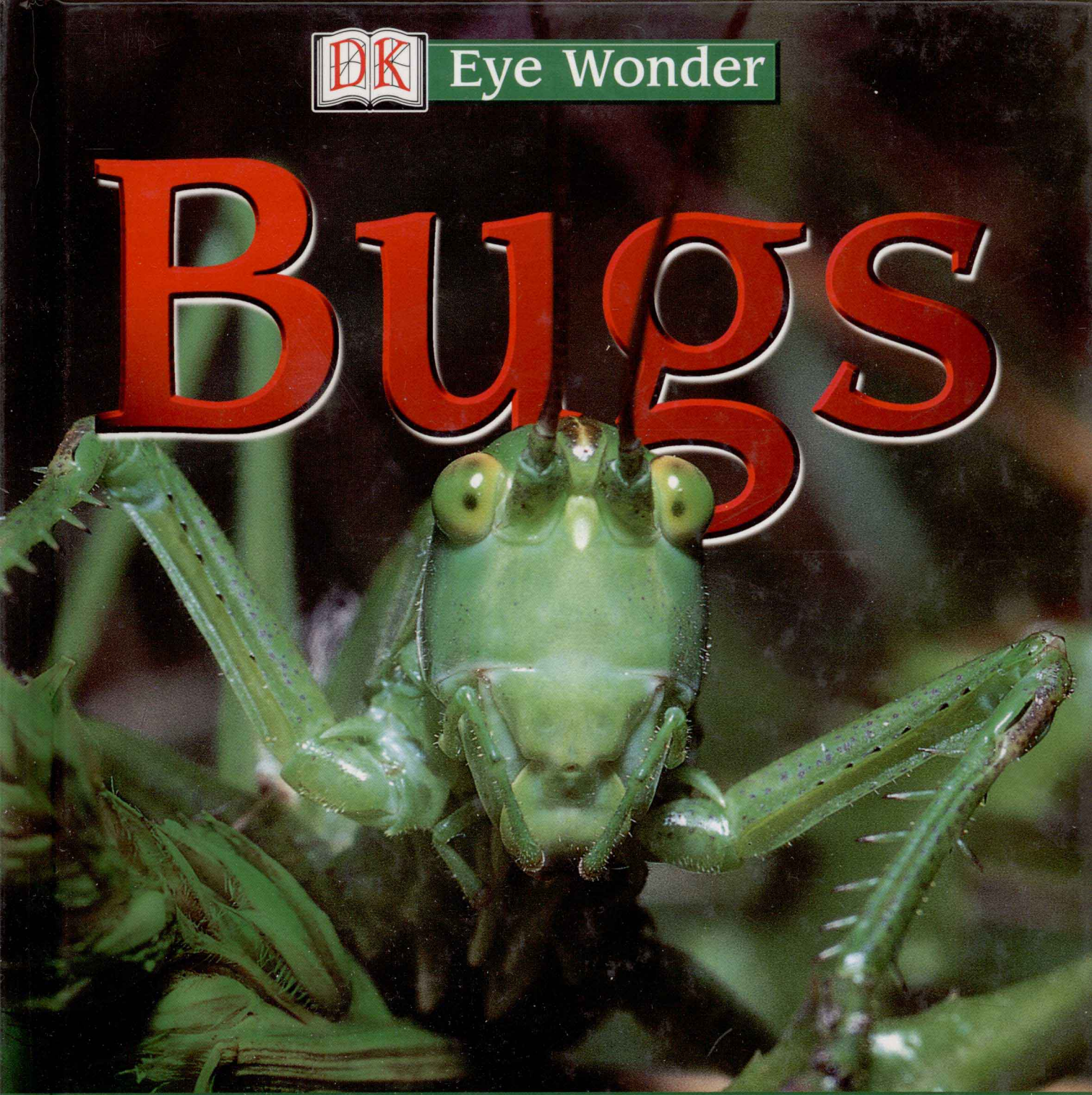
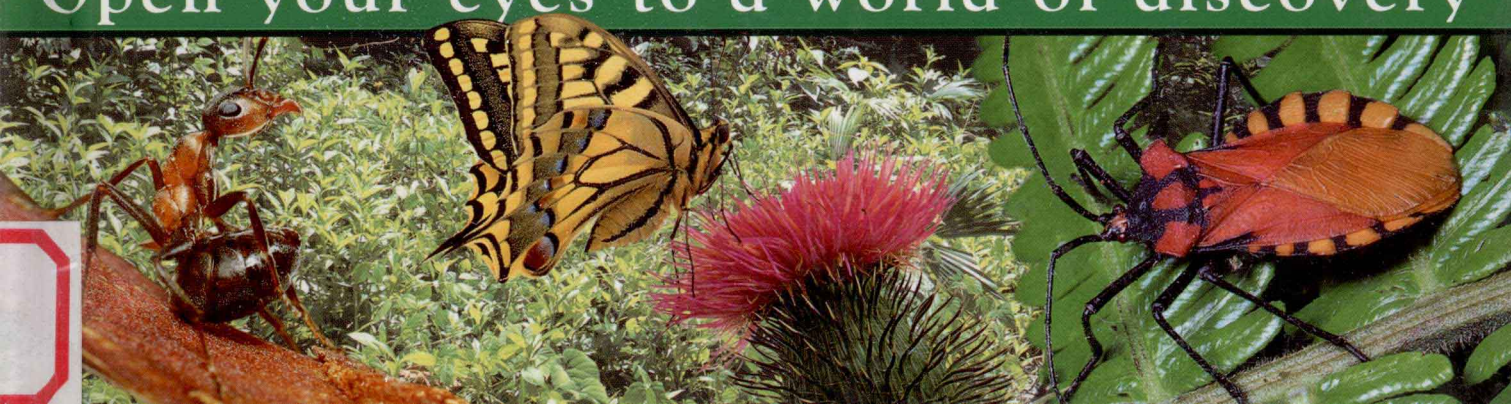
DK Eye Wonder

