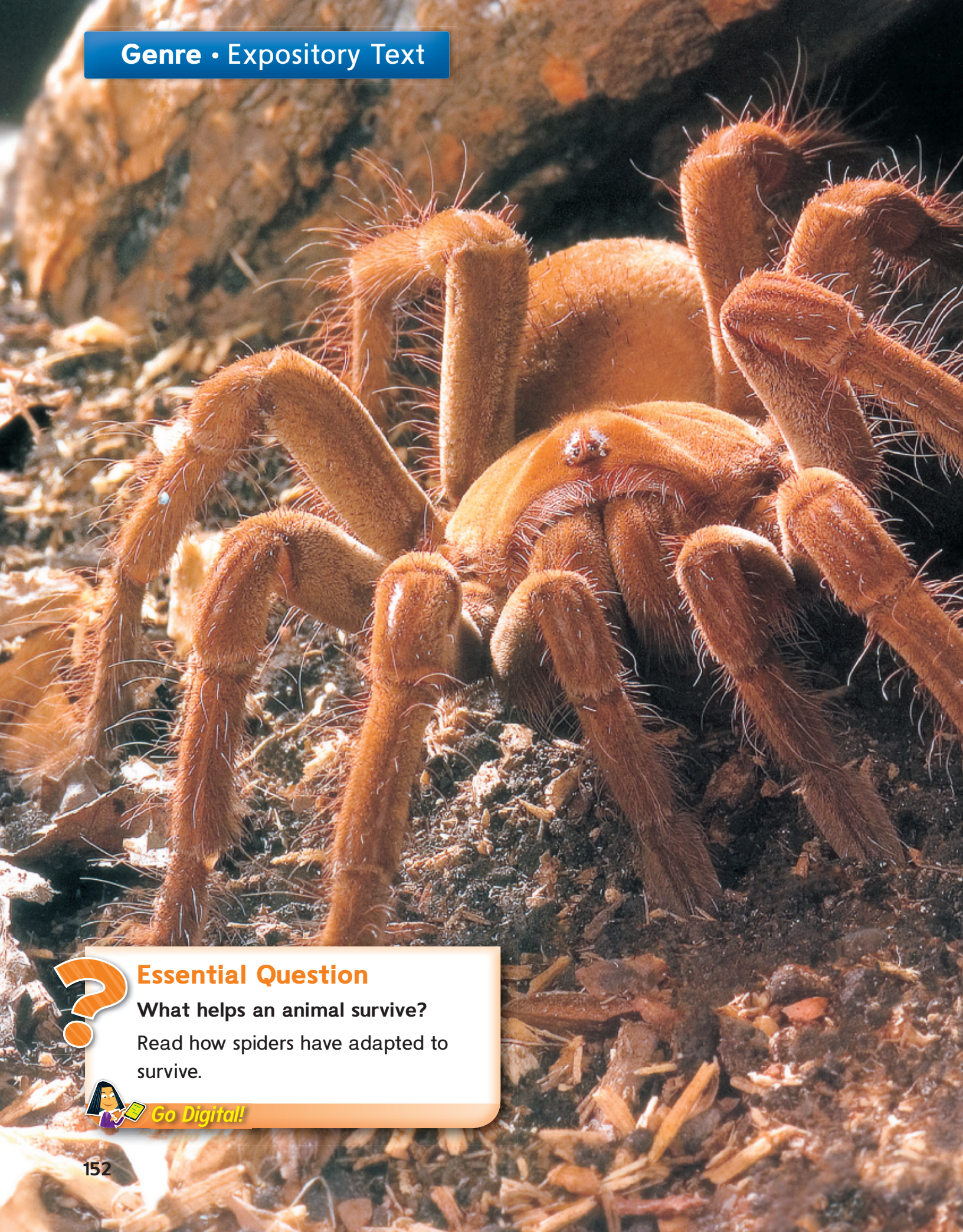


Wonders



Mc
Graw
Hill
Education

Literature Anthology



Essential Question

What helps an animal survive?

Read how spiders have adapted to survive.



Go Digital!

A close-up photograph of a tarantula's leg, showing its thick, brown, hairy texture. The leg is positioned vertically on the left side of the page, with its segments and fine hairs clearly visible against a dark background.

