

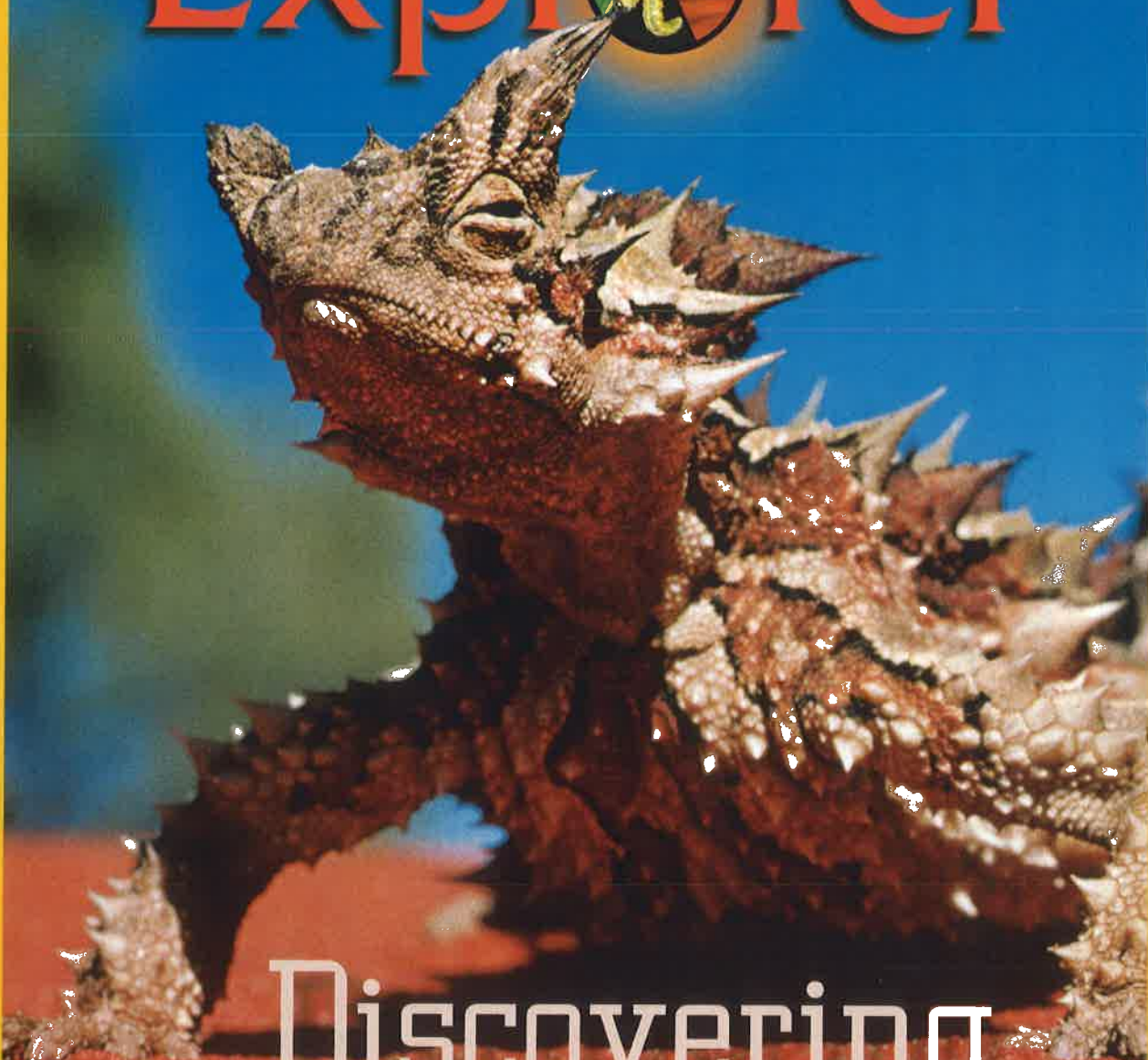
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Explorer