Bugs



Open your eyes to a world of discovery



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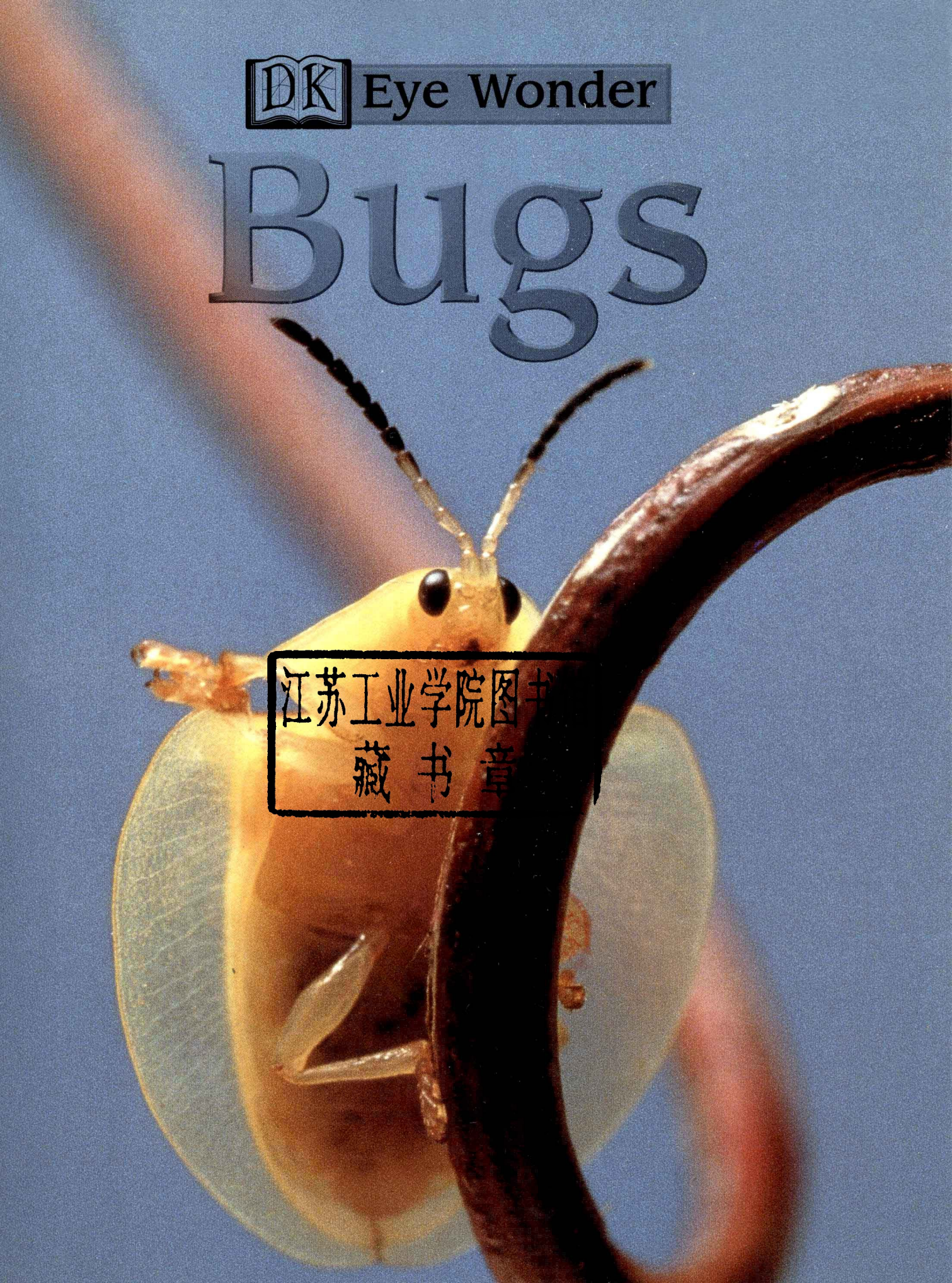

