Ask a Bug

What makes a bee buzz?

Why do stings hurt?

What's the loudest insect?

Where do you go when it rains?

Are all ladybirds spotty?

And it will answer you.

LONDON, NEW YORK, MUNICH,
MELBOURNE, and DELHI

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First published in United States in 2011 by
DK Publishing
375 Hudson Street
New York, New York 10014

11 12 13 14 15 10 9 8 7 6 5 4 3 2 1
180687–01/11

A catalog record for this book
is available from the Library of Congress.

ISBN: 978-0-7566-7230-0

Color reproduction by MDP, UK
Printed and bound in China by Leo Paper Products Ltd.

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www.dk.com

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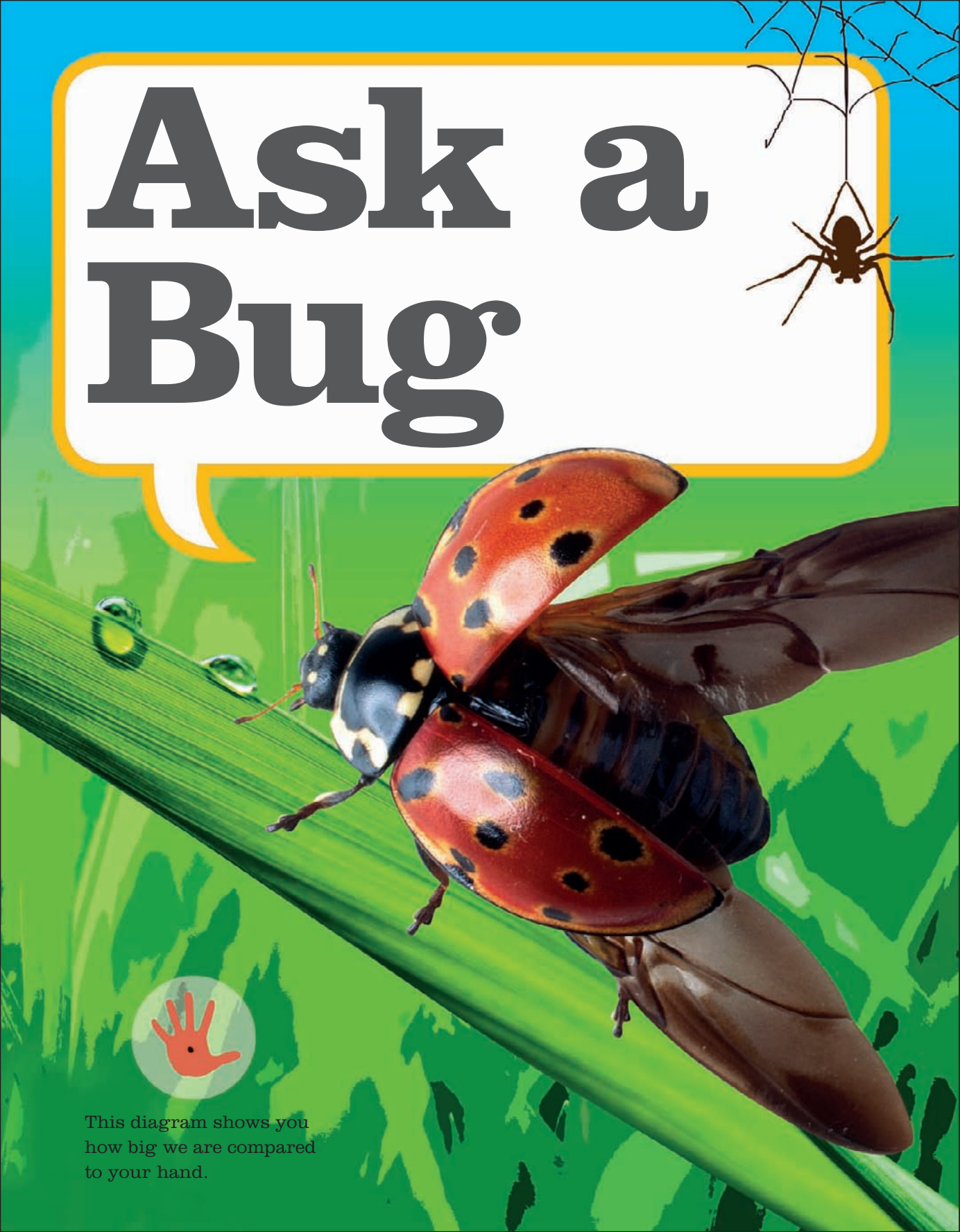
Ask a Bug



This diagram shows you how big we are compared to your hand.