Discovering Deserts

The Life of Larvae 2 Getting the Shot 16

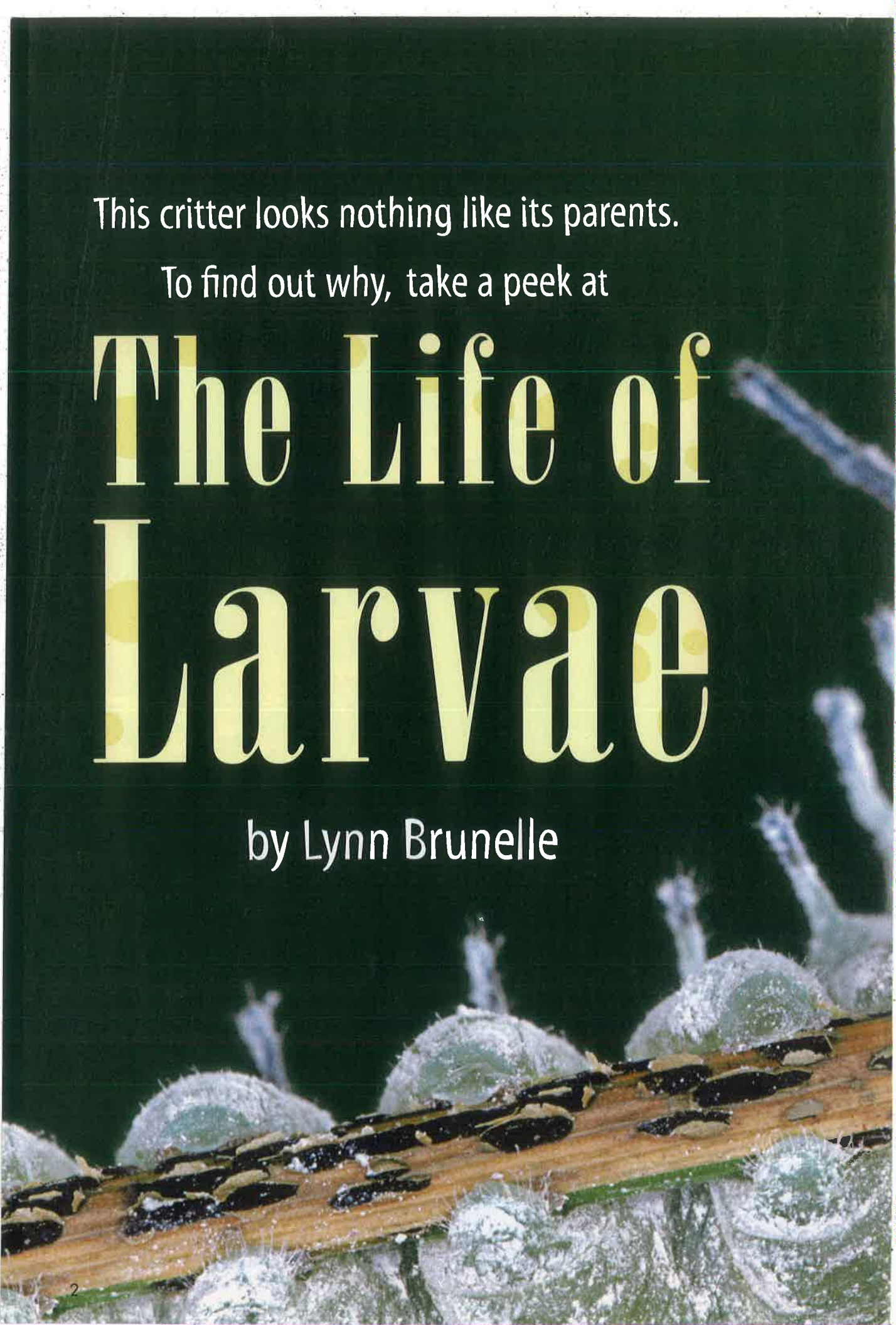
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This critter looks nothing like its parents.

