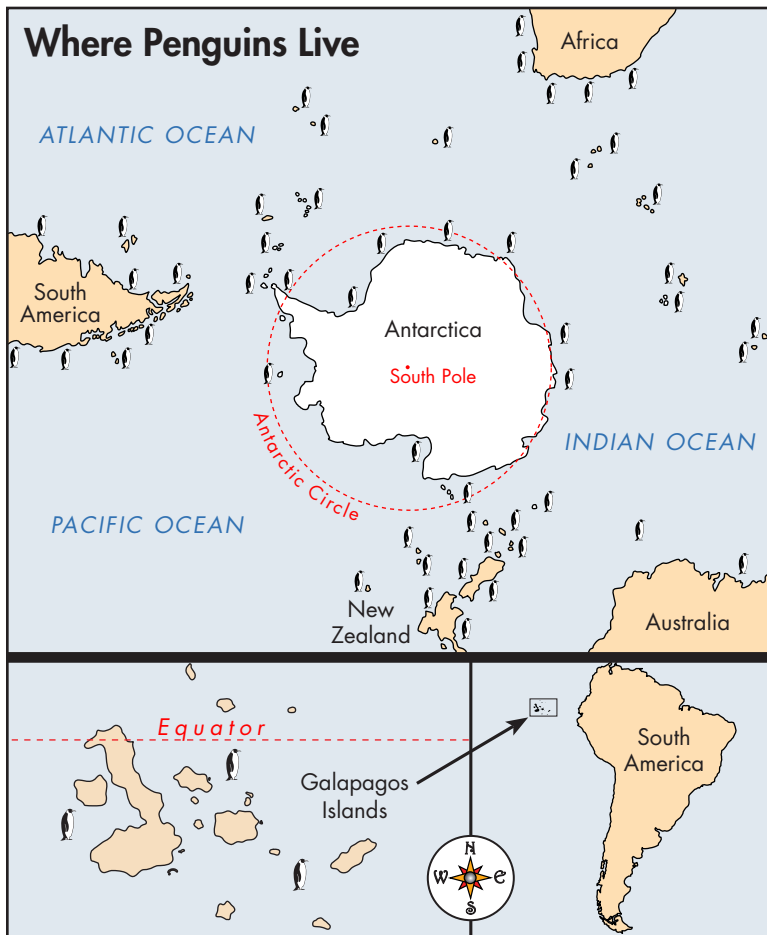


Some king penguins live near sheep herds on the Falkland Islands.

Where Penguins Live

All penguins live in the southern hemisphere. Many live in places with very cold weather. Four **species** of penguins live on the ice around Antarctica—the coldest place on Earth. Another three species live on islands near Antarctica.

But not all penguins live in cold, harsh places. The little blue penguin lives along the coasts of Australia and New Zealand, where forests, not ice fields, border the ocean. And the Galapagos penguin lives off the west coast of South America near Ecuador, which lies on the equator!



Imagine you are in a spaceship high above Antarctica. From that height, you can see the southern areas of Africa, Australia, and South America. The large “Where Penguins Live” map, from that same view, shows where most species of penguins live. The small maps show where Galapagos penguins live.

Hunters and Hunted

Penguins are meat eaters, and their diet includes fish, squid, crab, and other ocean animals. Among their favorite foods are tiny animals called *krill*, which are related to shrimp. The largest penguins—emperors and kings—mostly eat fish and squid, which are more filling than krill. Most penguins find their food near the ocean’s surface, but larger penguins may dive deep in the ocean to find food.

Like other birds, penguins have no teeth. Some seabirds, including penguins, have a fringe of spines inside their mouths. The spines help penguins hold onto slippery food that might be trying to escape.

You can see the spines along the sides of this rockhopper penguin’s mouth.





This gentoo penguin chick eats food brought up from its parent's stomach.

Penguin chicks are covered with down when they hatch. They cannot swim until they grow waterproof feathers, so they

must stay on land. Since there is no penguin food on land, one parent cares for the chick while the other parent goes to the ocean to eat. That parent brings back food for the chick.

As a chick grows, it leaves its nest and lives in a group with other chicks. They crowd together to stay warm, and their parents bring them food. Chicks recognize their parent's voice. Even with thousands of penguins in the colony and all the noise they produce, each chick knows the sound of its own parent's call, and they will find each other.

When chicks grow their adult feathers, they are ready to go to sea and hunt their own food. They eat well and grow quickly. Penguins between the ages of two and eight have chicks of their own.

Penguin Bodies

Unlike most birds, penguins spend most of their lives in the ocean. Their **streamlined** bodies and webbed feet help them move through the water with ease. Some penguins can swim as fast as 40 kilometers per hour (25 mph) for short distances.