Are **insects** the only **bugs?**

The word "bugs" can include not insects but also other creepy crawlies that have no backbones, such as scorpions, millipedes, and woodlice. Come and meet us!

How can I spot a bug?

Bugs have these things: a hard outer covering known as an exoskeleton, a body split into parts, and jointed legs. We are divided into four groups—insects, arachnids, myriapods, and crustaceans—depending on the number of body parts and legs we each have.

Insects, such as beetles and flies, have three body parts and six legs.

House fly

The head has the eyes, antennae, and mouthparts on it.

The thorax has the legs and wings attached to it.

The abdomen has many segments underneath the wings.

Goliath beetle

I'm a **shield bug** and I'm known as a "true bug." We are insects with sucking mouthparts. We use our needlelike beaks to cut open our food and then suck up the juices, like a straw.

Millipede

Centipede

Myriapods, such as centipedes and millipedes, have many small body parts and many legs.

5 things to know about us...

1. There are well over a million species around the world.
2. The largest group of bugs are insects.
3. Many bugs eat plants, some eat other insects, and others eat blood, dung, or decaying things.
4. Some of us can bite and sting, while others can pinch with their mouthparts.
5. We shed our skin (molt) as we grow, sometimes completely transforming for our last adult stage.

Arachnids, such as spiders, scorpions, and ticks, have two body parts and eight legs.

Tick

Crustaceans, such as woodlice, have three body parts and at least 10 legs. Sea creatures like crabs and shrimp are also part of this group.

Woodlouse

Spider

Scorpion

How many insects are there in the whole world?

Scientists think the number of insects alive in the world at any one time is 10 quintillion (10,000,000,000,000,000,000). That is 200 million insects for every human being on the planet.

Are **beetles** good **fighters?**

Bugs try to avoid fighting, since it usually means one will get badly hurt and die. However, if we need to defend ourselves, or protect our young, or even win a mate, then many of us do have the "weapons" to do so. We are stag beetles, and we have huge jaws, called mandibles. These look like antlers and we use them to fight each other.

5 things to know about us...

1. There are 1,200 different species of stag beetle.
2. We live in Europe and North America.
3. As larvae (babies), we eat rotting wood and roots.
4. We live for 3–5 years as a larva and for a few months as an adult.
5. We are endangered.

As adults, we can no longer eat, since our mandibles are too long to feed with.

Antenna

Head

Jointed leg

We have a hard case to protect our delicate wings and soft bodies underneath.

Are bugs messy?

Mostly, we are clean, although our nests may seem messy to you! We eat the food we gather and don't take up more room than we need. We also help to clean up the messes that people and animals make.

Mandibles

Neck shield

Why do bugs spiral around lights?

Night-flying bugs find their way using the Moon and stars. They confuse a bright light as being the Moon. Instead of flying straight, they spin out of control, trying to correct their direction.

What is the most colorful beetle?

Jewel scarab beetles are among the many beetles that are brightly colored with a metal-like shine. Beetles, like all insects, can be almost any color, from dull to beautiful.

Are all **ladybugs spotted?**

Most ladybugs are spotted but not all of us. The ladybugs with the most have 24 spots. But, there are a few of us that have white stripes instead of black spots, and some with no markings at all.

Our wings flap **85 times** every second!

Head

Antenna

Wing case

Are all ladybugs red?

No. The most common ladybug is red, but some are orange or yellow. Our color warns our enemies that we might taste bad, or helps us not to be seen.

5 things to know about us...

1. There are over 5,000 species all over the world.
2. We are beetles.
3. We live in trees, shrubs, fields, beaches, and even in your home.
4. We eat garden pests, such as aphids, mealy bugs, and mites.
5. Most of us don't bite.

My wing stretches out longer than my body.

My soft abdomen and wings are protected by my hard wing case.

Where do you go in winter?

As adults, we crawl into a crack, or under rocks or dead leaves, during the winter. We go into a sleeplike state and don't eat anything until spring.

Are your babies spotted?