To find out why, take a peek at

The Life of Larvae

by Lynn Brunelle



Life Science

COMPREHENSION STRATEGY:

As you read, look for the order in which events happen.



Hundreds of fat, white worms squirm in a nest under the ground. These worms have no eyes. They have no legs. They can barely raise their heads. Helpless, they wait in the dark.

Suddenly, ants crawl into the nest. They're giants compared to the worms. The ants step on the worms with their clawed feet. Then one ant stops. It lowers its head. It opens its sharp jaws just above a wiggly worm.

Don't worry. The ant is not about to eat the worm. Instead, the ant licks it. It's giving the worm a bath. The ants also feed and protect the worms. That's because these worms aren't worms at all. They're family.

Odd Babies

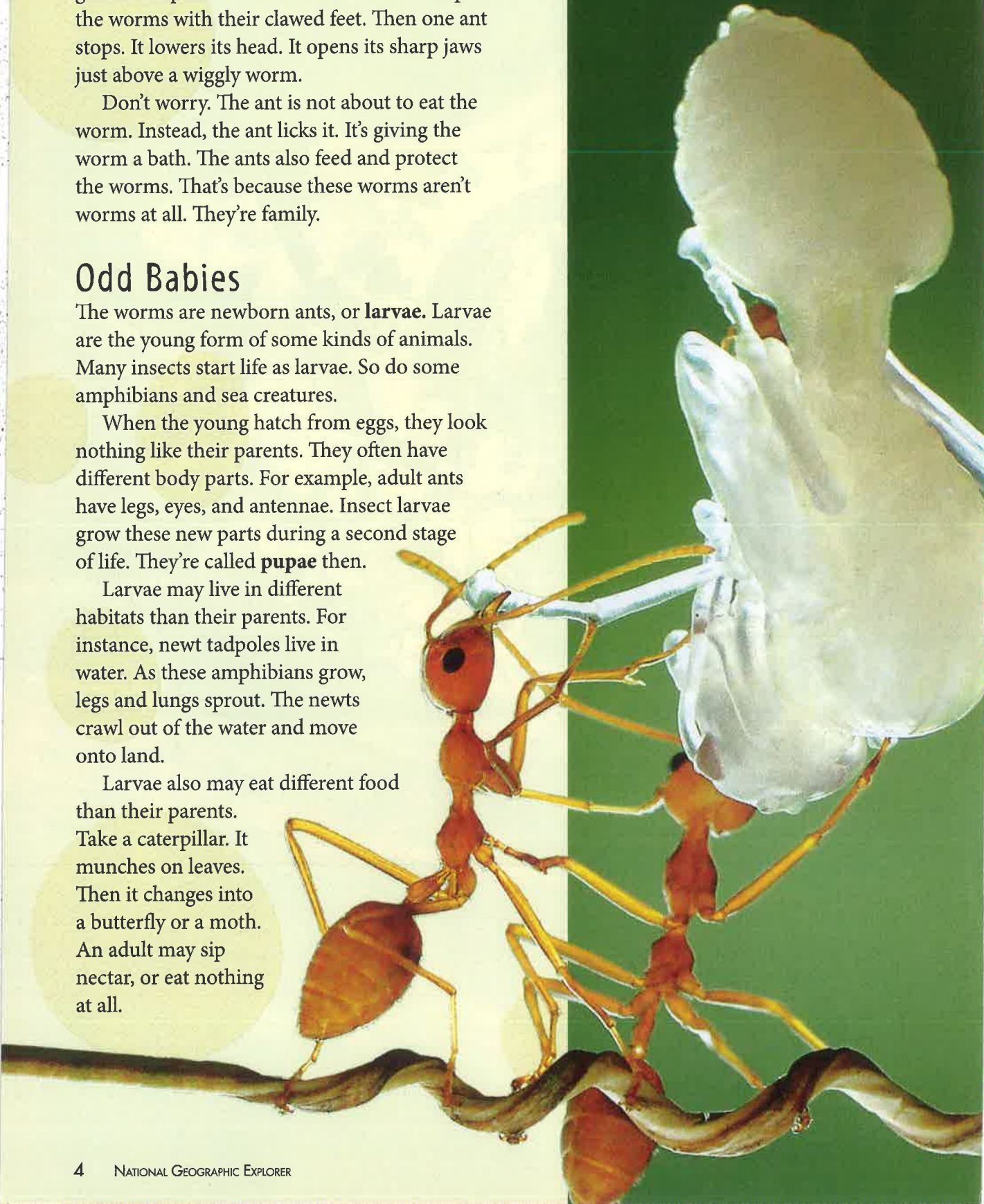
The worms are newborn ants, or **larvae**. Larvae are the young form of some kinds of animals. Many insects start life as larvae. So do some amphibians and sea creatures.

