

PHAROAH ANT



# LITTLE EXPLORERS

CENTIPEDE



LIFT THE FLAPS  
TO EXPLORE THE  
WORLD OF BUGS  
INSIDE AND OUT!

# BUGS

MOSQUITO



CATERPILLAR



WASP



SUNSET MOTH



DRAGONFLY



SNAIL

MILLIPEDE



BEETLE



GOLIATH SPIDER



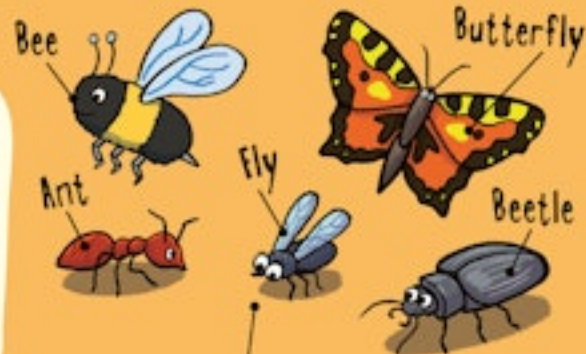
MORE THAN  
30 FLAPS!



Spider

## BRILLIANT BUGS

Bugs have been crawling, creeping, wriggling and buzzing on Earth for over 400 million years! They come in an amazing variety of colours, shapes and sizes, and no matter where you are, you won't have to look too far before you find one.



Bee

Ant

Fly

Butterfly

Beetle

## What is an insect?

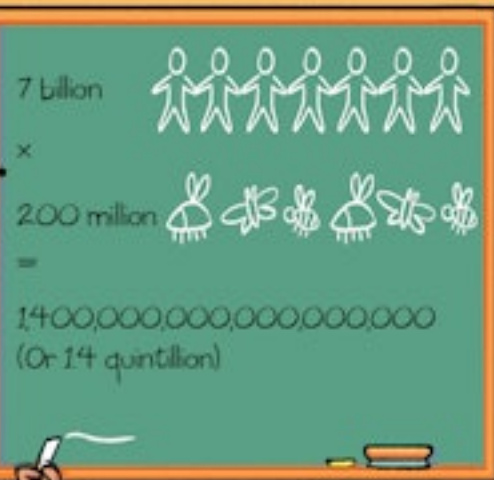
Insects are the most common type of bug. They have three body parts, three pairs of legs and two antennae (or feelers). Most have wings. Ants, flies, moths and wasps are all insects.



## Counting Creepy-Crawlies

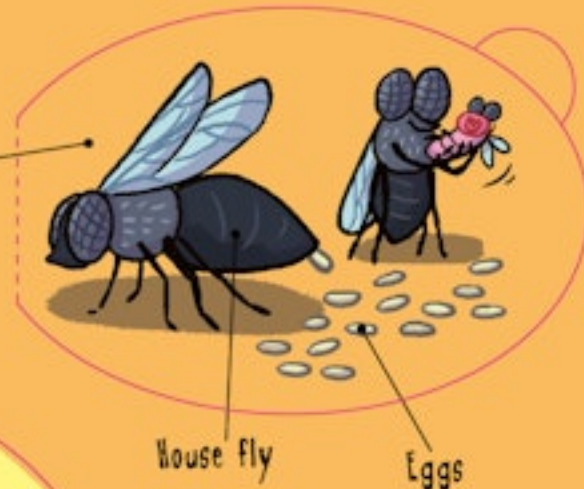
There are so many bugs in the world it is impossible to count them all. Some scientists believe there could be 200 million insects for every single person on the planet!

Scientist



## Big families

There are more insects and bugs on Earth than any other kind of animal. Female bugs can lay hundreds or even thousands of eggs at a time.



House fly

Eggs



Dragonfly

Cockroach

## Ancient insects

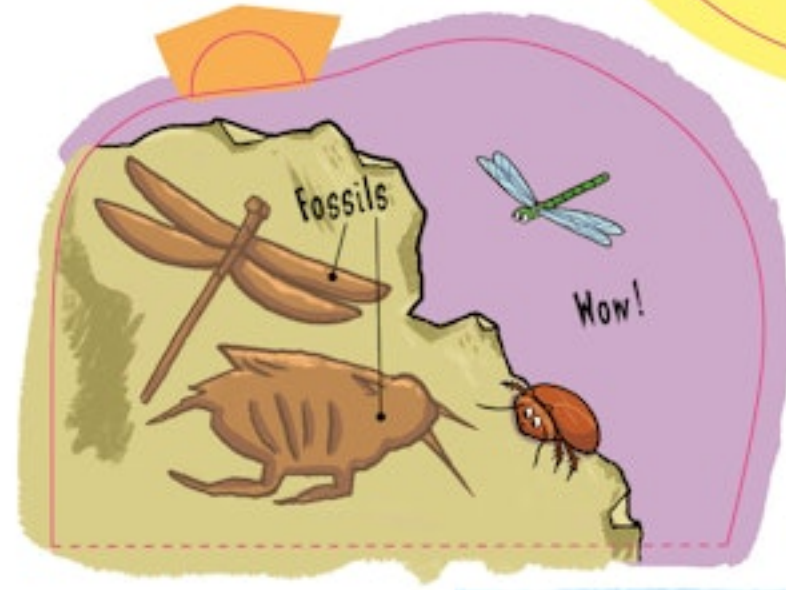
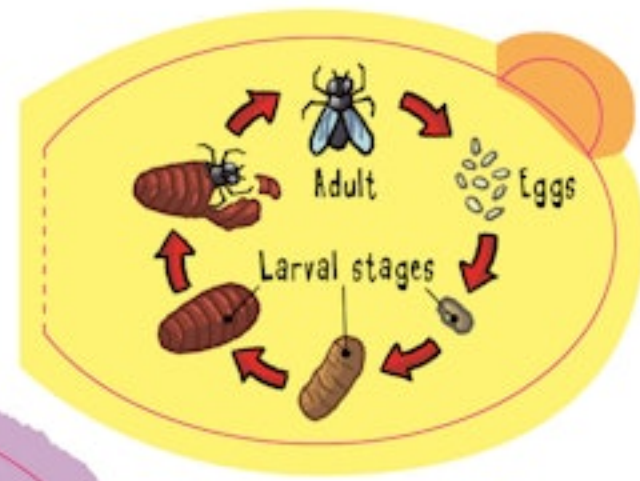
Fossils show that millions of years ago huge dragonflies buzzed overhead and massive cockroaches crawled on the land.