We lay tiny yellow eggs, which hatch into long, spotted larvae with six legs. The larva sheds its skin many times before becoming a pupa, and then changing into an adult.

What do you eat?

We eat tiny insects called aphids and lots of them! Just one adult can eat up to 50 aphids a day, and about 5,000 in its short lifespan.

Aphids are insects that suck the sap from plants, destroying them.

What's in **my net?**

When you go dipping in a pond or a river, many types of bug may end up in your net. I'm a diving beetle and I'm a really good swimmer, diving deep under water to find my food.

How long can you hold your breath?

Most bugs that live in water carry around an air supply that lets them stay under water for a few minutes to a number of hours. I have a breathing tube on my abdomen that I fill up when I go to the surface before diving again.

5 things to know about us...

1. There are 4,000 species found around the world.
2. We eat tadpoles, snails, small fish, other water insects, and even each other.
3. We begin life as fierce, underwater larvae.
4. As adults, we can fly to other ponds or streams.
5. We are eaten by fish, frogs, and water spiders.

My front legs are ready to grasp any prey.

My backside sticks out of the water to fill up with air.

My back legs have thick hairs to help push me through the water.

How do you catch your food?

As a larva, I am known as a predator. I hide myself among plants and sticks and then pounce on my prey as it passes by. I am also known as a water tiger.

Which is the best swimmer?

Water bugs have different ways of getting around to find food and escape from enemies.

Water boatmen swim on their backs just below the surface and row with their long back legs.

Whirligigs spin around in circles on the water's surface.

Water striders skim across the water's surface.

Why do **crickets sing?**

It's mainly the male crickets that make "music" to attract the female ones. We also chirp to warn other crickets of danger or to tell other insects to stay away. We make sounds by lifting our wings and rubbing them together.

Why do you have long antennae?

We feel our way by tapping our antennae around and picking up smells from our surroundings. This helps us to find food and water and other crickets.

We need to keep our antennae clean so that our senses work properly.

What do your babies look like?

Baby crickets are called nymphs and are smaller and less-developed than the adults.

Snowy tree cricket nymph

Our ears are on our front legs, just below our knees.

We use our legs like a catapult. The knee joints work like springs that are then released as we leap.

Each wing has a jagged edge. We make sounds by rubbing these two edges together.

How far can you hop?

We can hop about 20 times our length. This is the same as a person being able to leap the length of a football field in three jumps.

As we leap into the air, our powerful leg muscles straighten our legs.

5 things to know about us...

1. There are 900 species found around the world, mainly in grasslands and forests.
2. We are nocturnal, coming out mainly at night.
3. We eat plants, decaying plants, and funghi.
4. In some countries, people think we bring good luck.
5. Different species have different chirp sounds.

Why are **dragonflies** in a **hurry?**

We don't have very long to live as adults, so we zoom around finding food and a mate. The largest dragonflies can fly up to 25–38 mph (40–60 kph), making us the fastest flying insects.

Each **compound eye** has up to 5,000 tiny eyes.

5 things to know about us...

1. There are more than 5,000 different species.
2. We can be found on every continent except Antarctica.
3. We eat other bugs, such as mosquitoes, midges, and spiders.
4. We have been around for 300 million years.
5. We do not harm people.

Where do I see baby dragonflies?

We lay our eggs in water. Our young hatch and live under water for many years, getting bigger.

A dragonfly nymph

Each **leg** has bristles for catching other flying insects. We capture and eat our prey as we fly.

Our **wings** are almost see-through.

Thorax

Abdomen

We can fly not only forward but also backward, sideways, and even just hover.

Why are your eyes so huge?

We have the biggest eyes of any insect. They take up most of our head and work so well that we can see in front, below, and behind, all at the same time.

Wing

How do your wings move?

We can fly very fast and change direction very quickly. It's because our wings are powered by very strong muscles in our thorax and each wing can move on its own or together in pairs.

Can bugs **change color?**

No, but many of us are the same color or shape as plants around us. I am a praying mantis. Can you see me? I look like the green plant I live on. I stay very still until an insect lands near me and then I grab it.

Why are some bugs brightly colored?

Our colors are needed for survival. Red, orange, and yellow-and-black are warning colors. Bugs in these colors can hurt or are poisonous. Some of us are partly colored to startle our enemies.

Our **heads** can turn all the way around on each side.