When the young hatch from eggs, they look nothing like their parents. They often have different body parts. For example, adult ants have legs, eyes, and antennae. Insect larvae grow these new parts during a second stage of life. They're called **pupae** then.

Larvae may live in different habitats than their parents. For instance, newt tadpoles live in water. As these amphibians grow, legs and lungs sprout. The newts crawl out of the water and move onto land.

Larvae also may eat different food than their parents. Take a caterpillar. It munches on leaves. Then it changes into a butterfly or a moth. An adult may sip nectar, or eat nothing at all.

Adult ants carry an ant pupa.



Family Life

The life of a larva is different for different critters. Some, like ants, grow up with their families. The adult ants care for the larvae. The larvae have a job, too. They prepare food for the colony, or all the other ants.

First, the adult ants gather bits of dead bug. They can't eat bug bits, though. Their waists are too skinny to let chunks of solid food pass through. Instead, the adults bring the food to the larvae and lay it on their bellies. The larvae spit on it. Their spit turns the food into a juicy slime. The adult ants feed some bug juice to the larvae. Then they slurp up the rest.

The larvae of weaver ants do more than prepare food. They help build nests. When the ants gently squeeze them, the larvae ooze thin strings of silk. The ants use the silk threads to sew leaves together. Soon, the ants and the larvae have a new home.

On Their Own

Unlike the ants, most larvae must survive on their own. It's up to them to find food and stay safe. A ladybug gives her babies a head start.

When it's time for her to lay her eggs, she searches for just the right plant. The one she picks is crawling with tiny, spidery insects called aphids.

She lays her eggs on a leaf and flies off. She won't come back. A few days later, the eggs shake and tiny bugs hatch.

These baby bugs don't look like ladybugs at all. They are mostly black with orange spots. Unlike a ladybug, they don't have a shiny shell or wings. Instead, spines and bristles poke out of their backs. They look like mini alligators.

These larvae act as hungry as gators, too. Luckily, they don't have to look far for food. They gobble up juicy aphids. One ladybug larva can eat up to 60 aphids a day.



This ladybug larva snacks on aphids.

Safety in Numbers

Staying alive is one of the biggest challenges for larvae. They can be small with few defenses.

A baby jelly tries to survive by hiding in a crowd. It floats in the ocean with billions of other larvae. Some of these larvae are crabs. Others are shrimps, sea stars, or barnacles. Each is about as big as the period at the end of this sentence.

This mass of larvae rides the ocean currents. They rise to the surface to find food. They sink down deep to hide from predators. This doesn't always work. Suddenly, the water around the jelly larva churns. A great blue whale opens its mouth. It sucks in seawater, the young jelly, and lots of other larvae.

The water gushes out of the whale's mouth, but the larvae are trapped. The whale swallows them. Billions more larvae don't get gulped by the whale. Some will survive long enough to become adults.