Spiders

by Nic Bishop

Some spiders are as small as a grain of sand. **The biggest, the Goliath birdeater tarantula from South America, is as big as a page in this book.**

Yet all spiders share similar features. They have eight legs, fangs, spin silk, and eat other animals. At first you might confuse them with insects. But it is easy to tell the difference. Insects have six legs; spiders have eight. And spiders never have wings.

The Goliath birdeater tarantula likes to stay near its burrow on the rain forest floor. It waits for prey to come close enough to grab.

A spider's body has two main parts. The back part is called the abdomen. This contains the heart, which pumps pale blue blood (yes, blue!), and the spinnerets, which make silk. The front, or head part is called the cephalothorax. It has the spider's legs, eyes, fangs, brain, stomach, and two short arms, called pedipalps, which a spider uses to hold its prey.

The green lynx spider is perfectly camouflaged when it hides among leaves waiting to pounce on an insect. The long black spines on its legs are thought to help it trap its prey.



Spiders eat in an unusual way. They don't chew and swallow food like you do. They drink it. First the spider stabs its prey with its fangs and injects **poisonous** venom to stop it from moving. Then it **dribbles** digestive juices on its meal. This turns the animal's insides into soup, so the spider can slurp them out. Afterward, all that's left of the prey are empty bits of skin and some wings.

STOP AND CHECK

Summarize How do spiders eat their prey? Summarize using details from the text.





This black widow spider has just caught a wasp in her web. She will feed once she has wrapped it safely in silk.



Most spiders have eight eyes, so they can look several ways at once. But a spider cannot see as clearly as you. **Their eyes are usually very small and simple.** Spiders will notice if something moves nearby, but they often cannot see shapes very well.

A few spiders have no eyes at all. They live deep inside caves where it is completely dark all the time. But they have no trouble catching prey. That's because spiders have other amazing senses to rely on.

The long-jawed spider is a web builder. It gets its name from the very long jaws that hold the two thin fangs, which you can see folded underneath.

A spider does not have a nose or ears, at least not like you do. Even so, it has **extraordinary** senses all over its body. Take a close look. You will see this spider is covered with hairs. Many of these sense touch, **vibrations**, and sounds. **Hairs on a spider's legs can sense the sound of a flying insect.**

Other organs on the feet can smell and taste things just by walking on them. A spider can even recognize the taste of its own silk by touching it.

This huntsman spider is beautifully camouflaged on a rain forest leaf. Hairs on its body and legs will sense the vibrations made by the footsteps of an approaching insect.







Spider skin is made of tough stuff called chitin. It is the spider's personal body armor as well as its skeleton. Spiders don't have bones inside their body for support. Their hard skin is like a skeleton they wear on the outside. It protects and supports the spider's body.

This hard skin does not stretch, so a spider must molt now and then as it grows. **The spider finds a safe place and then slowly squeezes out of its old skin.** It can take an hour and is very stressful. The spider must even shed the skin covering its eyes and the inside of its mouth. Afterward, its new skin is damp and soft like putty. The spider rests until its new skin dries and hardens.

STOP AND CHECK

Summarize Why do spiders need to find a safe place to molt? Summarize using details from the text.

A cobalt-blue tarantula has to roll onto its back to molt. It is pulling the old skin off its legs. Its new fangs are pure white, but will turn dark later.

Silk is the secret of spider success. Spiders make several different types, which can be sticky, stretchy, strong, or fluffy. Each has a special use: for making egg sacs, wrapping prey, building webs, or making draglines that the spider trails as it walks along or jumps.

Silk is made by the spinnerets on the spider's abdomen. **Liquid threads come out of dozens of tiny nozzles and turn solid as the spider pulls them.** Spider silk is an amazing substance. It can be stronger than steel and can stretch twice its own length. Best of all, it's recyclable. A spider can eat its silk when it has finished with it.

A black-and-yellow garden spider will use its legs to turn its prey as it wraps it with silk from its spinnerets.





Spiderwebs are made of silk. Some webs look like old tissue paper draped on hedges. Others hang in messy tangles in the corner of your garage. But the best known is the orb web with its wonderful spiral of sticky threads. A large orb web may contain more than 100 feet of silk thread and can take about an hour to build.

Most spiders build their webs at night, working by touch. Once finished, the spider sits in the middle or at the edge and holds the web so it can feel the vibration of a trapped insect. If the prey is a dangerous wasp, the spider may cut it free. Otherwise it wraps the prey in silk and bites.