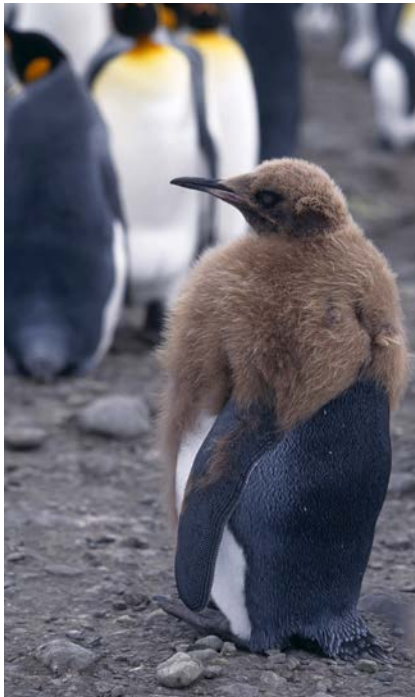
Instead of wings with long feathers, penguins have powerful flippers similar to those of seals, dolphins, and sea turtles. Penguins use their flippers like boat oars to push water and move forward. They steer with their feet and tails.



This king penguin uses its flippers to zoom through the water.

Penguins have two layers of feathers—a stiff outer layer and a soft layer underneath. Their small, stiff outer feathers are packed closely together. Penguins rub their beaks on oil glands at the base of their tails and spread the oil on their outer feathers. Their oily coats keep out water and keep in heat.

Underneath penguins' outer feathers is a layer of down—warm, fluffy feathers that hold warm air close to the body. A thick layer of fat adds another layer of **insulation**.



If a penguin gets too hot, it fluffs up its feathers to let body heat escape. It may eat snow to cool off, too. Eating snow also helps a penguin get enough water in its body.

Most penguins molt, or replace old feathers with new ones, once each year. Around age two, young penguins grow their adult feathers.

All these noises and movements help penguins pick mates. Each pair builds a nest together using grass, moss, feathers, or pebbles. Emperor and king penguins use their feet as a nest, cradling the egg on top of their feet.

Eggs must stay warm or they won't hatch. The smaller Antarctic penguins sit on their eggs for about five weeks. The eggs of emperor and king penguins take about eight weeks to hatch. During that time, a parent's body keeps the egg warm. King parents take turns egg-sitting, but an emperor father cares for the egg while the mother leaves to get food. He may go without food for four months before his mate returns to care for the hatched chick. During this time, he and other male emperor penguins face some of the harshest weather on Earth.



A flap of skin on this king penguin's body keeps its egg warm.

Penguin Parents and Chicks

Spring comes in late September south of the equator. This is when most penguins move onto land to start families. They build nests in huge nesting areas called rookeries. Depending on the species of penguin, the



rookery may be on snowy ice, a rocky cliff, or a hillside.

A penguin rookery is a busy, crowded place.

A group of penguins that nests together is called a *colony*. A colony may contain hundreds or even thousands of one species of penguin. They make noises—grunts, croaks, hisses, and trumpeting sounds—as well as movements such as stretching, bowing, and pointing their beaks toward the sky. A penguin colony is very loud (and dirty!), with lots of activity.



Tobogganing is much faster than walking.

Penguins are awkward on land. Because their legs attach far back on their bodies, it is difficult for them to walk smoothly. But penguins often must travel on land for long distances. When they get tired of walking, they slide on their stomachs. This way of moving is called *tobogganing*.

Do You Know?

Why don't penguins' feet freeze when they walk on ice?

Warm blood keeps penguins' feet from freezing. Fat and feathers keep penguins' core body temperature high, even when their feet are only a few degrees above freezing. As warm blood flows to their feet, it passes very close to cold blood that is flowing from the feet back to the heart. As it flows by, the warm blood heats the cold blood so that it doesn't lower the penguins' core temperature to a dangerous level.

Types of Penguins

Scientists place penguins in different groups based on their feathers and markings.

KEY

ANT = Antarctica
NANT = Near Antarctica
GI = Galapagos Islands
AFR = South Africa
ANZ = Australia and/or New Zealand
SAM = Southern South America

Name	Size	Home
CRESTED PENGUINS <i>Yellow or orange feathers on head</i>		
erect-crested	67 cm (26 in.)	ANZ
fiordland	55 cm (22 in.)	ANZ
macaroni 1	70 cm (28 in.)	NANT
rockhopper 2	52 cm (20 in.)	NANT
royal	70 cm (28 in.)	ANZ
Snares Island	50 cm (19 in.)	ANZ
BANDED PENGUINS <i>Black stripes on upper chest</i>		
black-footed (African) 3	68 cm (27 in.)	AFR
Galapagos	49 cm (19 in.)	GI
Humboldt 4	70 cm (28 in.)	SAM
Magellanic	70 cm (28 in.)	SAM
BRUSH-TAILED PENGUINS <i>Long tails</i>		
Adelie 5	70 cm (28 in.)	ANT
chinstrap 6	74 cm (29 in.)	ANT
gentoo	80 cm (31 in.)	ANT
GIANT PENGUINS <i>The largest penguins</i>		
emperor 7	120 cm (4 ft.)	ANT
king	90 cm (3 ft.)	NANT
OTHER PENGUINS <i>Different from all other penguins</i>		
little blue (fairy) 8	43 cm (17 in.)	ANZ
yellow-eyed	55 cm (22 in.)	ANZ



Wowser!

The smallest penguin is the little blue penguin. 8 It is about the size of a large duck. The largest penguin is the emperor penguin. 7 It is about the same height and weight as an average third grader!