Change Is Coming

To become adults, larvae don't just grow bigger. Often, their whole bodies change. They lose some body parts and grow new ones. This change is called **metamorphosis**.

A mosquito is a good example. A female mosquito lays hundreds of eggs in a puddle. They float, stuck together like a raft.

Soon, the raft shakes. One egg hatches, then another. These larvae look nothing like their mother. Each is long and skinny. Tiny spines stick out from their bodies.

The larvae swim through the water. They hunt for algae to eat. Some of the larvae even eat each other. Suddenly, one larva wriggles wildly. It can't breathe underwater! It zooms to the surface and sticks out a special breathing tube. It floats and sucks in air through the tube.

As the mosquito larva grows, it sheds its skin and grows a new one every few days. This is called **molting**.

Finally, the larva molts for the last time. It stops eating. It barely moves. Instead, it grows a hard shell. It becomes a pupa.

Extreme Makeover

Inside the shell, the insect's body turns to mush. New body parts form. When the pupa shell splits open, an adult mosquito climbs out. It has wings and six long, skinny legs. It flies off. Soon, it will lay eggs and new larvae will hatch.

For all of these critters, their life as larvae is more than a strange stage. It helps them to survive. For instance, mosquitoes don't need to compete with their larvae for food. The young eat algae. The adults drink nectar and blood.

Other species need larvae so they can move to new places. Take an adult sea squirt, for example. It can't swim. Its larvae can. After it hatches, the larva swims to a new spot on the seafloor. That way, it doesn't compete with the adults for space. Then it cements its head to the seafloor. It will stay there for the rest of its life.

Then there are ant larvae. The goo they make feeds the colony. The adults and larvae work together to get the food they need to live.

For many animals, though, this larva life doesn't last long. Soon, they're on their way to one of the most extreme makeovers in nature.


WORDWISE

larva: the young form of some animals

metamorphosis: a change in form that some animals go through as they become adults

molt: to shed an outer covering, such as skin or a shell

pupa: a stage in an insect's life cycle between larva and adult



If this larva survives, it will become an adult shrimp.



Mosquito larvae stick tubes out of the water to breathe air.