## New discoveries

Scientists know about 900,000 different kinds of insect, but every year they discover thousands more. They think there may be at least 4 million left to find!







The eggs hatch out and the young, called larvae, feed and grow before turning into adults. It takes just two weeks for a housefly to go from an egg to a fully-grown fly.

Today's insects are much smaller, but many look very similar to their prehistoric cousins. A prehistoric dragonfly was the same size as a modern day seagull!

Insect names often describe what the insect does, or where it is from. This tiny beetle is named after the character Paddington Bear, because it comes from Peru!



## BIGGEST BUGS

Big bugs are pretty frightening with their fearsome fangs, wide wings, long legs and super stings. Luckily, most of them are not harmful to humans.

### Giant weta

This huge cricket is only found on one small island off New Zealand. When fully grown it can weigh as much as a mouse!



A stick?



### Goliath birdeating spider

Although it is big enough to eat a bird, this huge, hairy hunter from South America prefers insects.



### African giant snail

The world's biggest kind of snail hides in its shell during the day and comes out at night to feast on leafy food.

### Atlas moth

With wings that measure 27 centimetres across, this is the biggest moth in the world.



### Emperor scorpion

The hairs on this scary scorpion's pincers help it find prey by sensing tiny movements in the air and on the ground.

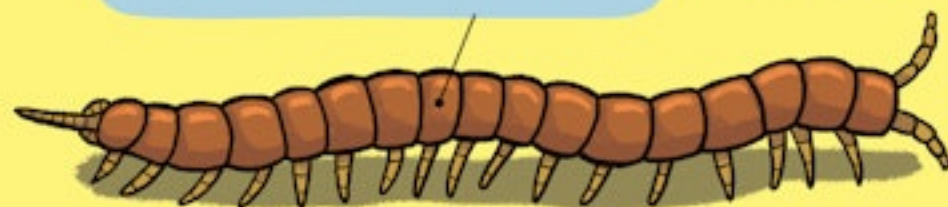
### Hercules beetle

The mighty male Hercules beetle has horns that look like a pair of pincers.

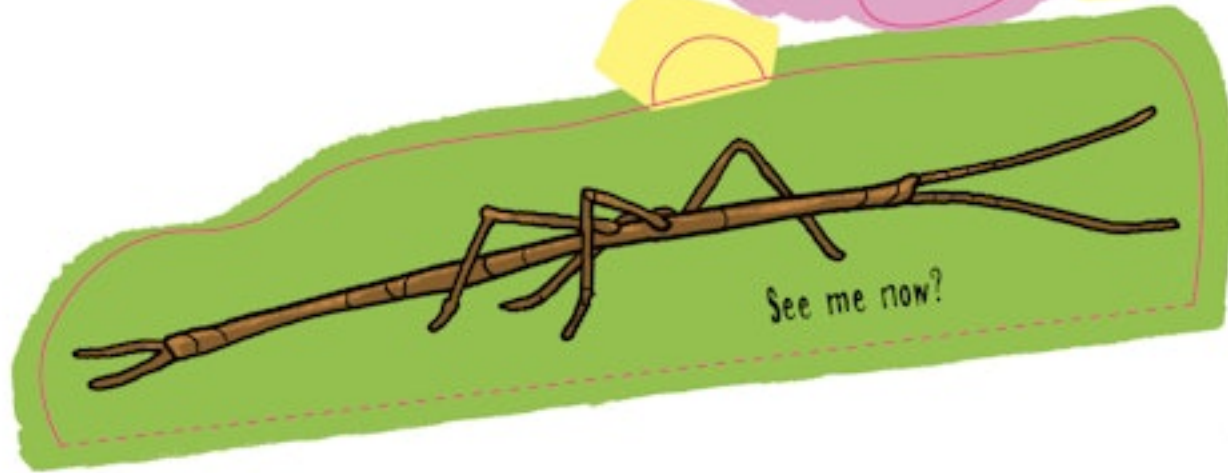


### Amazonian giant Centipede

Its size means this big bug feeds on anything it can overpower, including lizards, frogs, mice and bats.







This gentle giant's wing tips look like the head of a cobra. When threatened the moth drops to the floor and flaps its wings to imitate the scary snake.

Using its horns, the beetle picks up other males and throws them to the ground.

This giant bug sheds its hard outer skin 11 times before it is fully-grown.