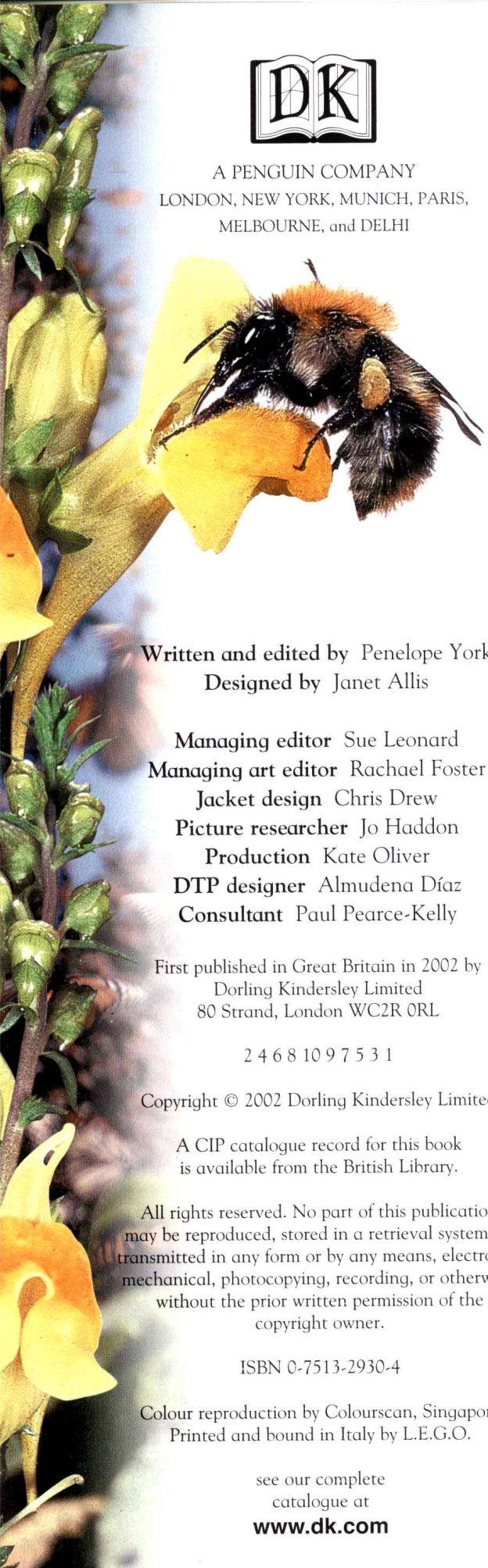

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Written and edited by Penelope York
Designed by Janet Allis