Discover DESERT

Are all deserts vast, bleak, and

By Gary Miller



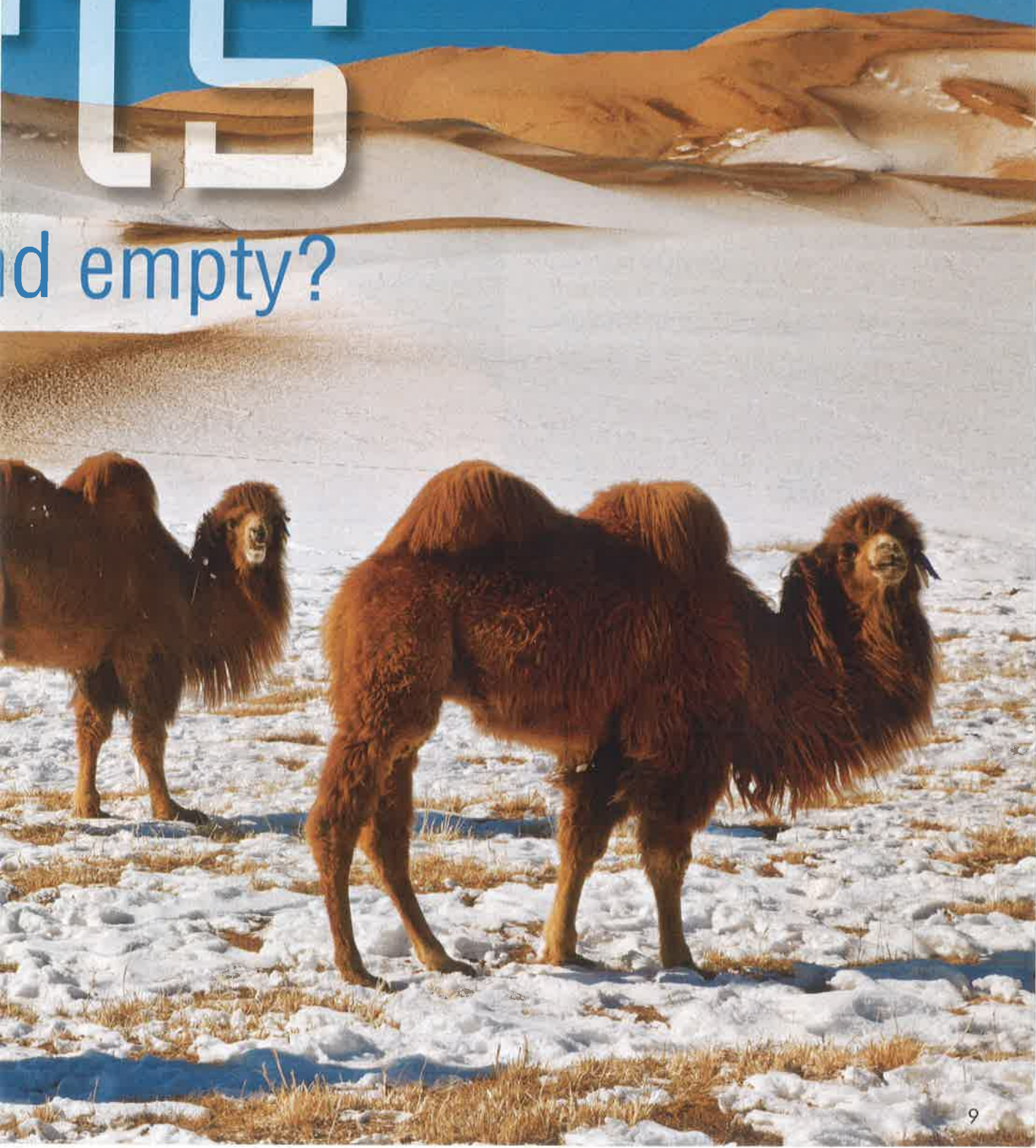
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Earth Science



COMPREHENSION STRATEGY:

As you read, make connections to what you already know about deserts.



Cold and Windy

The sun slowly rises over Antarctica. Its rays creep across the frozen landscape. Icy rocks sparkle like silver in the weak light. A bitter wind howls. The wind carries with it a curtain of snow. Hundreds of penguins huddle on a rocky point. There are no other signs of life here. This is just the start of another day in the world's largest **desert**.

That's right. Antarctica is a desert. That might surprise you. You won't find any sand dunes here. The sun doesn't feel hot.

Not all deserts are sandy and hot. They can also be cold and icy. Or they can be foggy and rocky. All deserts share one thing in common. They are dry. Each year, deserts get less than 25 centimeters (10 inches) of rain or snow.

If you traveled the world, you would find deserts at the cold Poles and near the warm Equator. You would find one in cold mountains. You would find them near oceans, too. These deserts are all dry, but all different.



Each desert has a unique **climate**. A climate is the usual weather for a place. Temperature, wind, and rain or snow make up climate. Climate affects how a desert looks and what lives there. Let's take a tour of three very different deserts. Bring some water along. You're going to need it.

Antarctica is one of the driest deserts. It hasn't rained or snowed on some parts of the continent in thousands of years. Most of Antarctica gets only a little bit of snow each year. Since the climate is so cold, the snow doesn't melt. Over time, it piles up. It forms thick ice sheets. Some icy parts of Antarctica are over 4 kilometers (2.5 miles) thick.

To explore this desert, you're bundled up today. You're wearing two coats. On your feet, you have heavy boots over four pairs of socks. You're also wearing a hat, a fur-lined hood, and three pairs of mittens. You're still cold.