Making itself hard to spot among the trees of the tropical rainforest, the giant stick insect even sways back and forth to look like a twig moving in the wind.

The spider lays a thread of silk across the entrance to its burrow. When it feels something brush against the silk, it attacks with its inch-long fangs.



## SMALLEST BUGS

Being small has its advantages. These tiny critters can fly or feed without being seen, and can fit in the smallest hiding holes.



### Fairyfly

Just like a fairy, the fairyfly is hard to spot, but this small, hairy-winged wasp can survive almost anywhere, from rainforests to deserts.



### Featherwing beetle

Half a millimetre long this tiny beetle can be found in old logs and rotting leaves, feeding on mould and fungi.

### Pharaoh ant

These tiny pests like to make their nests in the nooks and crannies of buildings such as hospitals, offices, factories and homes.



### Fruit fly

Often found buzzing near fruit bowls and bins, this little, red-eyed fly loves to feed on ripe and rotting fruit and vegetables.



### Western pygmy blue butterfly

It's easy to miss the world's smallest butterfly. Its spread wings measure just 12 millimetres from tip to tip.

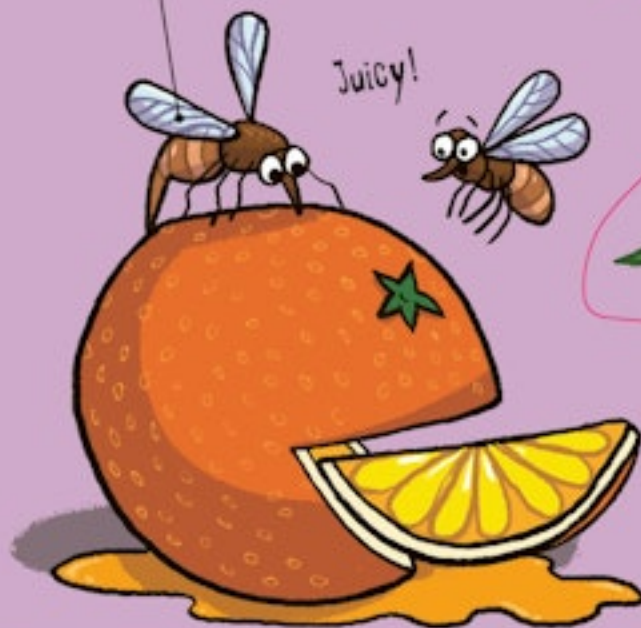


### Flea

Fleas like to drink the blood of cats, dogs and humans. They use their long back legs to leap onto their victim.



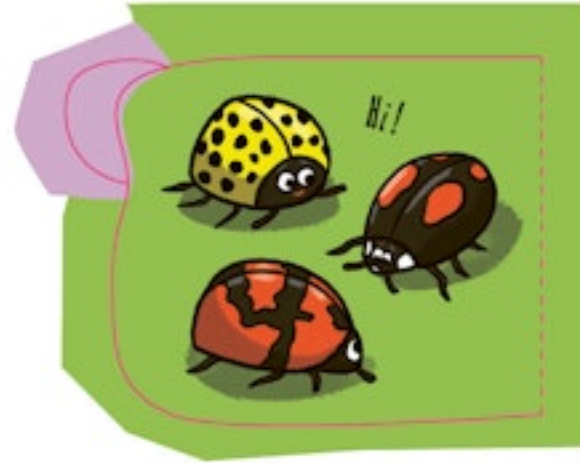
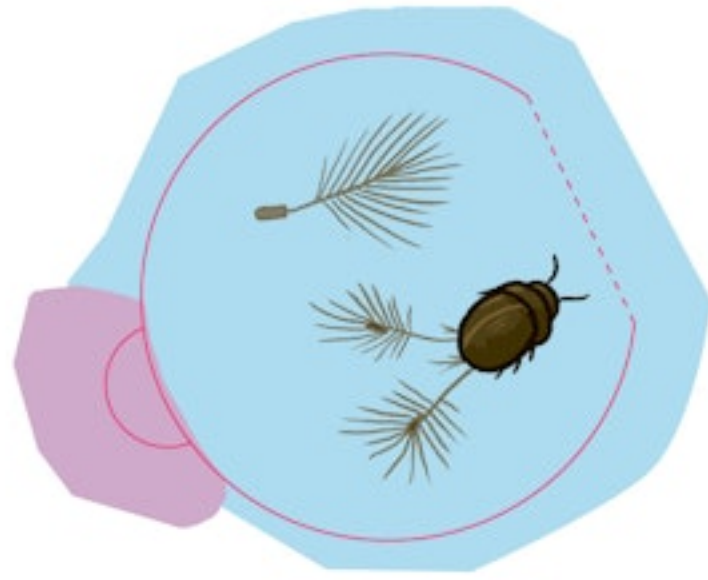
### Ladybird




### Blacklegged tick

Tiny blood-suckers that wait on the tips of leaves, ticks crawl onto the skin or fur of dogs, deer or humans to feed.



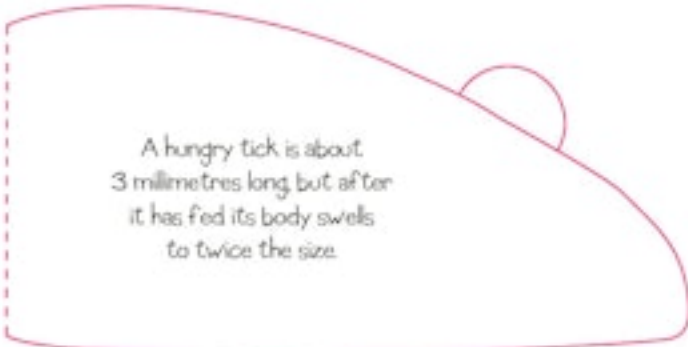




As well as feasting on our food,  
they can munch their way through  
fabric and rubber!



