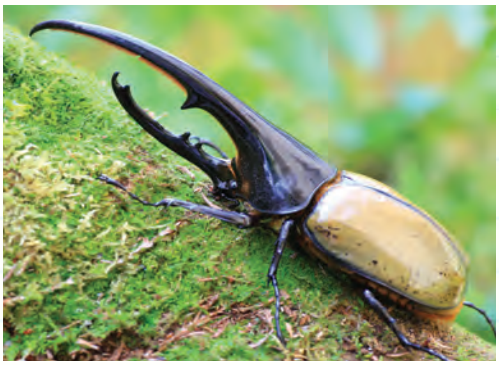
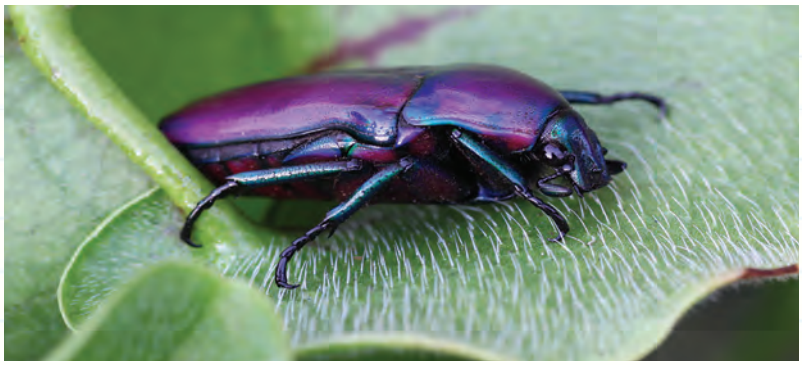
Marvellous MONSTERS

MARVELLOUS MONSTERS FACT FILE

Inside this booklet, you will find some monstrous facts and information about the marvellous mini-beasts you can see at Longleat this year.

LONGLEAT

BEETLES *Coleoptera*

Beetles make up the largest group of insects with at least 350,000 known species across the world and make up around a quarter of all know species on the planet! They include some beetles well-known to us such as the ladybird and in the UK, we have at least 4000 different species.

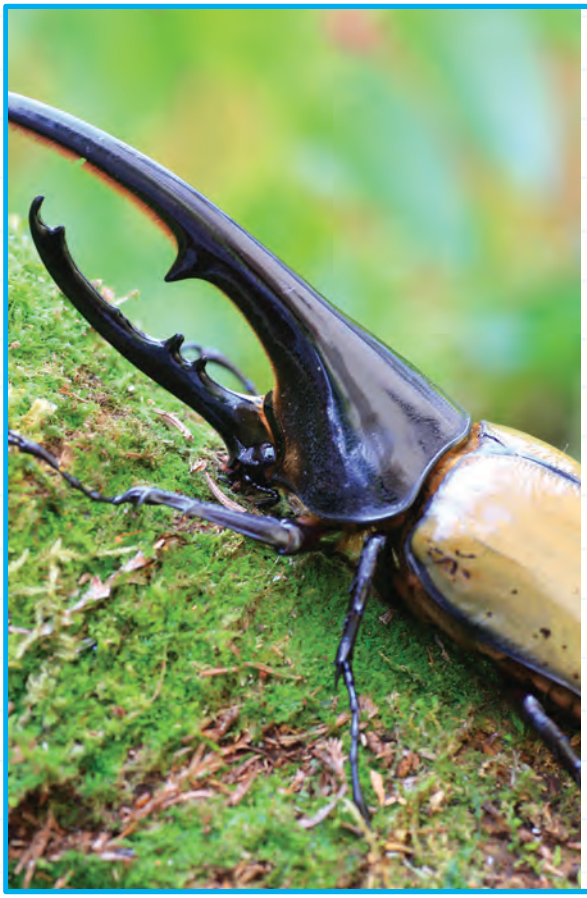
- Beetles have a distinct lifecycle and can spend several years as larvae before emerging as an adult.
- Beetles have an elytra which is a pair of modified wings that have hardened to form a wing case, thus beetles fly with one pair of wings.
- Beetles play a number of ecological roles. They can be detritivores, recycling nutrients such as plant materials, corpses and dung. They can act as pollinators and predators to pest species. They have been revered such as the sacred scarab beetle by ancient Egyptians and loathed as pests such as the death watch beetle.

They are a fascinating and diverse group of animals and well worth exploring in more detail.

LEARNING with LONGLEAT

HERCULES BEETLE

Dynastes hercules



Classification
Phylum - Arthropoda
Class - Insecta
Order - Coleoptera

Location
Southern USA, Mexico, Bolivia

Size
Up to 180mm long

Where are they found?
Understorey and forest floor amongst leaves, rotting wood and fruit

Diet
They are detritivores, so they eat dead and rotting fruit that has fallen to the ground.

This is one of the largest beetles in the world. The male is easy to identify with one long horn coming from the thorax and one from the head. The grubs play an important role with nutrient recycling and breaking down dead vegetation. The larvae can stay eating rotten wood for 2 years.

Colour changing

The wing cases (elytra) can change colour depending on the moisture levels. They change from yellow/green to brown to black as moisture levels increase.

Sexual dimorphism

These beetles show sexual dimorphism, meaning that the males and females of the species look different to each other.

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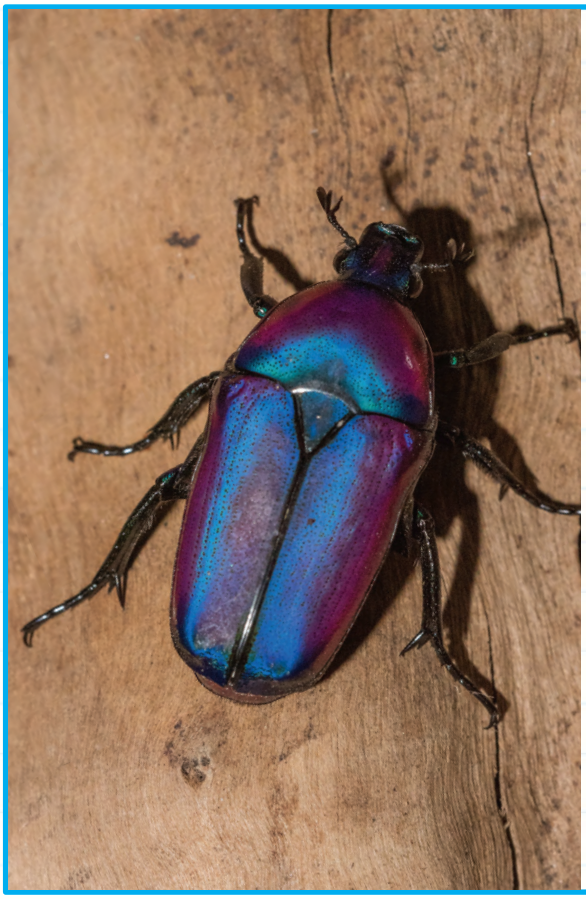
FRUIT BEETLE