Our front legs have **sharp spines** for gripping our prey.

We live for **less than a year.**

What are the best disguises?

The best disguises are the ones that help us to stay hidden from our enemies or prey. Some bugs look like sticks, thorns, or leaves. This ghost mantis looks like dead leaves.

Ghost mantis

5 things to know about us...

1. There are about 2,200 species, varying in size and color.
2. We live in tropical and warm, seasonal areas of the world.
3. We're so-called because we wait, front legs together, as if praying.
4. Most of us eat insects, including each other.
5. We are used by farmers to protect crops from pests.

I'm fully alert as I wait, watching everything around me. No one knows if I dream while at rest, but these dreams wouldn't be like yours—mine would be about my daily activities.

Do you make good pets?

Yes, as we are clean and easy to look after. We gradually get use to being handled. Our behavior is also fascinating to watch, especially when we catch and eat food.

1. We have excellent eyesight to spot our prey.

2. We move our front legs very quickly to catch our prey.

3. We hold our prey tightly in our front legs and eat it alive.

Why are **butterflies** so **colorful?**

Colorful wings are very important to us. Our colors help us to hide ourselves or startle our enemies. They keep us warm and help us to attract a mate.

Our wings are made up of thousands of tiny scales.

Why are you symmetrical?

Many animals are symmetrical. You are, too.

Do you remember being caterpillars?

Probably. In a science test, butterflies kept away from the smells they were taught not to like as caterpillars.

We live from **4 days to 6 months**, depending on our species.

How can I tell if you are a male or female?

Males often have more pointed wings with brighter colors and clearer patterns, and longer and thinner bodies. Females are often larger.

5 things to know about us...

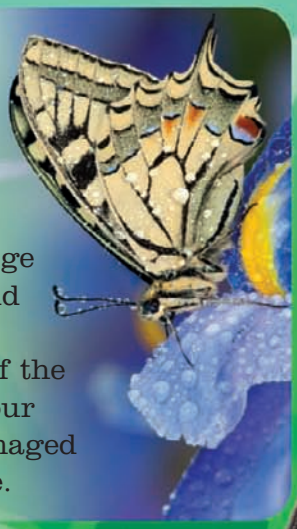
1. There are 20,000 different species all over the world.
2. We eat flower nectar (a sweet liquid) and pollen (a fine powder).
3. Most of us live in tropical rain forests.
4. We are very light.
5. We are eaten by birds.

We might land on you, since we are attracted to salt, and salt is in your sweat.

We smell and touch with our **antennae.** We taste with our feet.

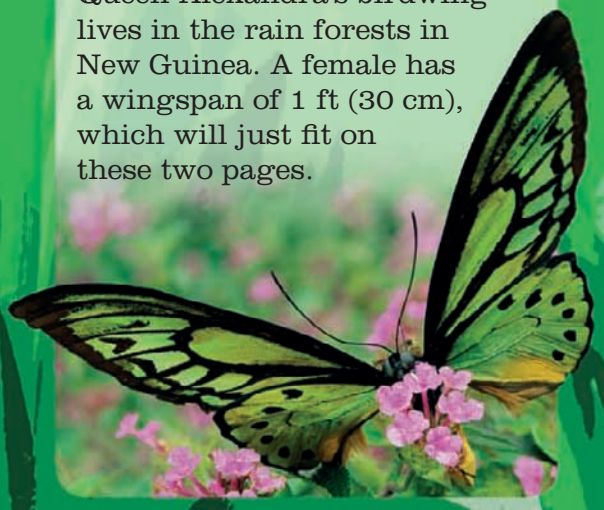
Where do you go when it rains?

We hide under large leaves or rocks and hold our wings tightly together. If the rain is too hard, our wings will be damaged and we will die.



Which is the largest one?

Queen Alexandra's birdwing lives in the rain forests in New Guinea. A female has a wingspan of 1 ft (30 cm), which will just fit on these two pages.



We have two **compound eyes** made up of 17,000 tiny eyes.

We have long **tongues**, which we uncurl to drink nectar.

Why do **ants** have **armies?**

We are social insects, which means we live in a group, or colony, to help us survive. We each have jobs to do. Most of us are workers but some are soldiers, guarding the nest. They defend the colony by biting, stinging, or spraying acid at attackers.

5 things to know about us...