STOP AND CHECK

Reread Why don't orb spiders get trapped in their own webs? Reread the caption to check your understanding.

Orb web spiders have special claws and non-stick feet so they can walk on their webs without getting stuck.

About the Author



A Creepy-Crawly Kind of Guy!

Nic Bishop is an author and photographer of nature books for kids. He also happens to really love spiders! What some people find creepy and gross is utterly amazing and intriguing to Nic.

Born in England, Nic has lived and traveled around the world. Some of his trips have been in search of the most interesting spiders on the planet. Sometimes his wife, a biologist, comes along. He seeks out spiders and other creatures to show kids what the natural world is all about.

Nic has even raised his own spiders at home. He does this so that he can take photos of them doing things like molting and laying eggs. It is hard to get pictures of spiders doing these things in the wild. Most of Nic's spiders stay in their cages, but a few pesky ones have found ways to escape! Don't worry, though—Nic has always been able to find and catch the little runaways!

Author's Purpose

Nic Bishop includes dramatic photographs and captions alongside the text. How do these text features give you a better understanding of spiders?

Respond to the Text

Summarize

Use important details from *Spiders* to summarize how spiders have adapted in order to survive. Information from your Main Idea and Key Details Chart may help you.

Main Idea
Detail
Detail
Detail

Write

Think about how Nic Bishop uses text features to tell about spiders. How do they help you understand his point of view about spiders? Use these sentence frames to organize your text evidence.

Nic Bishop uses text features to . . .

He shows that spiders are . . .

That helps me understand that he thinks spiders . . .



Make Connections



How have spiders adapted to survive?

ESSENTIAL QUESTION

Explain how spiders in the rain forest and spiders in the desert might adapt in different ways. **TEXT TO WORLD**



Compare Texts

Read how a spider learns to use his own special ability to save himself.

ANANSI AND THE BIRDS

Anansi always welcomed a challenge. His attempts to fool merchants out of their riches and lions from their jungle thrones made for exciting adventures. Today he would show those haughty birds that he could fly with the best of them.

He begged a feather from every bird he could find to create his own pair of wings, and then he began to practice flying. Anansi's wings **camouflaged** him well, and he looked just like a bird.

"Hoot!" the old owl chided under the moon. "A spider is not meant for the sky. Why do you try to be something you are not?"

"Mind your business, owl," Anansi replied angrily. "You are a **predator**, so go hunt some mice!"

Anansi followed the birds to their feast on the top of a mountain peak. He helped himself to their fare, shoving birds aside to get his fill. When he was full, he fell into a deep sleep.

Angrily, the birds took back the feathers from his wings and then left, all except for one crow. When Anansi awoke, he realized what had happened and begged the crow to help him get down the mountain.

"Of course," the crow replied slyly as he shoved Anansi over a cliff.

"Aaaayeeee!" shouted Anansi. Unable to fly, he tumbled helplessly through the air.

The old owl appeared before him, asking, "Why didn't you listen, Anansi? You are not a bird!"

"Please help me, owl!" pleaded Anansi.

The owl urged Anansi, "Push in your belly!" When he did, threads of silk shot out behind him. The owl caught them and tied them to a high branch. Dangling by threads, Anansi realized the owl was right. From that day on, he stuck to spinning webs instead of trying to be something he was not.