Chlorocala africana



Classification
Phylum - Arthropoda
Class - Insecta
Order - Coleoptera

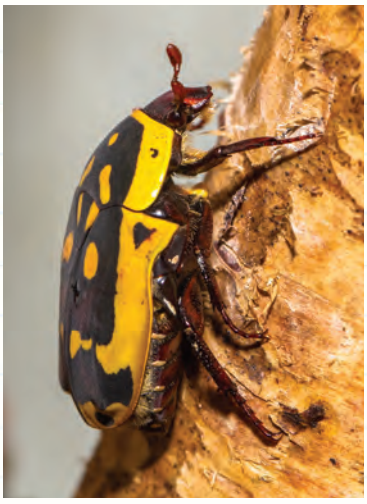
Location
Tropical regions across African such as Tanzania, Ghana and Togo

Size
15 - 20mm in length

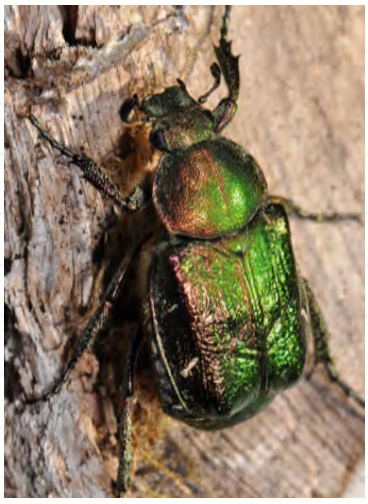
Where are they found?
On or near plants such as acacia and cassia, also need rotting wood for larvae.

Diet
Feed on nectar, pollen and plant sap

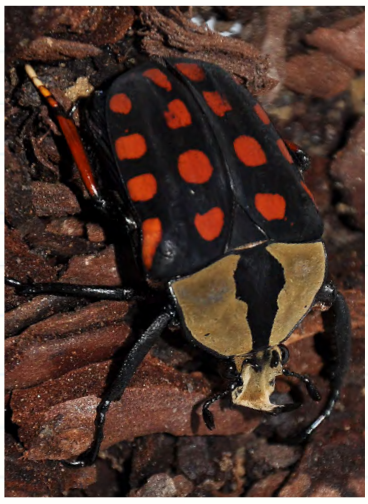
There are many different sub species of fruit beetle with a huge range of colours from metallic greens and blues through to yellows and golds.



BROWN AND YELLOW FRUIT CHAFER



NOBLE CHAFER



ORANGE-SPOTTED FRUIT CHAFER

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GOLIATH BEETLE

Goliathus goliatus

Classification
Phylum - Arthropoda
Class - Insecta
Order - Coleoptera

Location
Across tropical Africa, Zambia, Benin, Gabon, Cameroon

Where are they found?
Its one of the largest beetles, and can grow up to 100mm long.

Where are they found?
Tropical forest

Diet
Rotten fruit, pollen, nectar and tree sap

These are one of the largest beetles. Adults can be around 100mm in length with the larvae growing up to 130mm and weighing 100g the same as 2 Mars bars!

The beetles are well adapted for climbing and their legs have sharp claws at the end to help them climb tree trunks and branches.

Males have a Y-shaped horn which they use to get underneath and prise them away from the tree during fights. The females don't have a large horn, instead, they have a wedge-shaped head, like a shovel, which helps them when they are burying their eggs.

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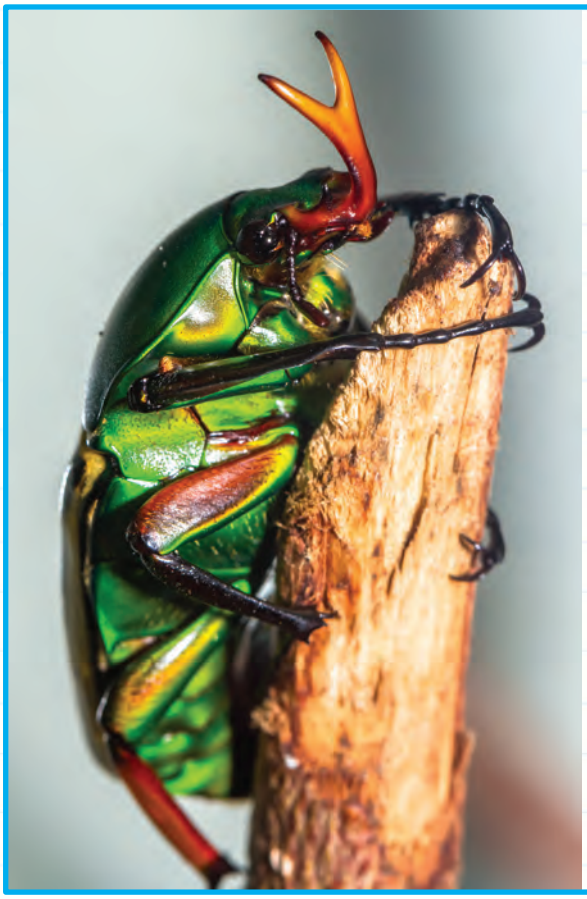
STRIPED LOVE BEETLE

Eudicella gralli



Classification
Phylum - Arthropoda
Class - Insecta
Order - Coleoptera

Location
Central Africa, Zaire

Size
250 - 400mm

Where are they found?
Tropical forest

Diet
They feed on the nectar and pollen of flowers. The larvae need rotting wood.

There are several colour variations of these flower beetles as well as a number of sub-species.

Females don't have a large horn, but the males have a Y-shaped horn used for fighting. When males and females have different characteristics, this is known as sexual dimorphism.

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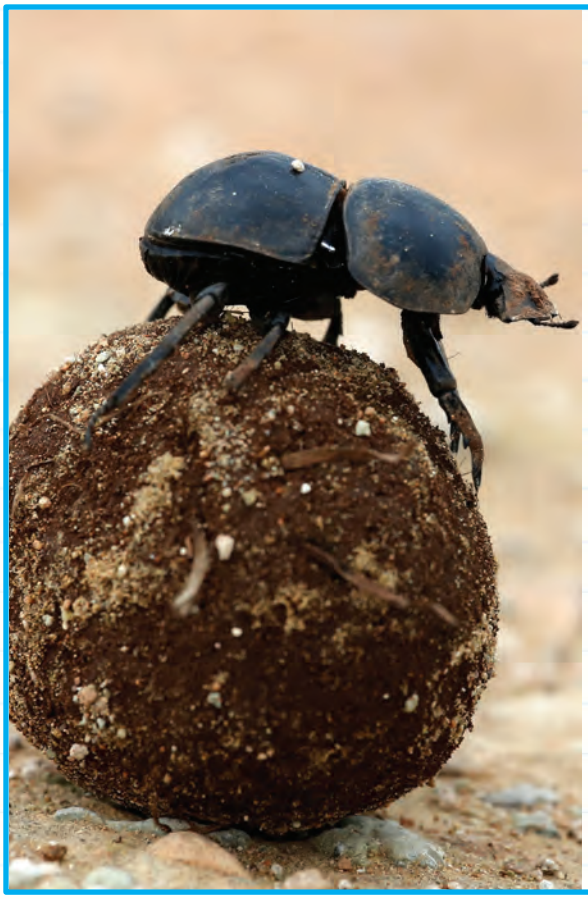
DUNG BEETLE

Scarabaeus viettei



Classification
Phylum - Arthropoda
Class - Insecta
Order - Coleoptera

Location
Madagascar

Size
25 - 40cm

Where are they found?
Dry, spiny forest

Diet
Dung and rotten fruit

Dung beetles play an amazing role in nature. They get their name from their association with dung. There are at least 7000 species of them, not all of which roll dung.