1. There are about 35,000 species of ant.
2. We are found all over the world, except Antarctica.
3. Our nests can be found in trees, just below the soil, or deep underground.
4. Just the queen ant lays eggs.
5. One of our main enemies is other ants.

Leafcutter ants don't eat leaves; they carry them back to their nests to grow a fungus that they eat.

What do baby ants look like?

Young ants are helpless larvae. The worker ants look after the eggs and larvae, keeping them warm.

How strong are you?

Some of us can carry things that weigh 20 times our own weight. This is the same as you being able to lift a horse. We work together to lift and carry much larger things.

Our jaws move 1,000 times a second to cut off pieces of leaf. They open and shut sideways like scissors.

Do bugs play?

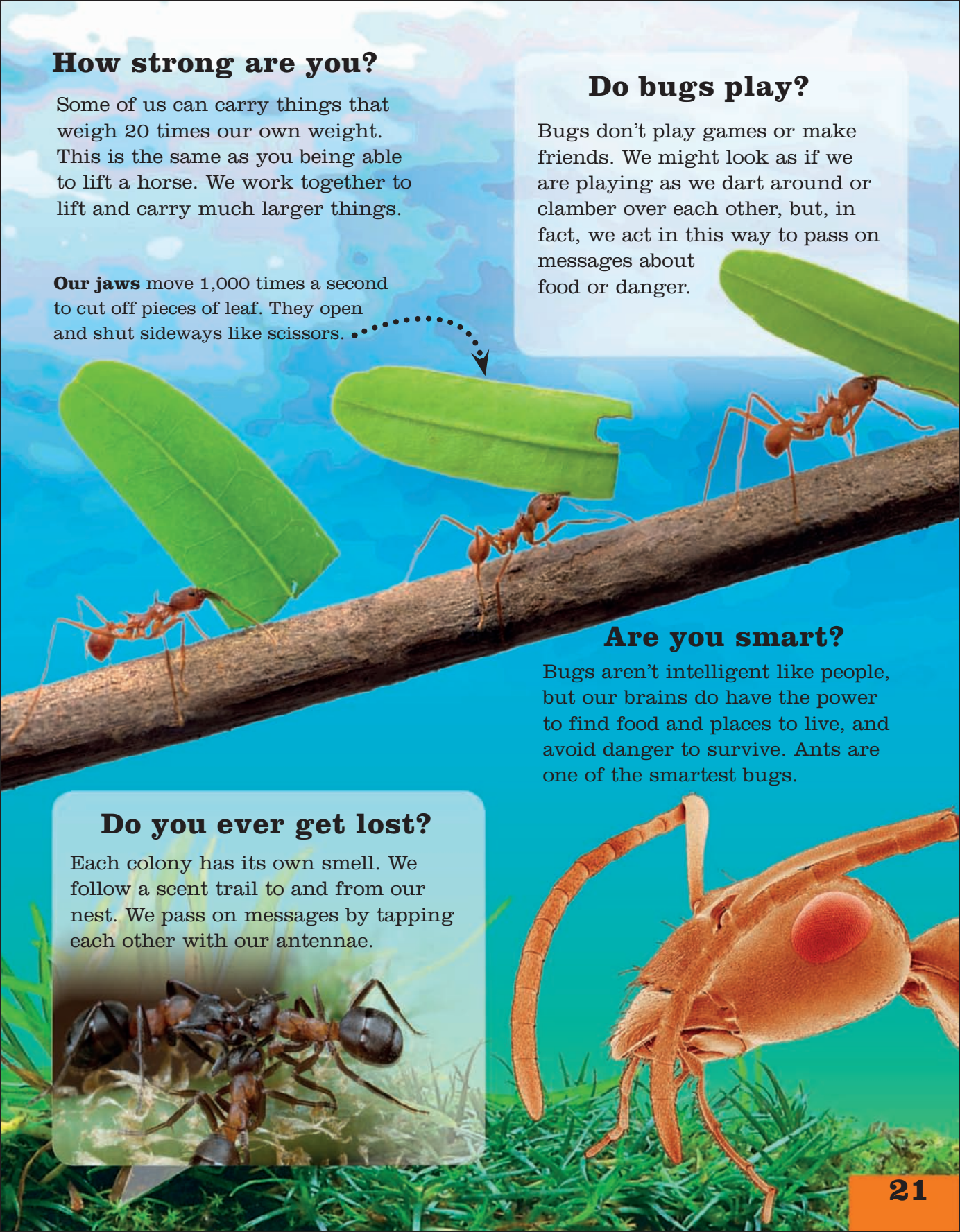
Bugs don't play games or make friends. We might look as if we are playing as we dart around or clamber over each other, but, in fact, we act in this way to pass on messages about food or danger.