Managing editor Sue Leonard
Managing art editor Rachael Foster
Jacket design Chris Drew
Picture researcher Jo Haddon
Production Kate Oliver
DTP designer Almudena Díaz
Consultant Paul Pearce-Kelly

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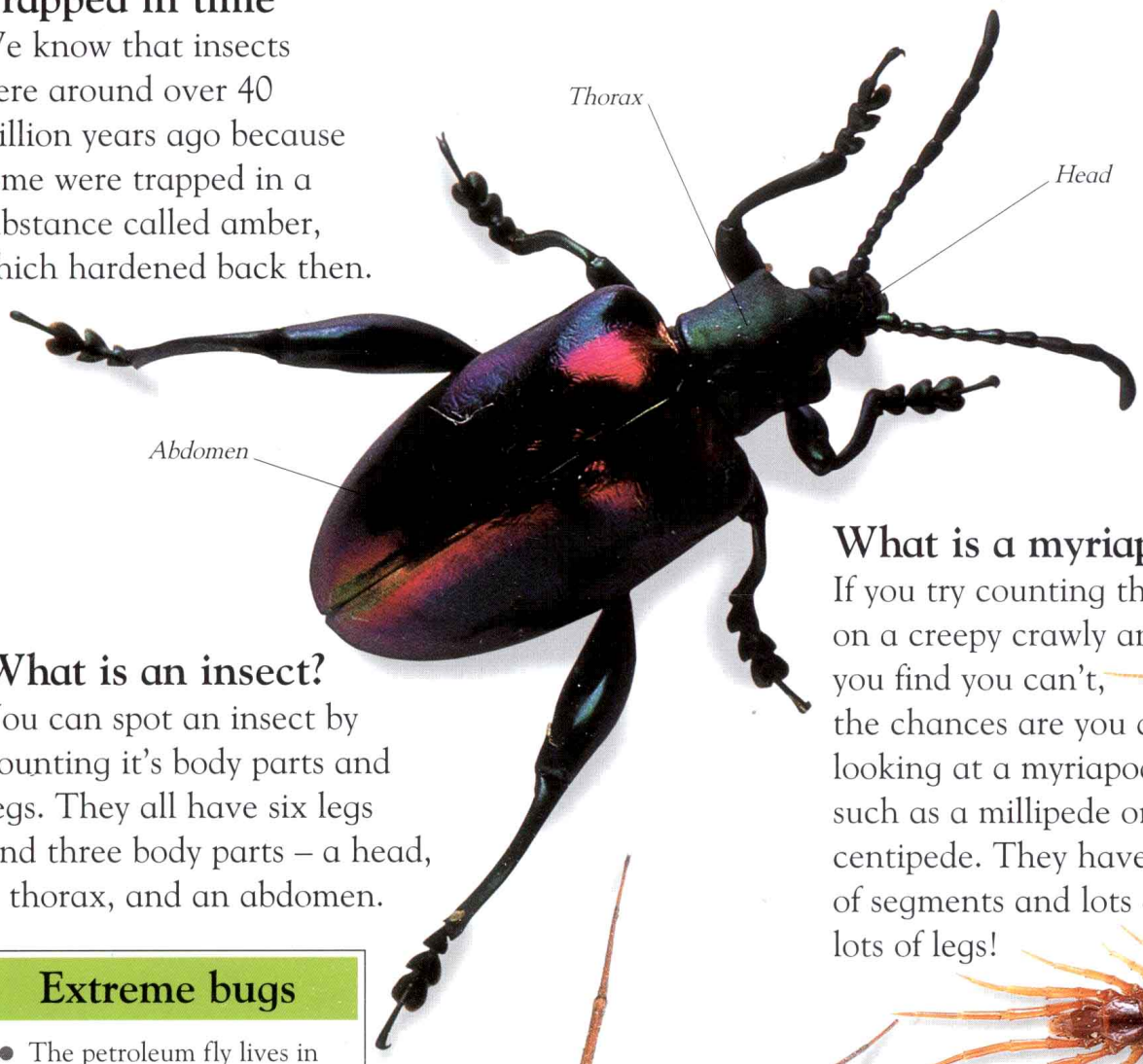
Contents