This beetle's feathery  
wings allow it to float  
in the wind, a bit like  
a dandelion seed.



A hungry tick is about  
3 millimetres long, but after  
it has fed its body swells  
to twice the size.



These bright little beetles  
are found all over the  
world. They come in many  
patterns and colours,  
including red, yellow,  
orange, black and blue.



A flea can jump  
150 times its own  
height. That's like  
a person jumping  
over a skyscraper!



## FLYING BUGS

In the spring and summer, the air is filled with the sound of buzzing bugs, by day and by night. They fly to find food or a mate and to escape from enemies.



Mosquito

If you hear the whining hum of tiny buzzing wings, watch out! Female mosquitoes suck blood and leave an itchy bite.

Locust



Female firefly



Moth

Housefly

A housefly has super-fast reactions. It can swerve and change direction in the blink of an eye.



Firefly

At night the bodies of these winged beetles glow with a soft light. The male flashes his light to impress a female. If she likes him, she flashes back.

Dragonfly

These insect acrobats can move each of their four wings separately. This allows them to zoom forwards and backwards, up and down, or hover.



Bumblebee

A bumblebee needs to flap its wings 200 times a second to lift its body into the air.

Bee or wasp?



Butterfly

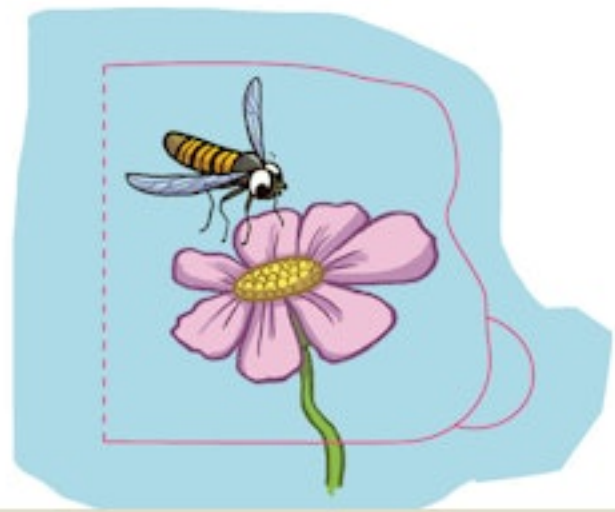
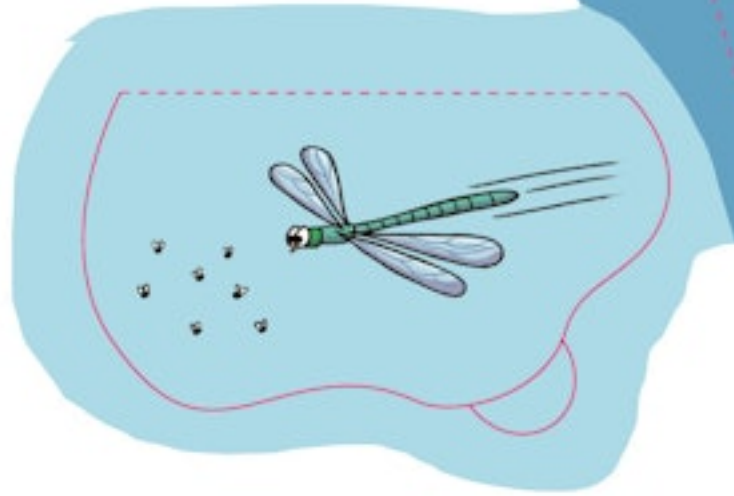
A butterfly's big wings let it move quickly and easily, making it hard for animals to guess which way it will go.



Leaf insect

This insect's leafy-looking wings are the perfect disguise. It rocks back and forth like a leaf blowing in the wind.







Every year, millions of Monarch butterflies fly 4,800 kilometres south to escape the cold winter in North America.

Dragonflies are fierce hunters. They live near water, snapping up other flying insects.

Neither. It's a harmless hoverfly. It pretends to be a stinging insect to put off hungry predators.

A moth's delicate wings are covered in tiny scales. If a moth flies into a spider's web, its scales stick to the silk. The moth can fly off, leaving just a few scales behind.

Mosquitoes are the favourite food of birds, bats, dragonflies and frogs.

## CREEPY-CRAWLY BUGS

Dig around in any garden and you will soon discover mini-beasts on the move. Some bugs wriggle along on hundreds of legs, others creep on eight, or scuttle on six. Some even slide along on no legs at all!

### Millipede

This bug has a long, wiggly body and lots of legs. It can be found in dark, wet places, like old logs, munching on rotten leaves.

### Earwig

Looking under logs, leaves and garden pots by day, earwigs come out at night to search for food.

### Spider

Many spiders make silken webs to catch flying prey. The silk is stretchy, sticky and very strong.

### Caterpillar

A caterpillar is a young moth or butterfly. When it is big enough, it builds a covering of soft threads around itself, called a cocoon.

Zzzzz

### Slug

The underneath of a slug's body is called its 'foot'. As it creeps along on its foot, it makes a slimy trail to slide upon.