Are you smart?

Bugs aren't intelligent like people, but our brains do have the power to find food and places to live, and avoid danger to survive. Ants are one of the smartest bugs.

Do you ever get lost?

Each colony has its own smell. We follow a scent trail to and from our nest. We pass on messages by tapping each other with our antennae.



Do all **bees** make **honey?**

Very few bees make honey and only honeybees store enough for you to take some, too. I am a bumblebee and I only make about ½ teaspoon (3 ml) of honey a day.

Do you all live in hives?

No. Most types of bee are solitary (live alone). Bumblebees and honeybees do live in groups, called colonies.

This long-horned bee makes its own nest in the ground.

As we fly around collecting nectar, **pollen** from one flower sticks to our legs and then falls off in another flower.

Bumblebees fly at much slower speeds than honeybees.

5 things to know about us...

1. There are about 2,000 species of bee around the world.
2. We feed on pollen and nectar.
3. We help plants to fruit by pollinating them.
4. Our young are called larvae.
5. We have many enemies, such as frogs, toads, and insect-eating birds and bugs, including wasps and spiders.

Hairs on my **antenna** pick up the smells of flowers.

What makes you buzz?

The buzz is mostly the sound of our breathing and partly the sound of our wings beating. Different bees make different buzzing sounds.

A bumblebee's **wings** flap up to 240 beats a second.

What's your favorite flower?

We visit flowers that are colorful and smell good to us. We see colors differently than you. We can't see red flowers, but white ones look very pretty to us.

This is what a yellow flower looks like to a bee.

Honey is made from nectar, a sweet liquid found inside flowers. We chew the nectar to make honey.

Why are bees so busy?

Honeybees are the busiest because they need to store enough honey for their colony to feed on through the winter. They visit more than 2,000 flowers a day in the summer.

Why do stings **hurt?**

Stings contain venom (poison) and have a venom sac attached. This store of venom is left with the sting in the victim. I am a scorpion and my stinger is on the end of my tail.

Are you a good mom?

Yes. I carry my babies around on my back to protect them. They stay with me until their first molt. I often have about eight babies at a time.

My **babies** crawl out of my body when they are born. I fold my legs to make a basket for them.

Do bugs feel sad?

We may have feelings, since we are using our senses all the time, but we don't have emotions, such as being happy and sad. If a bee stings, it is because it senses danger, not because it hates people.

A bee stings only to protect itself or the other bees in its nest. The bee dies as the sting is pulled out of its body to be left in its victim.

5 things to know about us...

1. There are about 1,400 species.
2. We are found all around the world, except Antarctica.
3. We hunt small creatures, including insects, mice, and lizards.
4. Our enemies include birds, lizards, and rats.
5. Only 25 species could kill a human.

Most spiders have a poisonous bite but only some spiders such as the redback spider can bite through human skin with their fangs.

Should I be scared of bugs?

Respect us rather than fear us. For those of us that could harm you, find out about our habits and follow advice on what to check to keep from being hurt.

Why do bites itch?

When insects bite, they puncture the skin and release a saliva that helps them to suck up their food.

Bed bug

Why don't **spiders** get stuck to their own **webs?**

Only some of the silky strands on our webs are sticky for catching insects. We don't step on these. We may also use some tiny claws on our feet to lift these sticky ones out of the way.

5 things to know about us...

1. There are 40,000 species of spider.
2. Most of us live on our own.
3. Most species live for 1–2 years, but tarantulas can live much longer.
4. Different species eat different things.
5. Female spiders lay more than 1,000 eggs at a time and wrap them in a silk egg sac.

On the tips of our abdomen we have spinnerets that make the silky strands.

How do you eat a fly?

First, I bite to poison the fly, which paralyzes it (stops it from moving) and slowly turns its insides to liquid. Next, I wrap the fly in silk and crush it with my jaws. Finally, I suck up the liquid.

Our webs get dirty and torn, so we make new ones every day. We roll up the old ones and eat them.