By gathering, burying, and eating dung they act as recyclers and help to improve nutrients in the soil. By removing the dung, they can also protect other animals from pests such as flies.

A common species of dung beetle in the UK is known as the dor beetle. They burrow into cowpats and bury the dung in the soil underneath ready for their larvae.

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LADYBIRDS

Classification
Phylum - Arthropoda
Class - Insecta
Order - Coleoptera

Location
UK and a vast majority of Europe

Size
5 - 9mm

Where are they found?
In a large variety of places including woodlands, grasslands, parks and gardens.

Diet
Aphids and other small insects

There are 46 species of ladybird in the UK but only 26 of them are what you would recognise as ladybirds. Ladybirds are a friend to gardeners as they feed on aphids, which can damage plants. It has been estimated that one 7-spot ladybird can eat as many as 5000 aphids in its lifetime.

The UK has recently been invaded by a group of ladybirds known as harlequin ladybirds. These are a threat to UK species as they are bigger, and out compete them for food. They carry a fungal disease which can kill the native species and have also been seen eating them!

You can have a go at identifying ladybirds where you live, www.ladybird-survey.org.ok shows examples of the most common ladybirds in the UK and their larvae. You can be a scientist and share your sightings too.

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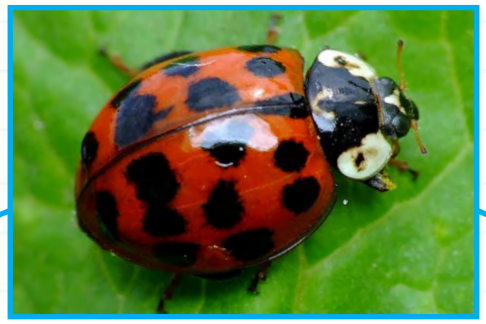
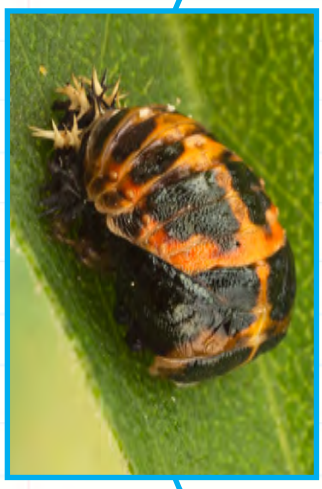
LADYBIRD LIFECYCLE



Adult ladybird

Eggs

Larvae



Pupa

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BUTTERFLIES & MOTHS

Butterflies and moths are some of the most commonly seen insects. There are 59 different species of butterfly in the UK and over 2000 species of moth.

Butterflies and moths have a very long tongue which they use to reach nectar in flowers. You can see what this looks like in the image above which shows a curled-up swallowtail butterfly tongue.

However, the UK's butterflies are under threat with 27 species showing a decrease in numbers over the last 10 years. Butterflies need your help and helping them can be quite simple.

We have several models of UK butterflies in our Secret Garden here at Longleat but also the caterpillar of the puss moth in the Main Square.

PUSS MOTH CATERPILLAR

Cerura vinula

Classification
Phylum - Arthropoda
Class - Insecta
Order - Lepidoptera
Family - Notodontidae

Location
Europe and North Africa

Size
50 - 80mm

Where are they found?
Woodland, parks and gardens

Diet
Willow leaves as well as trees that grow naturally in the surrounding forest

This amazing looking caterpillar eventually turns into a beautiful puss moth. These moths are fairly widespread and they eat leaves from plants such as willow, sallow and poplar, often found in gardens and parks.

The caterpillar undergoes some amazing changes as it grows. On hatching it is black with something that looks like two long tails. They go through many changes before ending with a large caterpillar that looks like it has a bright red cartoon face.

The caterpillar is well camouflaged but when threatened it can wave around its 'tail' to put off predators and finally it can squirt formic acid out of its thorax at an attacker.
If it makes it to the cocoon stage, the cocoon is one of the toughest made by UK moth species.

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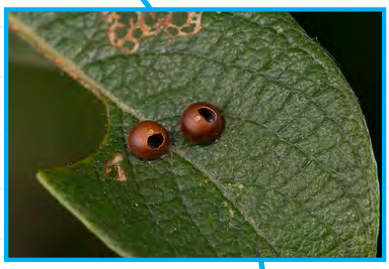
PUSS MOTH LIFECYCLE

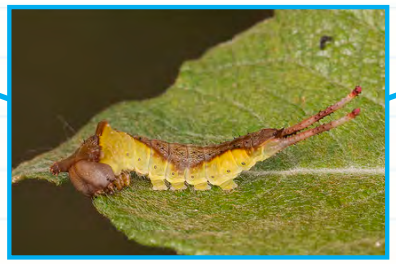
The lifecycle on the this page shows a common lifecycle for butterflies and moths but uses the puss moth as an example.

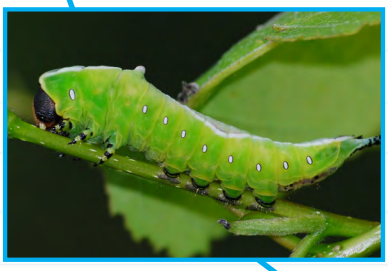
Puss moth



Eggs

Caterpillar stages





Puss moth cocoon

PEACOCK

Inachis io

One of the most recognisable of UK butterflies with its bright eyespots used to frighten or confuse predators.

Wingspan
5 - 9mm

Butterfly plants
Thistles, betony, buddleia, marjoram

Caterpillar plants
Common nettle, hop

SWALLOWTAIL

Pappilio machaon

Our largest native species of butterfly and one of the rarest.

Wingspan
83 - 93mm

Butterfly plants
Bluebell, thistles, ragged robin

Caterpillar plants
Milk parsley

TORTOISESHELL

Aglais urticae

An easily recognisable and the most widespread visitor to many gardens. Its numbers are declining at the moment.

Wingspan
55 - 65mm

Butterfly plants
Large variety of species

Caterpillar plants
Common and small nettle

LARGE BLUE

Glaucopsyche arion

This butterfly was classed as extinct in 1979 due to habitat loss. It has been brought back through reintroductions, but is still a rare sight.