Bugs, bugs, bugs

Most of the bugs that you know are called arthropods, which means they have their skeleton on the outside of their bodies. There are over a million known species of arthropods on the Earth. Here are a few types to spot.

Trapped in time

We know that insects were around over 40 million years ago because some were trapped in a substance called amber, which hardened back then.

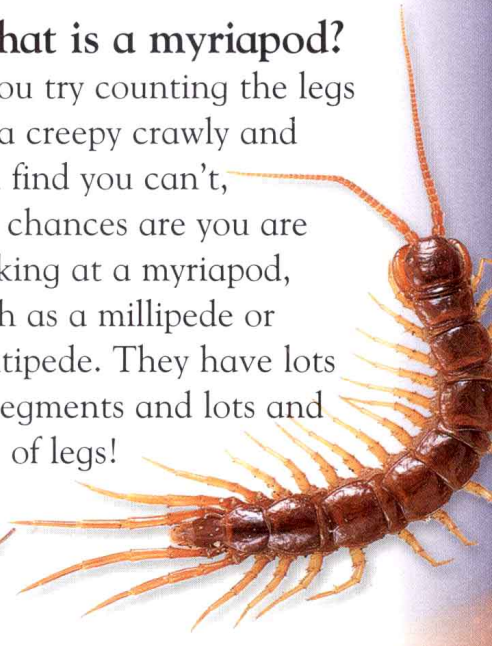


What is an insect?

You can spot an insect by counting it's body parts and legs. They all have six legs and three body parts – a head, a thorax, and an abdomen.

What is a myriapod?

If you try counting the legs on a creepy crawly and you find you can't, the chances are you are looking at a myriapod, such as a millipede or centipede. They have lots of segments and lots and lots of legs!



Extreme bugs

- The petroleum fly lives in puddles of crude oil and feeds on insects that get stuck in it.
- Some midges can be put into boiling water and survive.
- Snow fleas can survive in sub-zero temperatures. If you pick one up it will die in the heat of your hand.

What is an arachnid?

All arachnids have eight legs. Watch out however, other than spiders, a lot of arachnids look like insects so count carefully.

What is a true bug?

These days we tend to call all creepy crawlies "bugs" – as we have in this book. But actually, a true bug is a type of insect that has a long mouthpart that it pierces its food with, then uses it to suck up the inside of the food.

Leapers and creepers

Some bugs are speedy, some are slow. Some bugs run and others jump. They all have their reasons why they do what they do and a lot depends on where they live – different obstacles demand different types of movement.

High jump
The flea is the most powerful jumper of all insects. It has a little spring in its legs to enable it to jump very high. It can jump 600 times an hour for three days, when it is looking for a host.

Legging it

The green tiger beetle is the fastest insect on earth. It runs at 1 m (3 1/2 ft) per second. It uses its speed to catch other insects and to run quickly across the hot desert sand.

Leaps and bounds

If a grasshopper or cricket is disturbed and it needs to get away, it uses its massively developed, muscle-packed legs to leap high into the air.

A grasshopper can leap 20 times the length of its body

Looping upwards

Some caterpillars loop their way up branches. They attach their back leg suckers to the branch and stretch their bodies forwards, then loop up their back, pulling the suckers upwards. They can walk up some pretty steep twigs.

Keeping in step

A millipede has up to 180 pairs of legs! They all help it force its way through the soil. It has to be very co-ordinated when it walks otherwise its legs bump into each other. It moves them in waves.