Do your legs grow back if you lose one?

Yes. We usually have eight legs but if one is pulled off then it will grow back when we next shed our skin (molt) as we grow.

We have either 6 or 8 eyes.

Do all spiders make webs?

No. Some of us do, but others catch their food by lying in wait, jumping, or chasing.

A **jumping spider** can leap 40 times its body length. It jumps with speed and accuracy onto its prey.

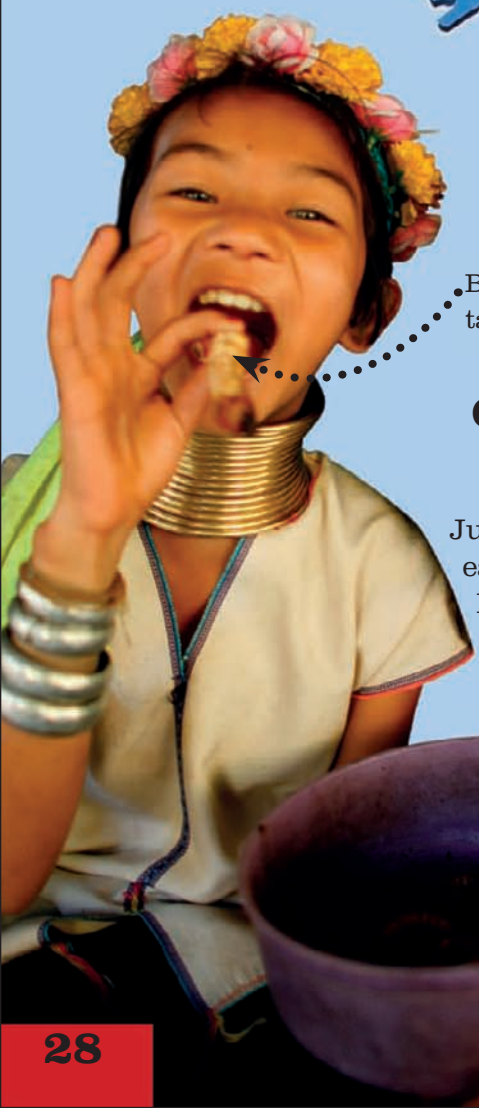
A **wolf spider** is an excellent nighttime hunter, speedily chasing its prey to catch it.

A **Goliath bird-eating spider** is a tarantula about the size of a dinner plate. It sneaks up on its prey and then pounces.

A **trapdoor spider** lives in an underground burrow and waits to pounce when its prey walks past.

Do **bugs** taste **good**?

Around the world, 80 percent of people eat bugs and enjoy them, too! Fried, roasted, or crushed, many insects are healthy to eat—from thick, juicy caterpillars to crunchy beetles.



Bugs make tasty snacks.

Can all bugs be eaten?

Just like other insect-eaters, people need to know which bugs are good to eat and which are harmful.

In Ecuador, **palm weevil larvae** are eaten.

In Bogotá, Colombia, people eat **roasted atta ant abdomens** instead of popcorn at the movies.

5 things to know about us...

1. There are 2,000 edible insects around the world.
2. A cricket contains lots of calcium to strengthen bones.
3. A caterpillar contains lots of protein, iron, and vitamins.
4. Termites contain no carbohydrates, but are full of protein and energy.
5. Bugs are also useful in making medicines.

In Japan, sushi is topped with **insects**.

In Thailand, insects are delicacies, such as **locusts, cicadas,** and **cockroaches**.

In Africa, **termites** are eaten with cornmeal cereal and are an ingredient in bread.

Cricket lollipops

Why do bugs bug me?

Bugs live in your home because it's warm and there's a plentiful supply of food. Some even feed on you.

Fruit flies like to eat rotting fruit.