Wingspan
48 - 52mm

Butterfly plants
Honeydew, carline thistle, thyme

Caterpillar plants
Thyme, marjoram

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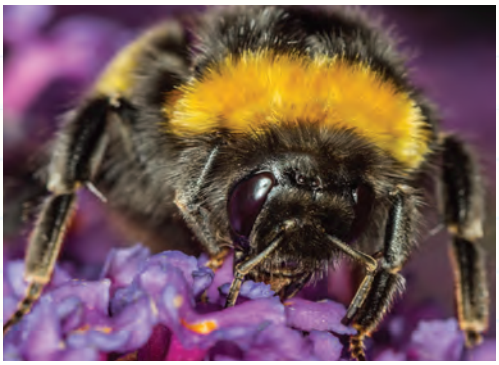

BEES, WASPS & ANTS

Bees, wasps and ants make up an order of insects known as the hymenoptera. There are over 500 species of ant, wasps and bees in the UK. Hymenotopera also include species of sawfly and ichneumon (a type of parasitic wasp).

- Bees are seen as the pollinators of the flowers and generally harmless unless provoked. We gather honey from honeybees. There are 24 species of bumble bee, 1 species of honeybee and over 200 solitary bees.
- There are hundreds of wasp species as well, most of whom are too small to sting humans. Those that are often seen as the pests of summer picnics have an important role to play in the environment. Wasps are predators and eat a lot of pests in our gardens. In addition wasps act as pollinators for many plant species such as figs.
- Ants also play an important role in the environment; aerating the soil, taking seeds into their nests, they eat a variety of food and are also eaten themselves.

COMMON WASP

Vespula vulgaris

Classification
Phylum - Arthropoda
Class - Insecta
Order - Hymenoptera
Family - Vespidae

Location
Widespread and common in the UK

Size
Workers 12-17mm, Queen 20mm

Where are they found?
Common in gardens, woodland and meadows

Diet
Honeydew, other insects and fruit

The common wasp is also known as a yellow jacket. It is an amazing architect and can build very complex nests. Unfortunately for us they like to build nests in roof spaces and chew up wood to help make it. The nests can range from the size of a golf ball to over a metre wide in size. A golf ball sized nest may have up to 50 wasps; a larger one can have thousands!

The wasp larvae produce a sweet substance that the workers feed on but in autumn the queens stop producing eggs. With no larvae the workers no longer have their food. Worker wasps then need to go in search of food and this can be provided by rotting fruit which falls in the autumn. A conflict occurs when humans have picnics with lovely sweet things which attract the wasps. This explains why wasps are generally a nuisance in the autumn. They sting to defend themselves and their nest, understandable really, as a damaged wing would likely mean death for the wasp.

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BUFF-TAILED BUMBLEBEE

Bombus terrestris

Classification
Phylum - Arthropoda
Class - Insecta
Order - Hymenoptera
Family - Apidae

Location
Widespread and common in the UK

Size
Workers 12-17mm, Queen 20mm

Where are they found?
Variety of habitats, gardens and parks

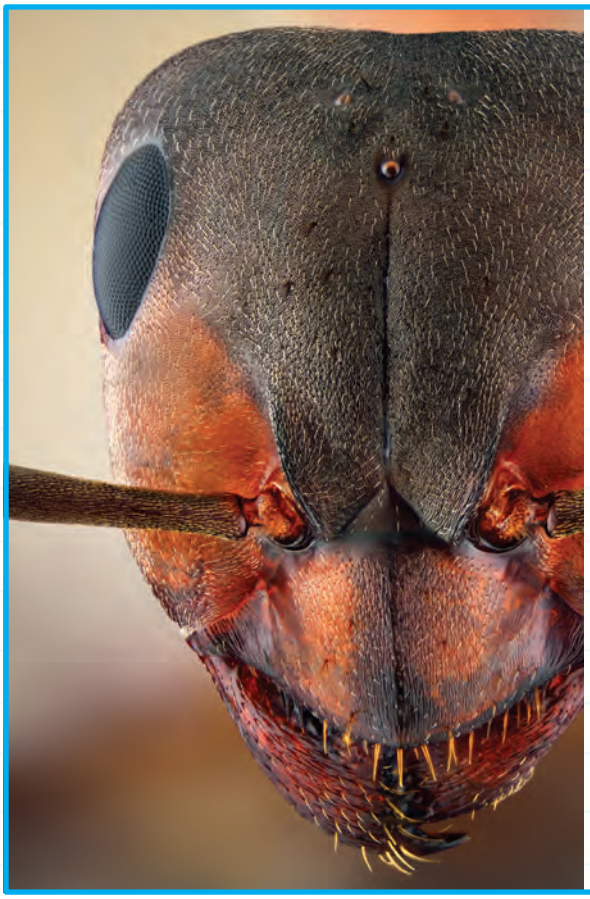
Diet
Visits a variety of flowers to collect pollen and nectar

Bumblebees leave behind 'smelly' footprints on flowers they visit. It means the bees can avoid flowers that have already been visited.

The buff-tailed bumblebee is our largest bumblebee and one that is often out flying earliest in the year. It nests in old vole or mouse nests. Like other social bees there are 3 main roles for buff-tailed bumblebees in the colony. The queen is the largest and is responsible for laying eggs, workers are all female; they look for food and tend the larvae and a few male drones leave the nest to find a mate to help set up a new colony.

WOOD ANT

Formica rufa



Classification
Phylum - Arthropoda
Class - Insecta
Order - Hymenoptera
Family - Formicidae

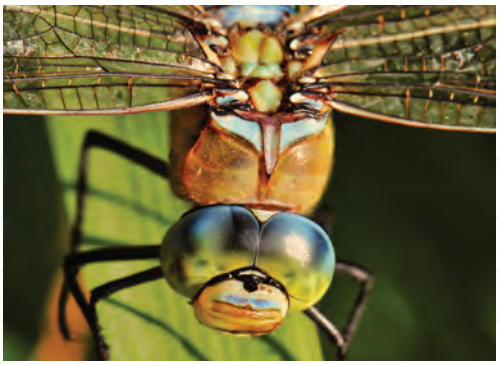
Location
Widespread and common in southern England