What's worse—it's snowing. Actually, it isn't. It just looks like it is. Antarctica is the windiest continent on the planet.

Antarctica's wicked winds whip snow that has already fallen. It's like a blizzard. This is called a whiteout. You feel like you're inside a giant ping-pong ball.

Life in Antarctica can be difficult. Not many animals live on the land. The penguins spend much of their time in the water. One of the next largest animals you'll find living on land is called a springtail. This insect-like creature is not much to look at, but it's tough. Its body makes a chemical that protects it from the cold. The springtail doesn't freeze. It moves about, eating algae and fungi.

Few plants grow here. In places where the ice is patchy, you can see the soil. Yet it is thin and rocky. The harsh winds rip apart all but the toughest plants. Most plants tend to be small. Mosses cling to tiny patches of soil. They don't need much water. They can also stand up to the fierce winds.

Your feet are starting to get numb as you explore. Maybe it's time to go to a different, warmer desert.



Hot and Sandy

Hot winds. Shifting sand. Scorching sun. You're in the Sahara now. It is the largest hot desert on Earth.

The sun beats down. You're dressed for sun, though. You've covered yourself from head to toe in long, loose-fitting clothes. You've wrapped a long scarf around your head. You can use it to cover your face, too. By midday, the temperature may rise above 50° Celsius (122° Fahrenheit). These clothes will help you keep cool.

Ahead of you, a large lizard climbs up a steep, golden sand dune. As you follow it, you try walking on the side of the dune that faces the wind. The sand is firmer here. The wind has pressed the grains of sand together.

Look around when you reach the top. Dunes are in every direction. They cover one fourth of this desert. Rocky soil lies beneath them.

Like all deserts, rain is hard to come by. Most years, less than 7.6 centimeters (3 inches) of rain falls in the Sahara. Even if it falls, that doesn't mean you'll feel it. Sometimes the sun is so hot that falling rain **evaporates** before it hits the ground.

Your water supply is running low, but don't worry. Even in this desert, water can be found. As you stumble your way through the shifting sand, you find an **oasis**. Here, water is stored deep underground. It rises to the surface and makes a small pool. Short plants and tall palm trees circle the pool. The taller date palm trees shade the smaller peach trees.

This is good news for you. Now you can have water and a snack. However, you'll have to share. A group of camels has found the oasis, too. They drink from the pool.

Suddenly, a tiny jerboa streaks in front of you. It's a small rodent that makes its home near the oasis. It drinks the water and nibbles on the plants. This one must be very hungry. Jerboas usually sleep during the daytime.

Nearby, you spot a fennec fox. It has dug a den in the sand. It will wait out the heat of the day so that it can hunt at night. It keeps cool with the help of its huge ears.

Blood flows toward the fox's ears, carrying heat from inside its body. Then the heat is released, cooling the fox down.

Your ears probably won't help you here, but staying put will. Traveling through the Sahara during the hottest part of the day would be unwise. The heat and sun would zap your energy. It's best to lay low like the fox. Hot and dry deserts may not be for you.



Windy and Rocky

If only there was a desert that wasn't too hot or too cold. Let's try the Gobi in northern China. It's called a semiarid desert. That's because it gets a little more rainfall than a hot, dry desert. It's also a lot cooler.

The Gobi is the largest semiarid desert in the world. You won't have to worry about getting sand in your shoes, though. Rocks cover much of the Gobi. High winds blow over the rocks, sweeping them clean.

It doesn't rain much here, but it might snow. Much of the Gobi sits high in the mountains. The temperature can be quite cold. At times, snow covers the rocks.

Dark green desert grasses poke up through the snow. As you walk along, you get a sense of how vast this desert is. And this desert is getting bigger.

The Gobi is being changed by a process called **desertification**. This happens when a semiarid place gets drier. Then the desert grows bigger. Many things can cause this. Too much farming can cause it. Animals uprooting and eating all the plants can cause it, too.