### Woodlouse

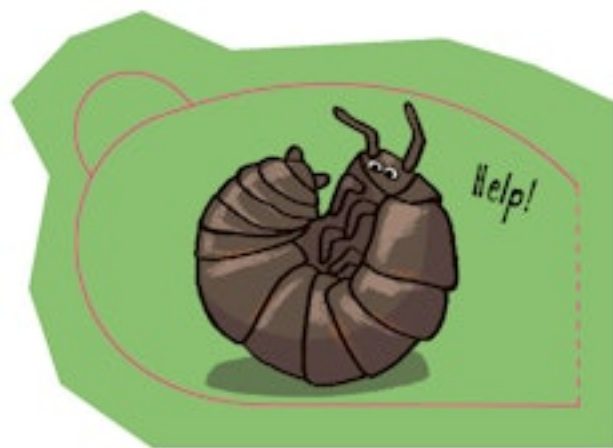
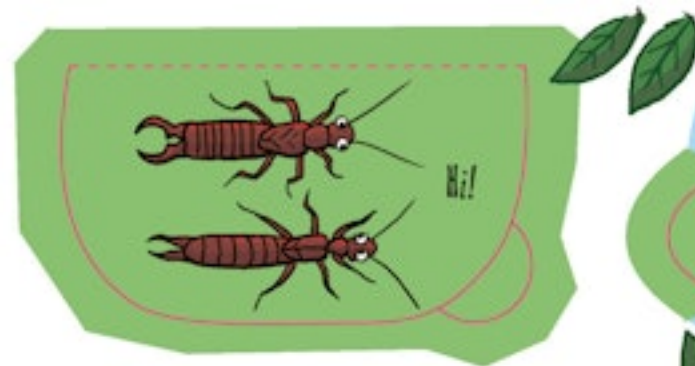
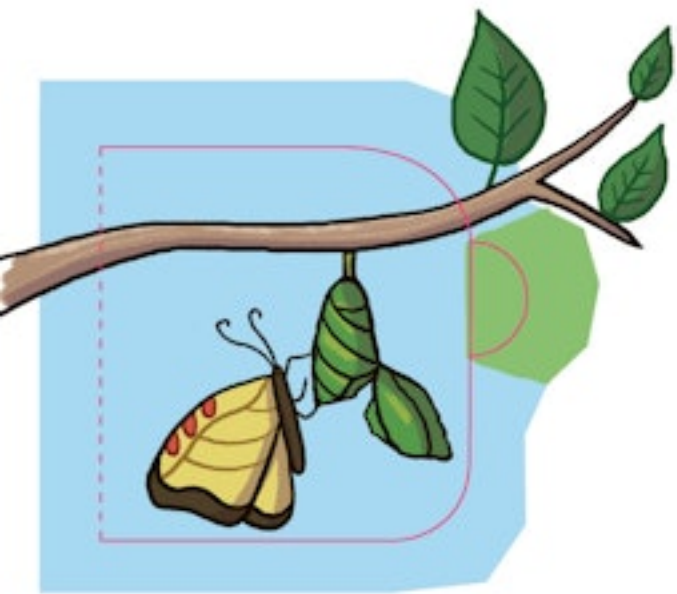
Some types of woodlouse curl up into a ball when they are scared...

### Snail

### Cockroach

This amazing survivor can go for a whole month without eating. Its long feelers seek out food and water.





Different spiders make  
different-shaped webs.  
There are spirals, tubes,  
tunnels and tangles.

The pincers at the end of its  
body fend off attackers.  
A female's pincers are straight,  
and a male's are curved.

A snail has a hard shell to  
protect its slimy body.  
When it is frightened  
it hides inside its shell.

Cockroaches are  
nature's dustbins. They  
gobble dead or rotting  
animals and plants.

...just like this! Its hard,  
outer shell protects its  
soft belly and legs.

Inside the cocoon the  
caterpillar grows six legs  
and beautiful wings, then it  
climbs out and flies away!



## BIG BUG FAMILIES

Some bugs live in a big group, called a colony. There can be millions of bugs in one colony. They share the work of building their home, finding food, looking after the young and fighting off enemies.

### Bees

Every bee in the hive has a special job to do. They work together to keep their family big and healthy. Worker bees collect sweet nectar to feed the colony.

Beehive

### Ants

An ants nest is like a factory swarming with workers. Every ant knows its job because they have a special way of talking. They send messages to each other by releasing chemicals from their bodies.