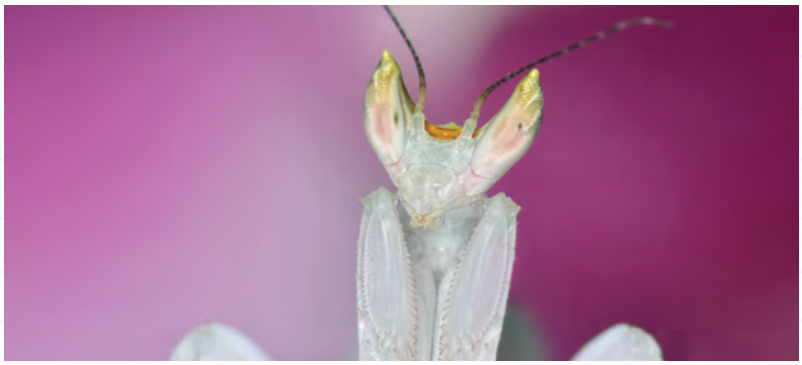
Size
10mm

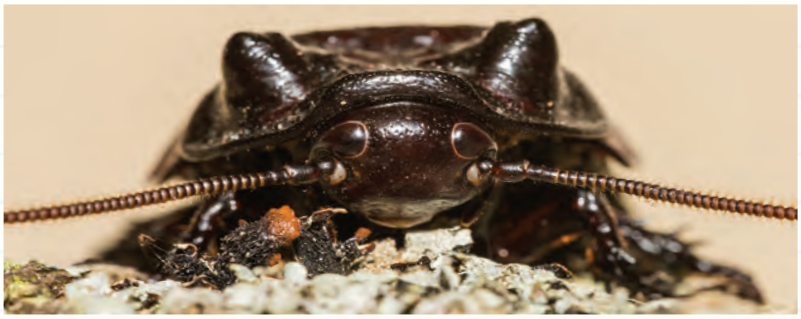
Where are they found?
Coniferous forest and mixed woodland

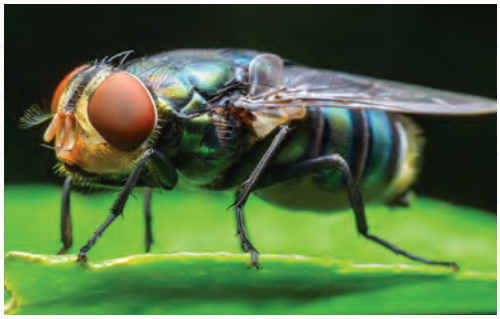
Diet
Aphid honeydew and invertebrates

Wood ants can live in colonies of nests linked together which can contain more than one queen. A colony may have around 250,000 ants! The worker ants will 'farm' aphids. They collect a sugary substance - 'honeydew' from the aphids, who are themselves protected by the ants from predators. However, some recent studies have shown that the aphids may be captives of the ants, chemicals released by the ants slows down the aphids so they can't escape.









OTHER INSECTS

The majority of Britain's invertebrates (animals without backbone) are insects. Beetles, butterflies, bees, wasps and ants are all members of the order known as Insecta. Our big bugs at Longleat include a range of other insects as well as the ones listed above.

Insects have a distinct body pattern divided into 3 parts; the head, thorax and abdomen and have six legs in their adult form. The basic life cycle is egg, larva and adult.

MADAGASCAN HISSING COCKROACH

Gromphadorhina portentosa

Classification
Phylum - Arthropoda
Class - Insecta
Order - Blattaria

Location
Madagascar

Size
Up to 6cm long

Where are they found?
Forest floor amongst leaves, rotting fruit and wood

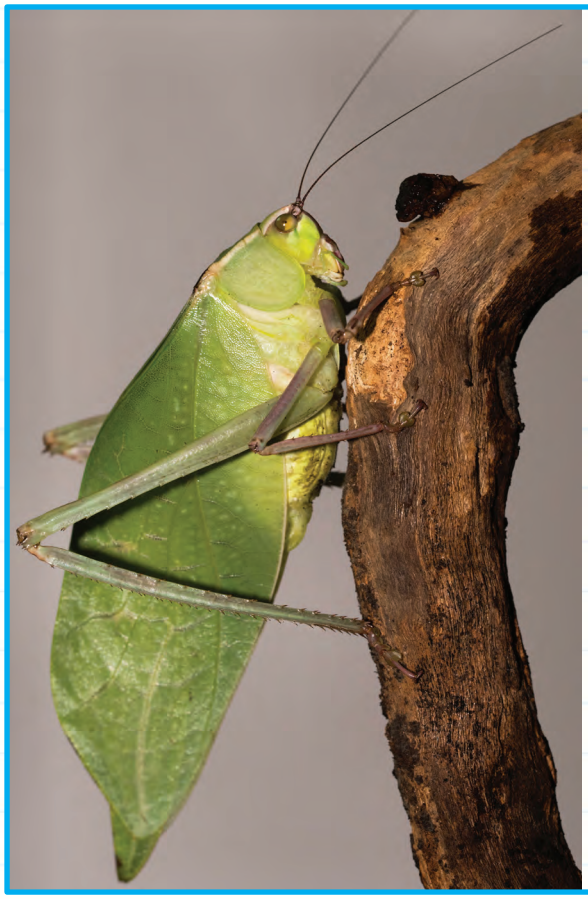
Diet
Detritivores - they eat dead and rotting fruit that has fallen to the ground

Males will often fight each other and use their 'horns' to push each other off logs with the victor being the one left on top.

They make a loud hiss which is caused when they force air out of their bodies through holes called spiracles. The noise is used for defence to try and confuse a potential predator, to work out who is in charge and for courtship.

FLORIDIAN KATYDID

Stilpnochlora couloniana



Classification
Phylum - Arthropoda
Class - Insecta
Order - Orthoptera
Family - Tettigoniida

Location
Across Florida, Cuba and Caribbean

Size
Around 40mm with a 70mm wingspan

Where are they found?
Trees and shrubs

Diet
Leaves from trees and shrubs that it lives on and as well fruit and flowers

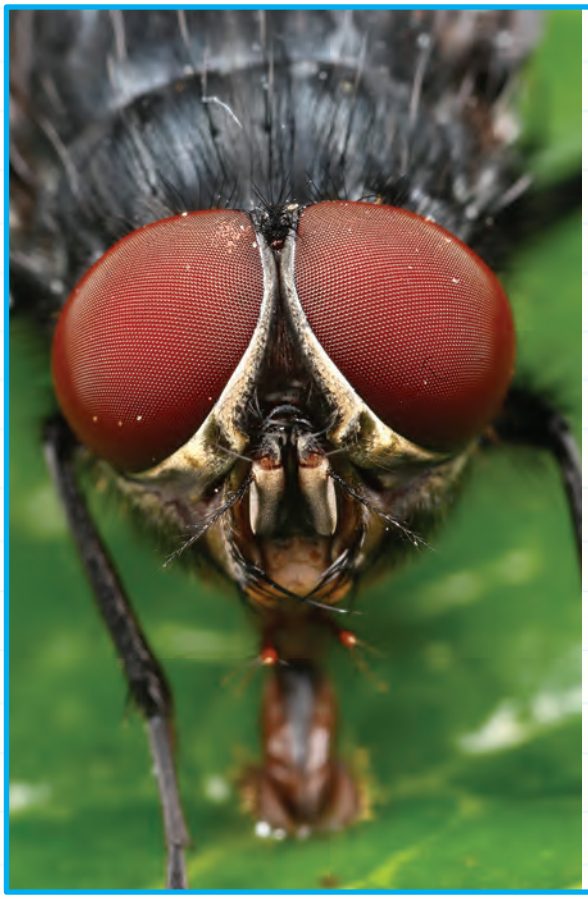
These cryptic creatures are masters of camouflage. They can be different shades of green to match the surrounding leaves. Their wings even have the patterns of leaf veins on them. Although staying still is the preferred option to avoid detection by predators, they usually walk rather than jump but can leap to avoid predators that have spotted them.