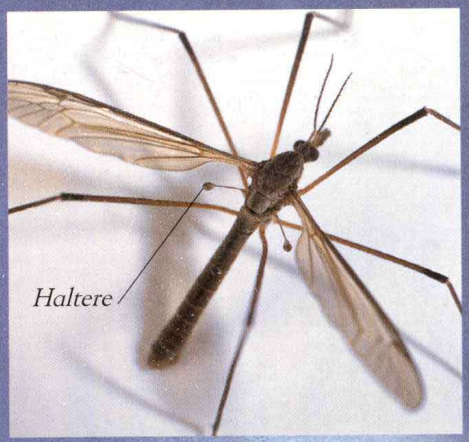
Up, up, and away

Creepy crawlies are the ultimate explorers, they can get anywhere and everywhere. This is because many of them have wings. Flying insects have two pairs of wings but use them in different ways. All, however, are experts in aerobatics.

Lift off
The lacewing flutters gracefully using all four wings. It can control each pair separately, which means it can turn easily and even fly backwards.

Flutter by
The butterfly flaps all its wings at the same time at about five beats per second. It's wings are delicate and it has to be careful that it doesn't damage them.

Gone in a flash!
The little hoverfly can beat its wings up to 1,000 times per second. Sometimes it flies too quickly to be seen. It hovers in the air then darts away so quickly that it seems to disappear.



Cruise control

The second set of wings on flies have turned into halteres that look like drumsticks. The fly uses these for balance and co-ordination and they help the fly to change direction in a split second.

A hard case

The beetle only uses one pair of wings to fly with. Their front wings have become hard cases that protect the flying wings when they are folded away.

THE INCREDIBLE JOURNEY

When the winter cold sets in, in the Rocky Mountains, North America, the monarch butterfly migrates up to 3,000 miles to the finer weather in California and Mexico. This insect covers 80 miles a day and travels in huge groups. They always settle on the same tree as the year before, at the end of their journey, and no-one knows how they find their way.

Making sense

Imagine being able to taste with your feet, or having eyes as big as your head. Sounds odd? Well bugs have some pretty strange ways to find their way around and sniff each other out.

Feeling the way

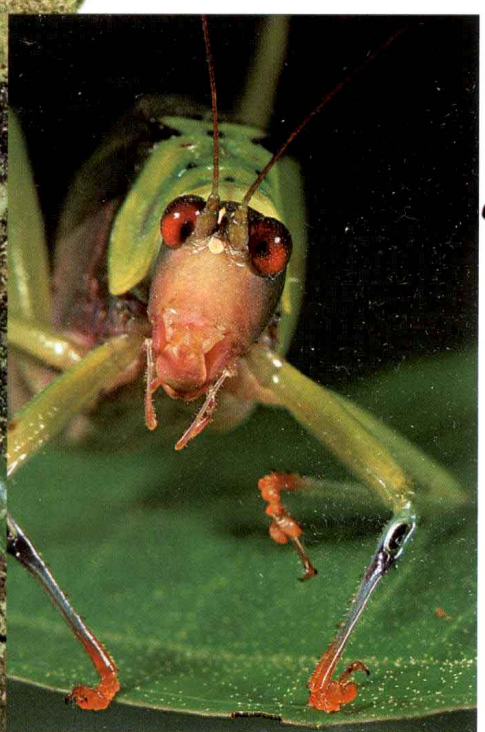
Some insects, such as this cave cricket, live in dark places where there is little light. Because of this their eyesight is not good. Instead they use long feelers, or "antennae", which stop them from bumping into walls all the time in the pitch black.

Powerful perfume

Antennae are also used to smell. This male moth has two hairy antennae that can smell a female moth from 11 km (6 1/2 miles) away!