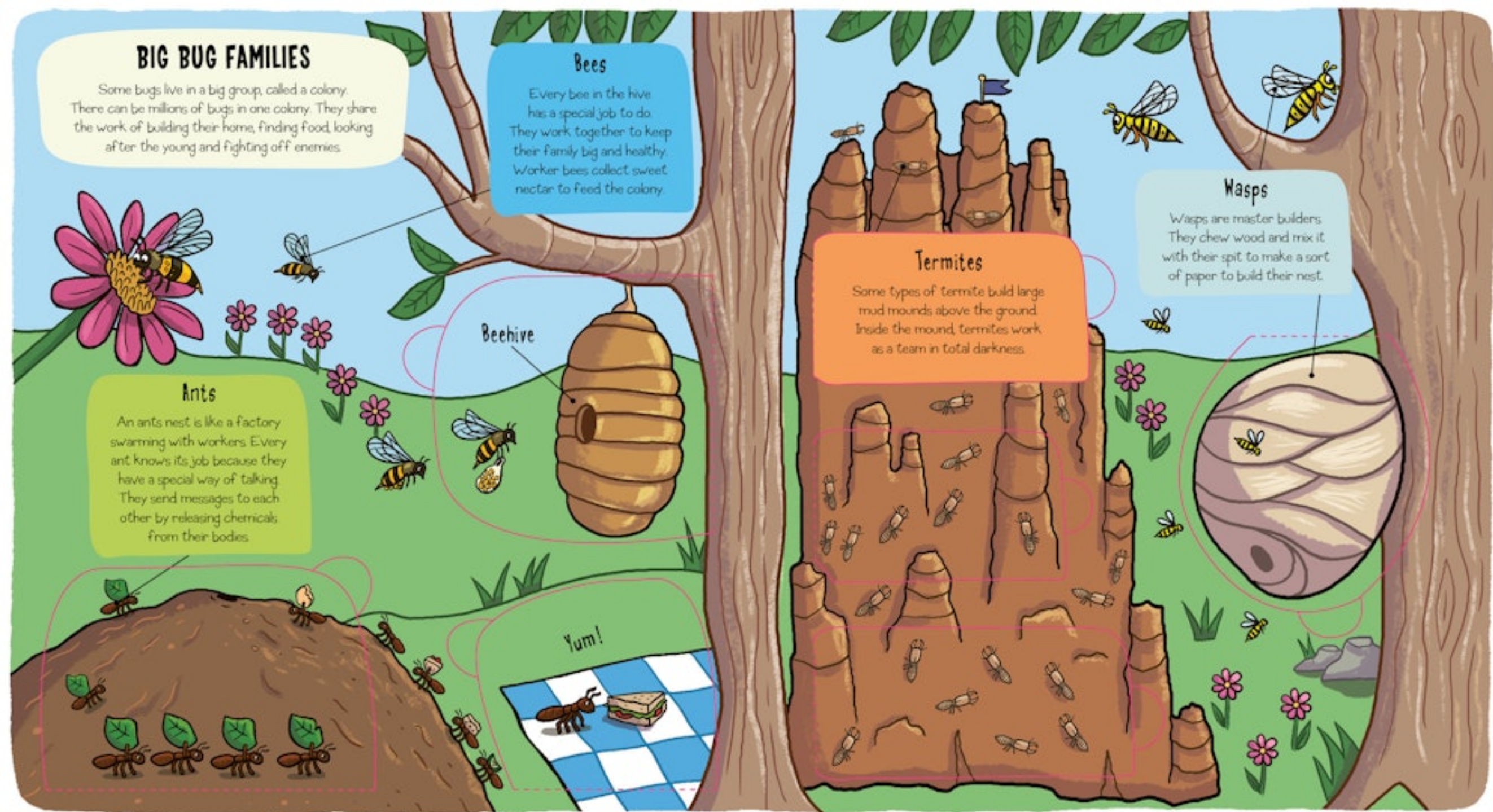
Yum!