They are nocturnal and are known for their loud calls which are in short bursts, whereas a cricket tends to have a longer call. They make the sound through a process known as stridulation. This is when they rub their legs and wings together.

LEARNING with LONGLEAT

BLUEBOTTLE FLY

Calliphora vomitoria



Classification
Phylum - Arthropoda
Class - Insecta
Order - Diptera
Family - Calliphoridae

Location
Widespread throughout the world

Size
10-14mm

Where are they found?
Pastures, barnyards, anywhere with rotting materials

Diet
Rotting carcasses, faeces and nectar

The bluebottle is a very common and large member of the blow flies. They are closely related to greenbottles. They are a striking blue colour, which gives them their name and have red eyes. The body and legs of this fly are covered in stiff hairs.

They vomit on their food which starts the digestion process so they can then suck up the juices with their tongue. These flies are known for feeding on carrion but may also have a role as pollinators. They have been seen feeding on nectar on plants with exposed nectaries. They are attracted to those plants that have a smell of rotting meat. The blue bottle fly is being used to pollinate vegetable crops in trials in the USA.

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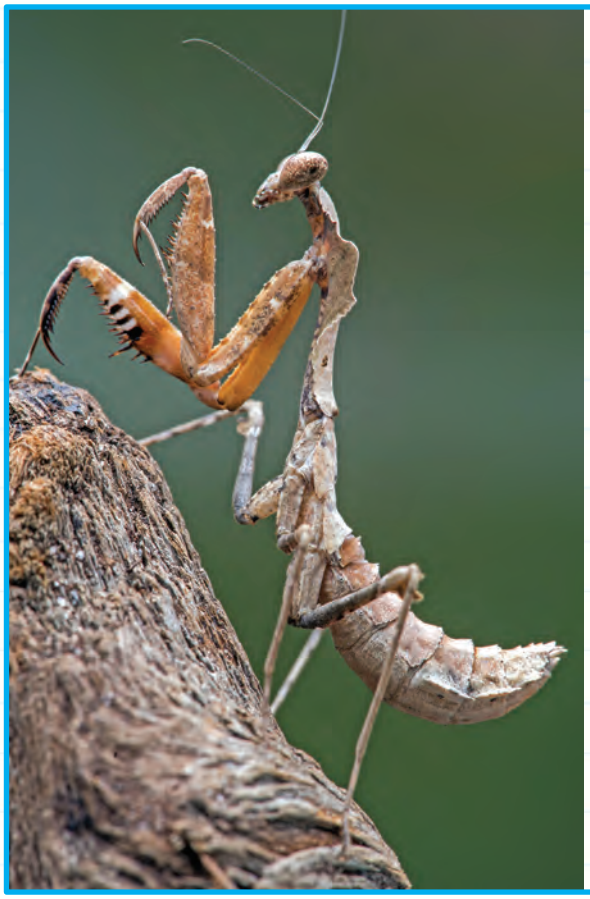
DEAD LEAF MANTIS

Deroplatys desiccata



Classification
Phylum - Arthropoda
Class - Insecta
Order - Mantodea
Family - Mantidae

Location
Borneo, Malaysia, Indonesia, Sumatra

Size
Males - up to 70mm
Females - up to 80mm

Where are they found?
Scrubland and forests

Diet
Variety of insects such as moths

The dead-leaf mantis resembles dead leaves and is various shades of brown. The wings and wing cases resemble veins of leaves. They are even rough at the edges to look like crumbling leaves. When it is disturbed it will rock to look like it is a leaf blowing in the breeze. If that fails it can open its wings out to flash its eye spots to frighten a predator.

They will sit ready to ambush waiting for prey to get close. They can turn their heads 180 degrees to look at their prey. When they are close enough they will reach out quickly with their spiked legs and grab the prey, they then start to eat, often while it is still alive! It is so fast it is difficult to see with the naked eye.

You can see footage of a mantis catching its prey, along with live mantis exhibits in the Longhouse here at Longleat.

ORCHID MANTIS

Hymenopus coronatus

Classification
Phylum - Arthropoda
Class - Insecta
Order - Mantodea
Family - Mantidae

Location
South east Asia

Size
Males - up to 25mm
Females - up to 80mm

Where are they found?
Orchids in tropical forests

Diet
Pollinators and visitors to orchids

Masters of mimicry - these amazing insects have evolved to resemble orchid flowers. It was thought that they use this camouflage to sit ready to ambush and wait for visitors to the flower. However recent research has shown that the mantis itself can be more attractive to the pollinators than the actual flowers. Pollinators are attracted to them as they think they are flowers and before they know it they have become the next meal. Their mimicry is so good it can confuse the mantis' predators who may just walk on by.

EMPEROR DRAGONFLY

Anax imperator

Classification
Phylum - Arthropoda
Class - Insecta
Order - Odonata
Family - Aeshnidae

Location
Asia, Europe and Africa

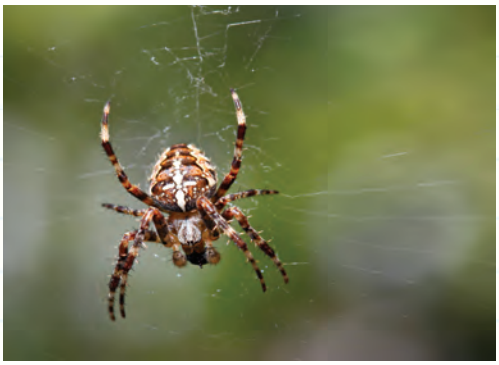
Size
Up to 78mm, wingspan 106mm

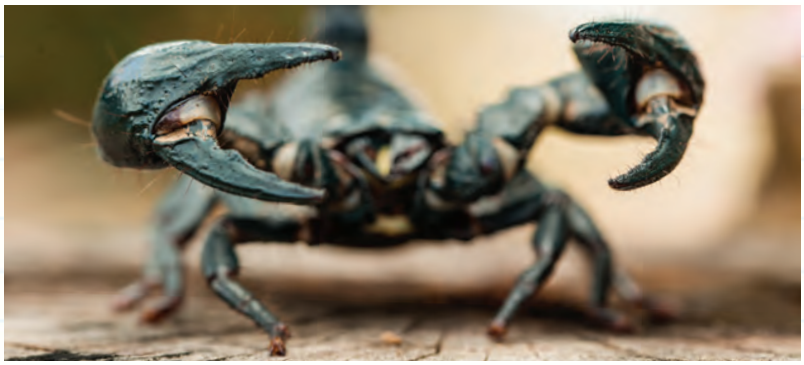
Where are they found?
Near slow moving water for breeding, as nymph's require water, and hunting.