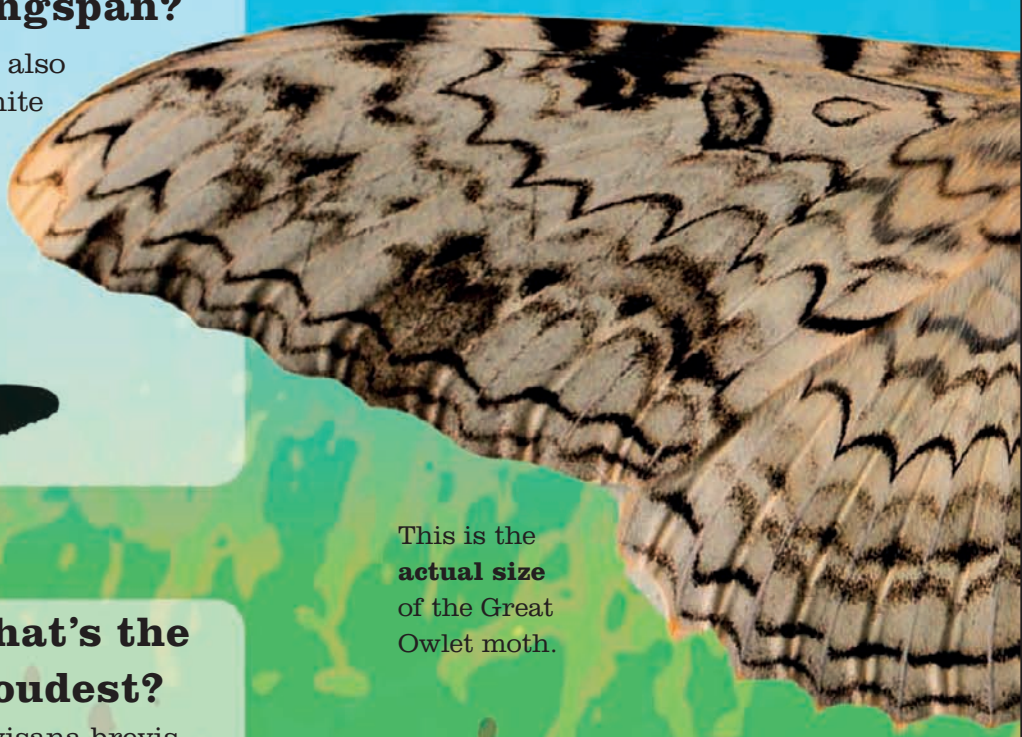
Mosquitoes are the most dangerous bug to humans. They can pass on the deadly disease malaria through their bite.

Bloodsucking **head lice** cling to human hair and snack on blood by biting through skin.

Who are the **record holders?**

Which has the largest wingspan?

The Great Owlet, also known as the White Witch moth; it is found in tropical America and has a wingspan of 12 in (31 cm).



This is the **actual size** of the Great Owlet moth.

What's the loudest?

Brevisana brevis makes a mating sound of 106 decibels. This is louder than the noise made by a jackhammer breaking concrete.

Which runs the fastest?

Tiger beetles in Australia can run 170 body lengths a second. That is the equivalent of about 217 mph (350kph) for humans.

Which is the longest?

A type of stick insect in Malaysia and Indonesia can grow to nearly 2 ft (55 cm) long.

Which flaps the fastest?

A midge fly flaps its wings 1,046 beats a second.

Which is the heaviest?

A pregnant giant weta found in New Zealand holds the record for being the world's heaviest insect. In Maori, our name means "god of ugly things."

Which is the strongest?

The male horned dung beetle is able to pull a ball of dung 1,141 times its body weight. That is equal to a person dragging six full double-decker buses.

Glossary

Abdomen The bottom part of an insect's body.

Colony A group of the same type of animal, living together.

Compound eye A bug's eye that is made up of many tiny eyes.

Exoskeleton A skeleton, or hard shell, on the outside of an animal that protects and supports its soft body parts.

Head The top part of an insect's body.

Larvae The newly-hatched wingless young that will become an insect.

Mandibles A pair of mouthparts, or jaws, that an insect uses to bite, cut, or carry food.

Mate A pair of animals that have young together.

Molt To shed old tight skin to leave new bigger skin underneath. Bugs molt as they grow.

Nectar A sweet liquid made by flowers and eaten by some insects and birds.

Nocturnal Awake and active during the night.

Nymph A larva of an insect with undeveloped wings.

Pollen A yellow powder on the male parts of a flower.

Predator An animal that hunts and kills other animals.

Prey An animal hunted and killed for food.

Seasonal From an area that has four different seasons in a year—spring, summer, fall, and winter.

Species A type of plant or animal that shares the same features and can have young together.

Thorax The middle part of an insect's body.

Tropical From an area that is hot and humid and where it rains all year round.

Praying mantis

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Acknowledgments

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