### Termites

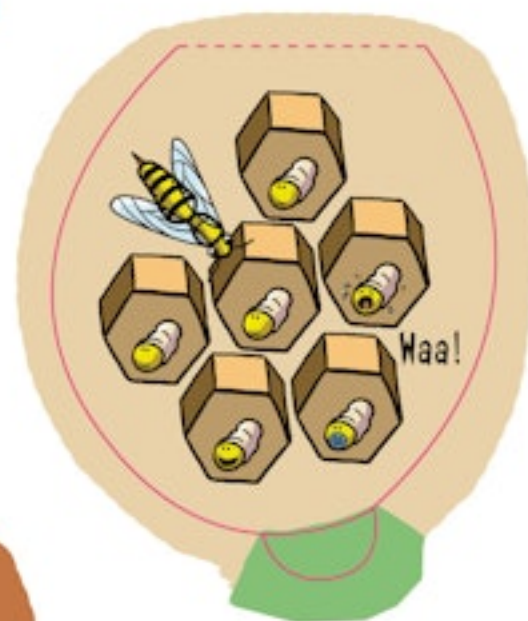
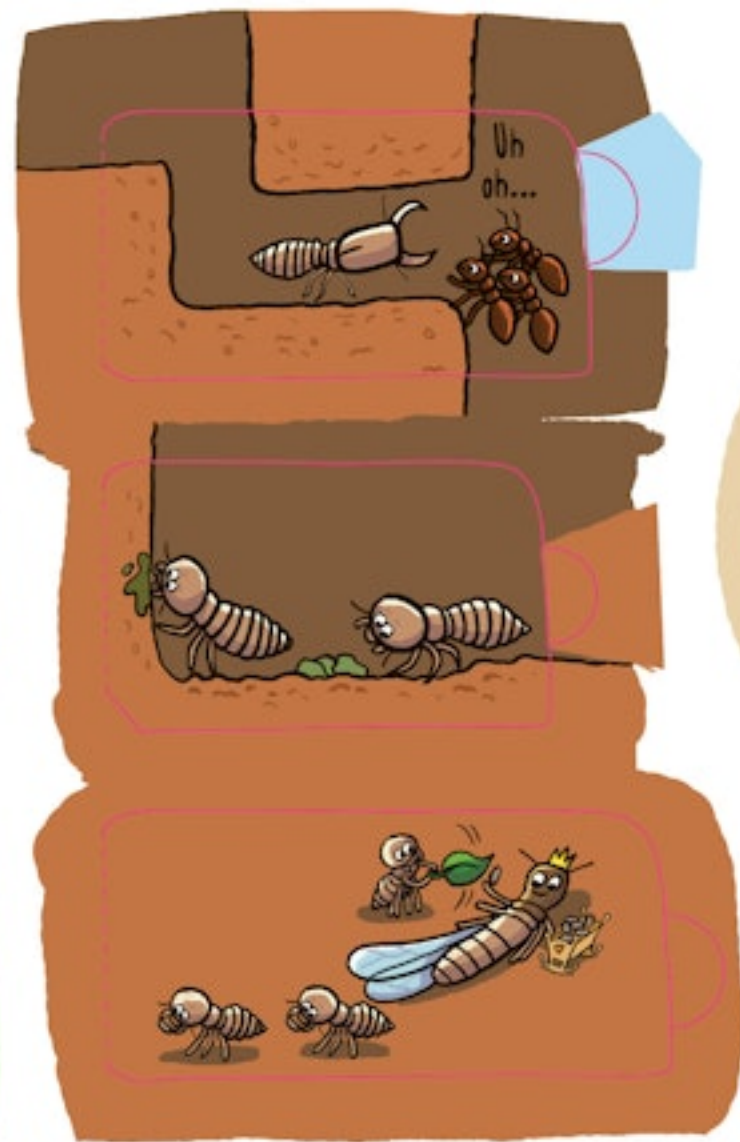
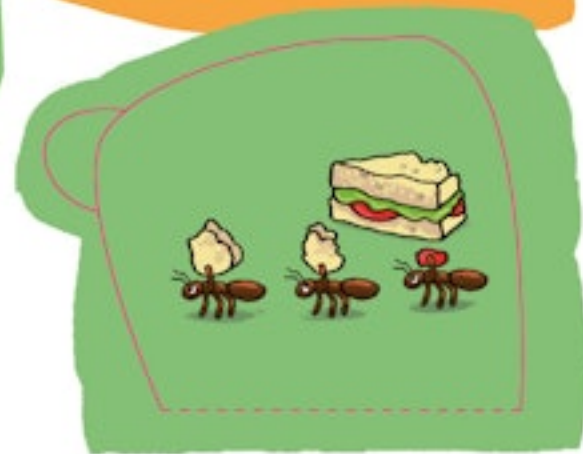
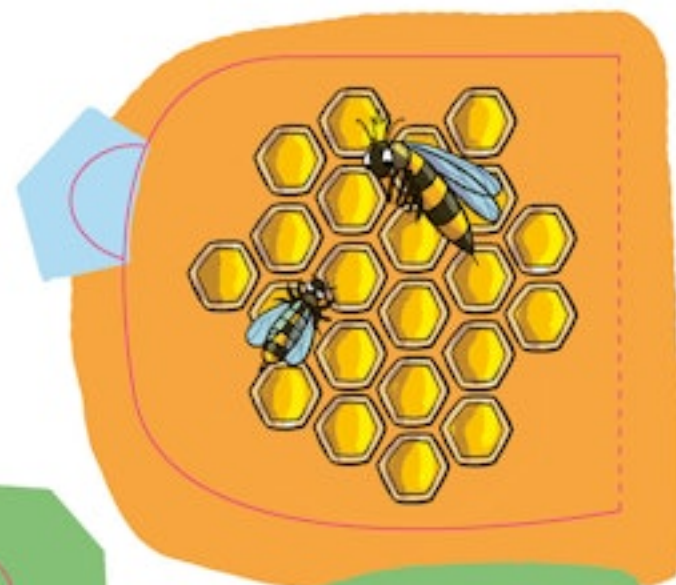
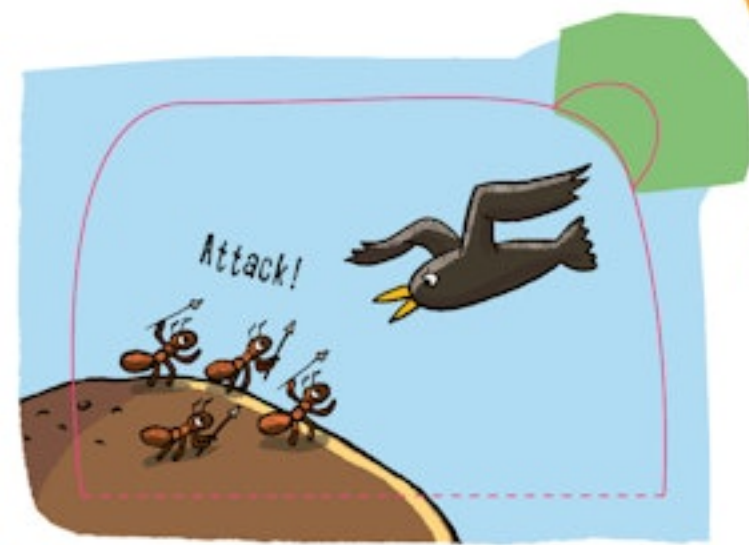
Some types of termite build large mud mounds above the ground. Inside the mound, termites work as a team in total darkness.

### Wasps

Wasps are master builders. They chew wood and mix it with their spit to make a sort of paper to build their nest.









Inside the nest is like a wasp apartment block: each floor has rows of hexagon-shaped holes. Inside each hole a young wasp, or larva, is growing.

Soldier termites defend the mound from attack with their big pincers.

Worker termites repair the walls with spit and mud. Others grow fungus that they eat.