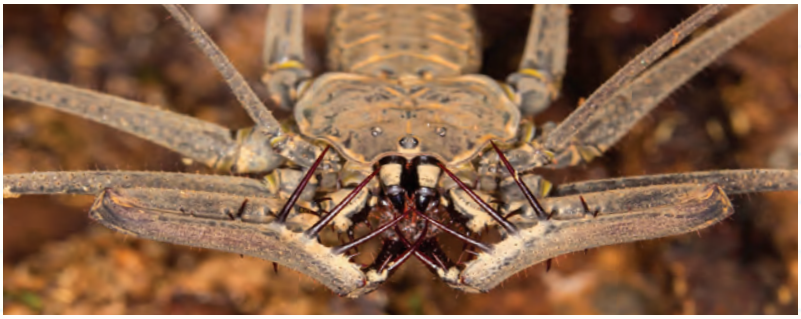
Diet
Variety of insects and other dragonflies

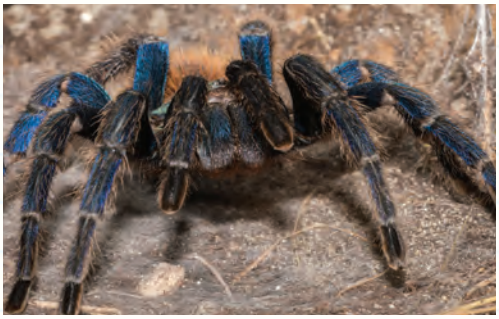
One of the largest and most striking dragonflies. It has a green thorax and blue abdomen which slopes downwards. It is an expert hunter and catches its food in flight, usually eating its food while flying.

The female lays eggs in water and attaches them to pond plants. The larvae, called nymphs, are voracious predators catching small fish and tadpoles as well as other nymphs. They undergo several moults, getting larger each time, before they crawl out of the water up some vegetation to make their final moult before emerging as an adult.









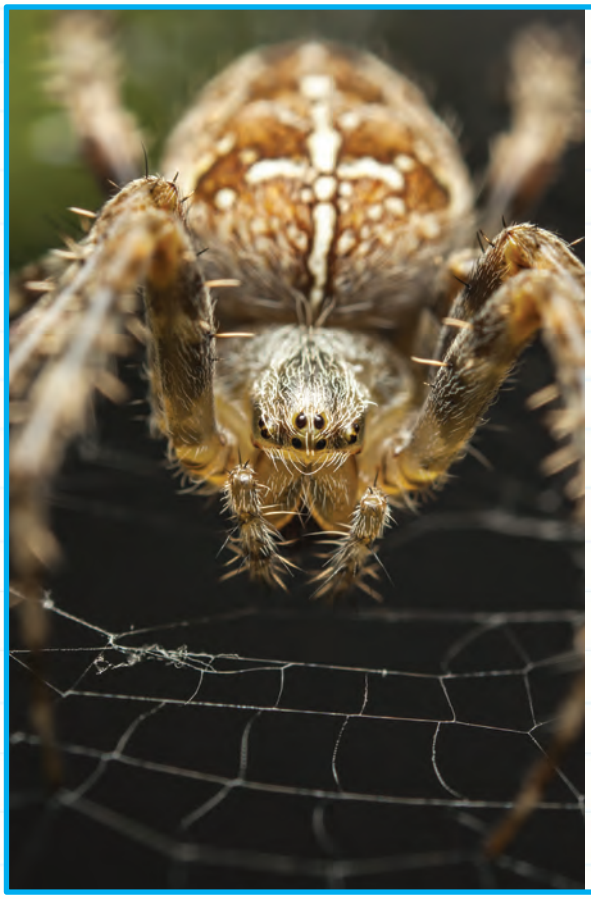
ARACHNIDS

Arachnida is the invertebrate group that includes spiders and scorpions. There are over 100,000 species and also includes harvestmen, ticks and mites. Spiders make up the majority of the group, with over 50,000 known species. Arachnids are distinguished from insects by the fact they do not have antennae or wings. Their body is organized into two segments the cephalothorax and the abdomen.

The sensory organs of arachnids are one of their interesting features. Fine sensory hairs cover their body and provide their sense of touch. Many arachnids have more complex hairs called trichobothria that sense vibrations in the air and water. Arachnids do have eyes but they differ in type between species and most are in fact thought to not to have great eyesight.

GARDEN SPIDER

Araneus diadematus



Classification
Phylum - Arthropoda
Class - Arachnida
Order - Aranaea

Location
Widespread in the UK

Size
Males - 8mm
Females - 13mm

Where are they found?
Gardens, hedges and parks

Diet
Insects caught in its web

One of our most common orb web spiders. This spider spends most of its time in the middle of its web waiting for vibrations that let it know that an insect has flown into its web. It will run to the prey that has been caught, bite it, and inject venom to kill it and then wrap it up in silk. It may eat it straight away, but more likely it will take it and store it away to eat later.

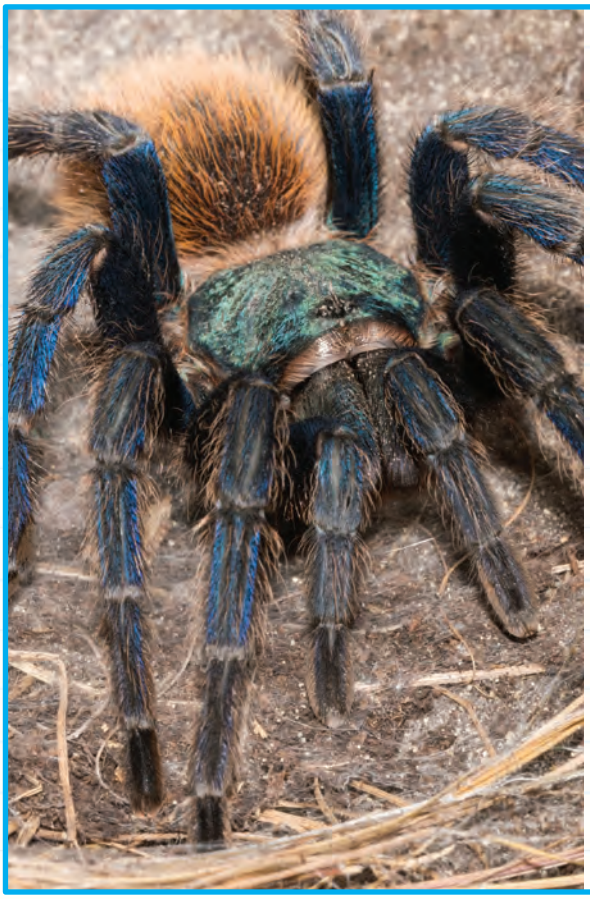
The spider will rebuild its web every day, as well as when it is damaged. It will eat its old web first to get the proteins it will need to spin the new web.