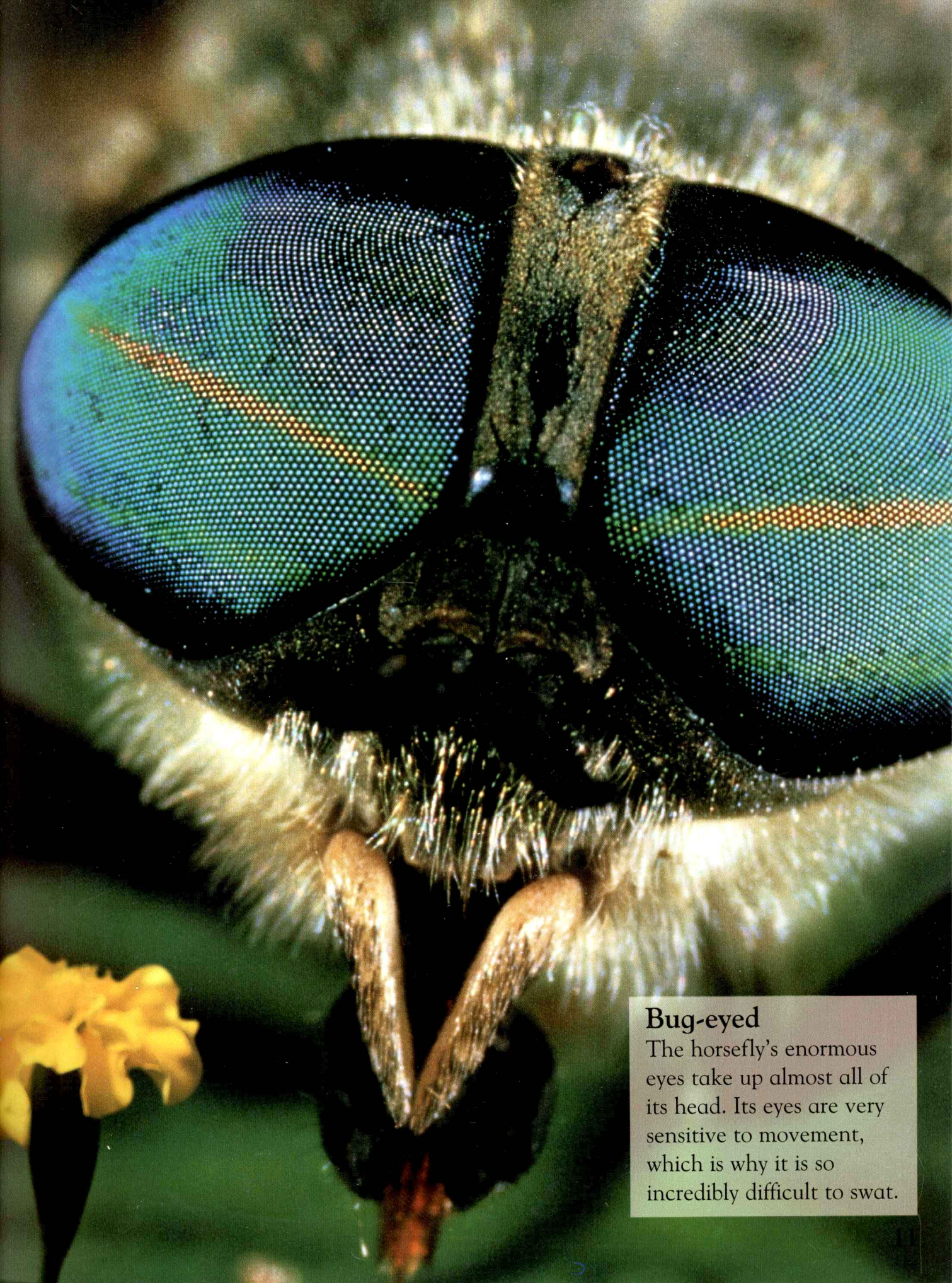
A matter of taste

This butterfly tastes with its feet. When it lands on a particularly tasty flower, its long mouth-parts, or "proboscis", unfold automatically and allow it to drink.



Bending your ear

Bug's ears can be found on their wings, bellies, or heads and believe it or not, this katydid (bush cricket) listens with its knees! The slits on the legs are ears that can pick up other cricket's calls.



Bug-eyed
The horsefly's enormous eyes take up almost all of its head. Its eyes are very sensitive to movement, which is why it is so incredibly difficult to swat.

Meat eaters

There are so many bugs around, you would have thought it would be easy for predators to catch and eat them. Wrong, hunters have to invent cunning ways to get their dinner, and have weird ways to eat it too.