You stop a moment to get a better look at this huge desert. Not far from where you are standing, you see a rare sight. An endangered snow leopard stands on a rock.



The snow leopard's thick, smoky gray fur covers its thin body. It stands on thick legs with large paws and thick, sharp claws.

The snow leopard makes a sound at you. Chuff, chuff, chuff. It looks hungry. Maybe now is not the best time to get too close. It's probably time to move on.

So now you've traveled the globe and seen some of the world's most amazing deserts. In each, you've seen a different climate. Deserts can be hot and sandy. Yet they can also be cold and snowy, even windy and rocky. All deserts are dry, yet none of them are empty. Instead, they are full of life.



WORDWISE

climate: the usual weather that occurs in a place, including average temperature, wind, and rain

desert: a place that gets less than 25 centimeters (10 inches) of rain or snow a year

desertification: the change from grassland to desert

evaporate: to turn from liquid into vapor

oasis: a green, fertile area surrounded by desert

Getting

An underwater photograph featuring a school of sharks swimming in the dark. In the upper portion of the frame, a large, translucent jellyfish with long, flowing tentacles is visible. The word "Getting" is overlaid in a large, white, sans-serif font across the top half of the image.



COMPREHENSION STRATEGY:

Before you read, look at the photos. Tell why they are special and what they show.

the Shot



A National Geographic photographer takes his camera into the ocean.

By Marylou Tousignant



David Doubilet floated in the ocean. Wearing scuba gear, he waited and watched. He was looking to take photos of sharks for National Geographic.

Soon, he spotted a great white shark swimming nearby. He raised his camera. He focused and pressed a button. Click. He took a picture. Click, click. The shark swam closer. Click, click, click. The shark was now a little too close.

Doubilet wasn't worried. He backed up. He reached behind him for the shark cage, where his dive partner waited.

He knew the cage's metal bars would protect him from a shark attack. But he had a problem. The cage wasn't there!

Turning quickly, he could see that an underwater wave had moved the cage. It was now too far to swim to. He had nothing to protect him.

"The shark knew that I was in trouble," Doubilet says. Doubilet scooted backward, trying to get closer to the cage. The shark followed him.

Not many divers can outswim a shark. In seconds, the shark closed the distance between them. Doubilet was in real danger. He didn't know what to do, and he didn't have many options. So he pushed the shark away using his camera.

This movement caused the shark to turn away slightly. That gave Doubilet and his partner the time they needed. His partner pulled him into the cage and closed the door. The shark circled the cage, still curious.

David Doubilet gets close to a shark to take its picture.





Doubilet takes this picture as the crocodile swims past him.

Diving In

Being chased by a shark might seem dangerous. It's just another day at the office for Doubilet. He spends more time in the water than on land. After taking millions of pictures, he's used to underwater danger.

He started swimming when he was 8 years old. Growing up with asthma, he didn't play a lot of sports. But he did swim. The ocean fascinated him. When he was 12, Doubilet took his first pictures underwater. He used a small camera. His father helped him wrap it in a clear rubber bag to keep it dry.

His cameras are much fancier now. He dives with two or more digital cameras. He also sets up a camp of cameras on the sea bottom. Each camera is in a case bigger than a shoebox. Each case has two long arms with lights at the end.

From a distance, his camera cases look like giant spider crabs. On dives, he doesn't always just bring these cameras. Sometimes he needs brighter lights and special lenses. A dive can last a few hours. He usually dives with a partner, often his wife. They sometimes work back-to-back while taking photos. That way, nothing can sneak up on them. "If the action gets intense, we get out of the water," he says.

You might think that meeting a shark was his most dangerous moment. Yet Doubilet says sharks aren't the scariest creatures. Crocodiles are. Doubilet says that crocodiles have good memories. "We'd go back, and there would be a crocodile waiting to ambush us," he says. So he has a rule when he takes photos of them. Never dive in the same place twice.