This spider is easy to recognise as it has a series of white spots on its abdomen that look like a cross. They can usually be seen from June to October when they are fully grown.

LEARNING with LONGLEAT

GREENBOTTLE BLUE TARANTULA

Chromatopelma cyaneopubescens



Classification
Phylum - Arthropoda
Class - Arachnida
Order - Aranaea
Family - Theraphosidae

Location
South America

Size
Males - 11cm
Females - 15cm

Where are they found?
Dry bushy, semi-desert areas

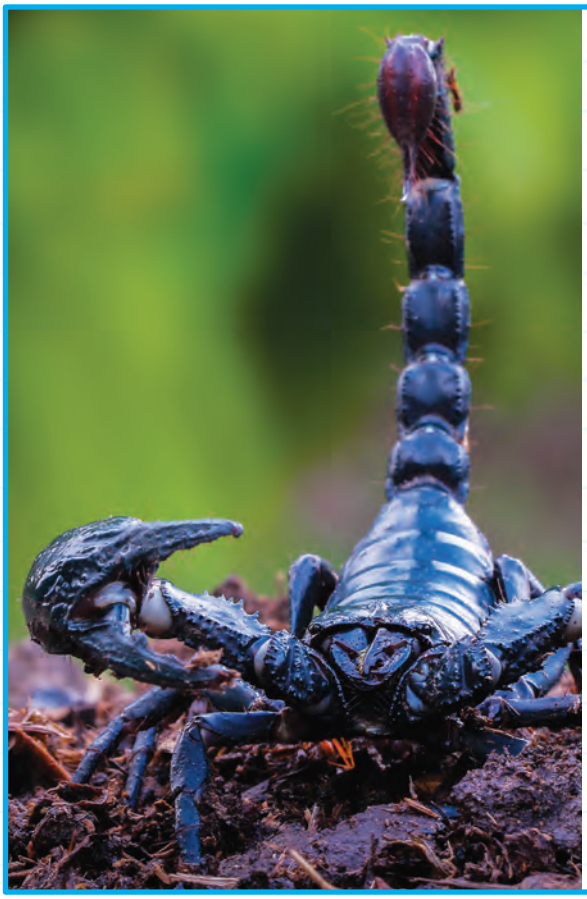
Diet
Insects caught in webs and hunting

This is a beautifully coloured spider of the tarantula family. It catches its prey either by an animal getting caught on its web or it hunts by stalking. It creeps up on its prey before jumping on them and injecting venom from its fangs. They eat a variety of animals such as locusts, lizards, and even small mammals like mice.

LEARNING with LONGLEAT

EMPEROR SCORPION

Pandinus imperator



Classification
Phylum - Arthropoda
Class - Arachnida
Order - Scorpions
Family - Scorpionidae

Location
Various countries across Africa

Size
20cm length and can weigh 30g

Where are they found?
Tropical forest and savannah, lives in burrows under rocks or termite mounds

Diet
Insects and small vertebrates

According to fossil records, scorpions have been on the planet for at least 425 million years. The emperor scorpion is one of the largest scorpions and certainly one of the heaviest.

They have sensory hairs on the pincers and tail which can be used to detect prey through vibrations. Scorpions are very well known for their stinging tail which can be used to inject venom to immobilise its prey, certainly young scorpions will do this. Adults are more likely to use their large, powerful pincers to crush their prey and use the sting for defence.

Scorpions are a prey species too and are eaten by a variety of animals including mongoose and meerkats who are immune to certain types of scorpion venom.

LEARNING with LONGLEAT

TAILLESS WHIP SCORPION

Euphrynichus amanica

Classification
Phylum - Arthropoda
Class - Arachnida
Order - Amblypigi

Location
Tropical and sub-tropical regions of the world. This species is found in South and North America.

Size
20mm body length

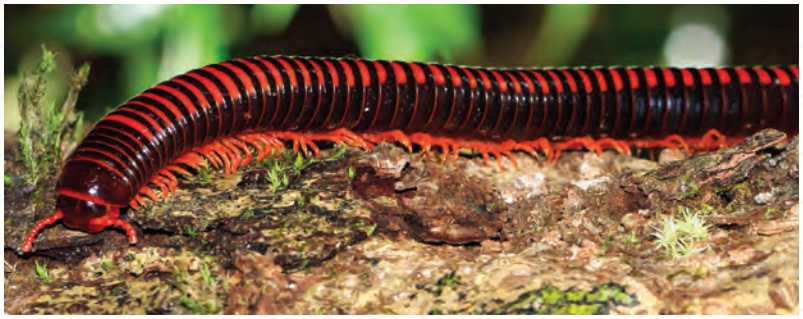
Where are they found?
Under leaves, in tree stumps and in caves

Diet
Other arthropods and small vertebrates

This nocturnal creature is not a scorpion at all but is an amblypygid (Am-blee-pig-id). There are 150 know species. It is closely related to the spider and is sometimes called a whip spider. It has 6 walking legs, the front 2 legs aren't used for walking but are very large pincers (pedipalps). The pedipalps are covered in lots of spines which they use to capture prey, they have no fangs or venom. They can also have huge antennae to help them detect their prey in the dark.

A computer generated amblypygid was used in the Harry Potter and The Goblet of Fire film. Mad-eye Moody used it to show the cruciatus curse to Neville Longbottom. They are harmless to humans though.

LEARNING with LONGLEAT



MILLIPEDES & CENTIPEDES

Myriapoda is the invertebrate group containing millipedes, centipedes, and others. This group contains over 16,000 species. Millipedes and centipedes are known for having a lot of legs. The group name suggests they have myriad (10,000) legs but in fact none have that many. The species with the most is the millipede, *Illacme plenipes,* which has 750 legs.

You can tell the difference between centipedes and millipedes by looking at their body design. Centipedes have a flattened appearance compared to the more cylindrical body shape of the millipede. Centipedes have one pair of legs per body segment, while millipedes have two pairs.

MADAGASCAN FIRE MILLIPEDE

Deroplatys desiccata

Classification
Phylum - Arthropoda
Class - Diplopoda
Order - Spirobolida
Family - Pachybolidae

Location
Madagascar

Size
Up to 14cm long

Where are they found?
Forest floor

Diet
Fallen leaves, rotten wood and fruit

These millipedes are a striking red and black colour with bright orange legs.

Millipedes have their own defence system and can secrete substances to try and deter a predator. These toxins can smell terrible, taste terrible and contain chemicals such as cyanide.

Amazingly lemurs often grab the millipedes and bite them which causes the millipedes to release their toxin. The lemurs then rub the millipedes and toxin all over their bodies. Which acts as an insecticide to keep other insects such as mosquitos away!

LEARNING with LONGLEAT

BUGS NAME:

Scientific name -

Classification

Phylum -

Class -

Order -

Family -

Location

Size

Where are they found?

Diet