The waiting game

A praying mantis hides camouflaged among leaves where it sits still for a very long time with its forelegs ready to strike. When an insect passes, it pounces at lightning speed and chews it up in its jaws.

Wrap it up

The spider waits patiently in its web for an insect to fly into it. It then wraps the bug up in a jacket of silk to stop it from moving, injects it with venom, and then sucks out its insides.

Dragonflies need a lot of wing skill to catch a bug in flight.

It takes the orb web spider about an hour to spin a web

Little suckers

The assassin bug is a typical piercer and sucker. It catches its prey then pierces the body, injecting saliva to turn the inside of the prey into liquid. Then the assassin sucks it dry.

Fast food

Hawker dragonflies are so nimble and speedy that they can catch insects in mid-air. They grab a passing insect with their powerful jaws and grip it with their long legs.

The trapdoor spider spends most of its life waiting for its next meal.

Knock knock!

The trapdoor spider makes a hole for itself underground and weaves a trapdoor of soil and silk. When an unsuspecting insect wanders over the door the spider is out like a shot to snatch it and gobble it up.

Cunning carnivores

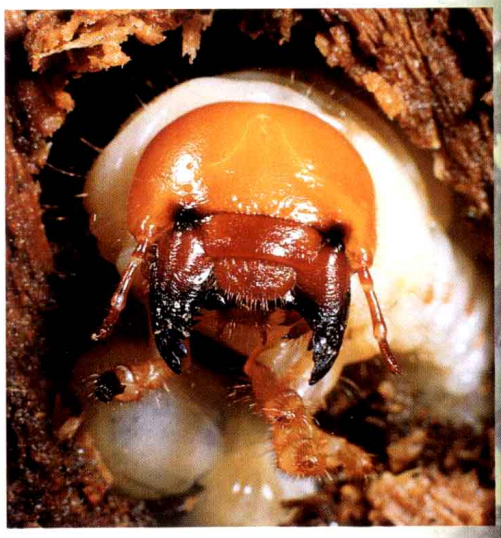
- The Portia spider from Australia taps on the webs of other spiders pretending to be a fly. When the spider arrives to eat the fly, Portia eats it up!
- The ant lion larvae buries itself in the ground with its mouth facing the sky. When an ant runs over it, it falls straight into its jaws and is eaten swiftly.

Bug veggies

Most bugs in the world are vegetarians and munch like mad during their short lives. Some are piercers and suckers and others are biters and chewers, but however they do it, they do it a lot.

Army of eaters

Caterpillars are big eaters. They are biters and chewers and have to nibble constantly in order to grow into adults. They have powerful jaws and strong teeth that can chew through tough leaves.



Heavy duty chewing

You may find wood tricky to eat, but this stag beetle larva doesn't. It chews and chews rotten wood until it is fat enough to turn into a beetle.

Liquid lunch

When the caterpillar grows into a butterfly it turns into a piercer and sucker. It feeds on liquids, which it sucks up using its long, hollow tongue (the proboscis), like a straw.

When butterflies and moths are not hungry, they roll their tongues into tight, curly coils.

Nuts about nuts

The acorn weevil only eats acorns and is an unusual eater. It pierces the hard nut with its long snout, and chomps away inside with the jaws it has at the end of it. It then sucks the food up the snout into its body.

This weevil also lays its eggs in acorns

Now you see me...

Lurking in the undergrowth there are many bugs that look like bugs, and many bugs that don't. Cunning camouflages help some bugs to catch a meal and others to avoid becoming one.

Spiky survivors

Birds are not going to risk landing on a prickly branch, so what better a disguise than to look like a spiky thorn – as long as these treehopper bugs keep still.

Flower power

If you look carefully at these beautiful flowers, you will be able to work out the shape of an orchid mantis. It can change colour from white to pink to blend in with the particular flower that it chooses to sit on.

Lost among leaves

As long as this leaf mimic katydid sticks to the right leaves, it definitely won't be spotted. It even has veins on it's back just like the real leaves have.