Deep inside, the big queen lays eggs every day. They will grow up to be more workers and soldiers.

Worker bees also look after the queen bee and the eggs she lays, keep the hive clean, and defend it from attack.

Forager ants go out to gather food. They send out a chemical message to other ants: "Follow me to the food!"

Soldier ants send out a warning message to the other ants when danger is near: "Attack!"

## BEAUTIFUL BUGS

In a bug's world, beauty is not just for show. The colours and patterns have a job to do. They might send out a warning or help attract a mate. They can provide camouflage or a sneaky disguise.



**Glasswinged butterfly**

See-through wings make it hard for attackers to spot this butterfly as it sips nectar from flowers.

**Peacock spider**

This tiny Australian spider waves its brightly-coloured bottom in the air, hoping to attract a female.



Cha, cha, cha!

**Picasso bug**

The dazzling patterns on this African bug's back look like they have been painted on. They warn animals to stay away!



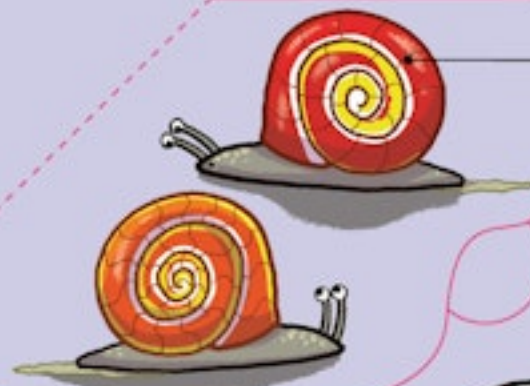
**Purple jewel beetle**

The colours change on this beetle's shell as it catches the light in the African sunshine.



**Painted snail**

These snails are found on the island of Cuba. Their shiny, stripy shells come in many shades of yellow, orange and red.



**Sunset moth**

The bright colours of this colourful moth warn predators that it is poisonous.



Looking good!

Beware of this flower!

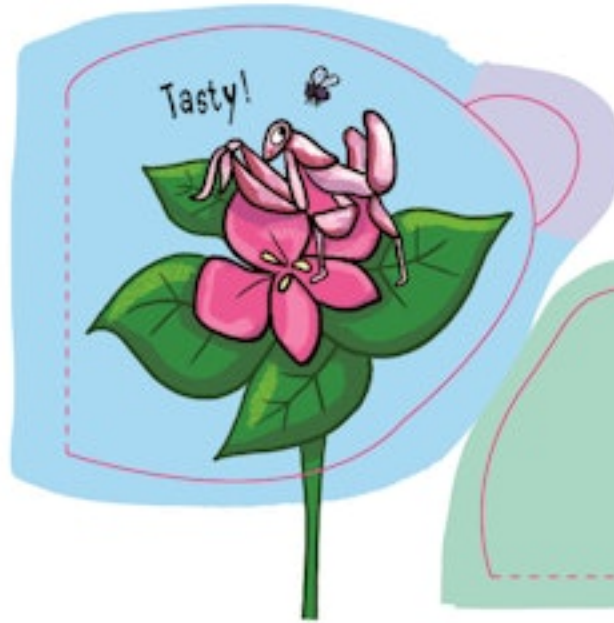


**Puss moth caterpillar**

It's hard to see this caterpillar against the green leaves that it feeds on, but it hides a secret weapon.







When scared, it raises  
its startling red-rimmed head and  
waves the long whips on  
the end of its body.

The orchid mantis  
climbs onto a flower and  
sits very still until a flying  
insect is fooled into  
coming too close – then  
it becomes lunch!

Painted snails are  
endangered. They  
are collected for their  
beautiful shells, which  
are made into jewellery.

It raises a pair of legs  
and claps them together  
as it dances to get the  
female's attention.

The Picasso bug can  
produce a horrible smell  
to put off attackers!



## USEFUL BUGS

Some bugs are helpful to humans. They keep nasty bugs at bay, help plants to grow and even provide us with food.



Bee

Bees carry pollen from flower to flower as they feed. This allows the plants to form seeds, which grow into new plants.



Earthworm

Earthworms gobble rotting roots and leaves. This comes out the other end of their bodies as rich soil, perfect for plants to grow in.



Silkworm

A silkworm is a caterpillar. Before it turns into a moth, it spins a cocoon of pure silk threads around itself.



Lacewing

Lacewings and their young feast on pests, like leaf-gobbling caterpillars and sap-sucking greenflies.

## EDIBLE BUGS

Feast your eyes on creepy-crawly food. Bugs and insects are eaten in many parts of the world because they are cheap, healthy and delicious!



Mealworms

A meal of dry-roasted mealworms tastes a bit like shrimp. Mealworms are the larvae, or young, of the mealworm beetle.



Cricket

Eaten fried, boiled and roasted, these crunchy critters are considered a tasty treat in Mexico, Thailand and Cambodia.



Scorpion

Deep-fried scorpions on skewers are often sold at markets in China and Thailand. The sting in the tail is harmless when cooked.



Leafcutter ants

In Mexico, these ants are toasted and served up at cinemas instead of popcorn.





People use the silk threads and  
weave them into a  
beautiful soft cloth.

Honeybees make honey  
to feed on over the winter.  
The busy bees make more  
than they need, so there is plenty  
for beekeepers to collect.

Some people keep worms  
in special bins, and feed them  
scraps from the kitchen.  
The worms turn the waste into  
compost for the garden.