Make Connections



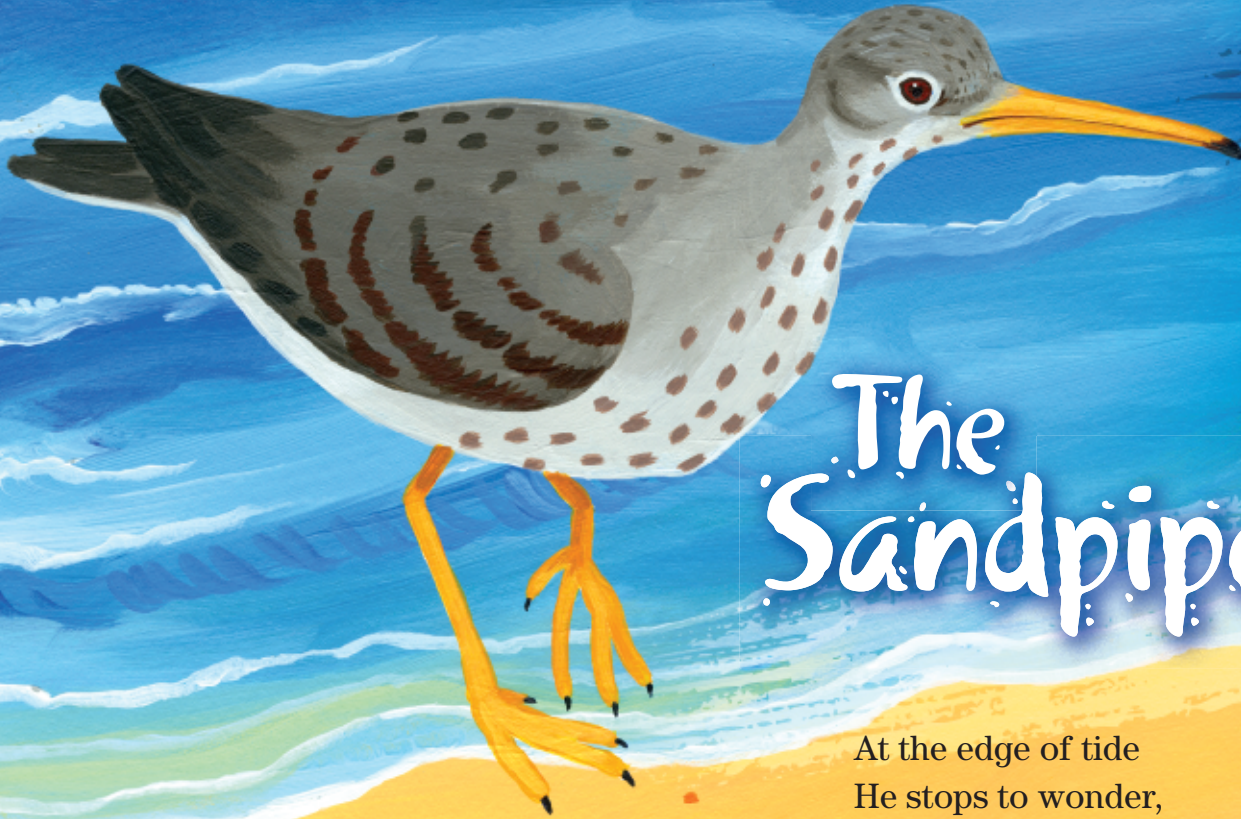
What helps Anansi survive?

ESSENTIAL QUESTION

In this story Anansi discovered that he had an amazing ability. Discuss some other amazing animal adaptations.

TEXT TO TEXT





The Sandpiper

At the edge of tide
He stops to wonder,
Races through
The lace of thunder.

On toothpick legs
Swift and brittle,
He runs and pipes
And his voice is little.

But small or not,
He has a notion
To outshout
The Atlantic Ocean.

—*Frances Frost*



Essential Question

How are writers inspired by animals?

Read how poets visualize animal characteristics and habits.



Go Digital!

An illustration of three bats hanging upside down from the top of the page. They have brown fur, large ears, and dark wings. The background is a gradient of colors from dark blue at the top to bright yellow at the bottom, suggesting a sunset or sunrise. The word 'Bat' is written in a large, stylized, orange font in the center of the page.

Bat

All day bats drowse in houses' eaves
Like tents collapsed for storage,
But when dusk darkens, like fall leaves,
They loosen. Then they forage

For juicy June bugs, meaty moths,
Mosquitoes (eaten rare).
They're scary. But there's nothing like
A bat to clear the air.

—*X.J. Kennedy*

The Grasshopper Springs



The grasshopper springs
and catches the summer wind
with his outstretched wings.

—James W. Hackett

Fireflies at Dusk

Fireflies dance at dusk,
tiny lanterns in the dark
lighting my way home.

—Evelyn Rose



Respond to the Text

Summarize

Use details from “Bat” to summarize the poem. Information from your Point of View Chart may help you.

Details

↓

Point of View

Write

Describe how the poets use their inspiration to convey their points of view about each animal or insect. Use these sentence frames to help organize your text evidence.

In each poem, the poet is inspired by . . .

In “The Sandpiper,” the poet describes . . .

In “The Grasshopper Springs” and “Fireflies at Dusk,” the poet describes how . . .

Make Connections



In what ways did these animals inspire writers?

ESSENTIAL QUESTION

What are some other animals around the world that deserve their own poems? Why do you think they would inspire writers? **TEXT TO WORLD**