



## Insects (Insecta)

Insects first appeared on the planet over 400 million years ago. There are now well over a million different insect species on the planet. Life cycles vary but often involve an egg stage, nymph or larva stage and, finally, an adult stage. The transition from larva to adult stage often involves the formation of a pupa, for example, the chrysalis of butterflies.

### A Typical Insect

Wings

Many insects have wings at some stage of their development attached to their thorax

Head

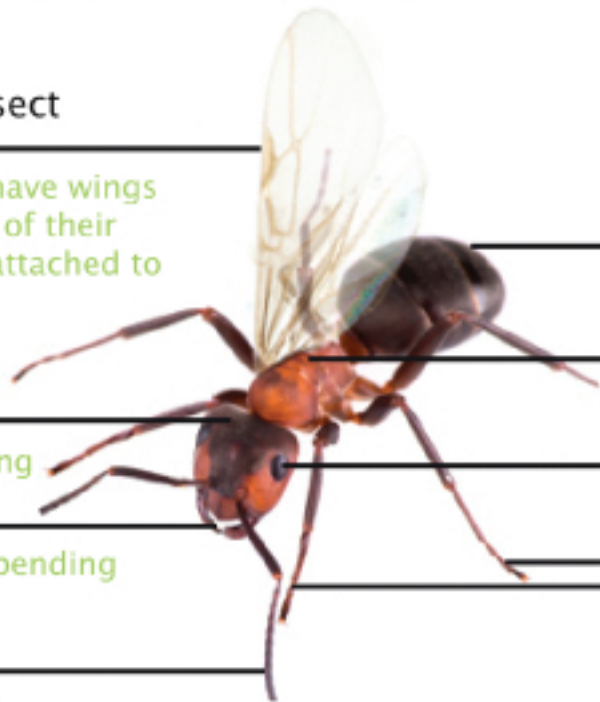
Sensing & eating

Mouth parts

These vary depending on the species

Antenna

Smell & touch attached to the head



Abdomen

Reproduction & digestion

Thorax

Protects & supports

Eye

Senses light

Legs

6 jointed legs attached to the thorax

### Exoskeleton (outside skeleton)

All insects have an inflexible exoskeleton which is jointed to allow movement. To grow larger the exoskeleton is moulted (removed), the new exoskeleton then expands and finally hardens.

Dragonfly emerging from nymph stage leaving its exoskeleton behind

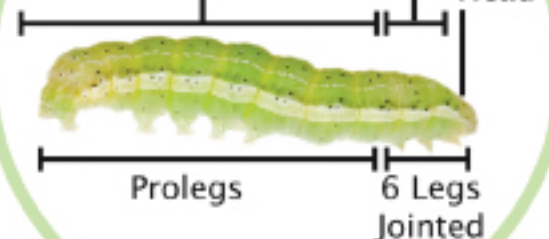


### Caterpillars and some other larva

Abdomen

Thorax

Head



# MINIBEAST

## Focus Card



The  
*Gilbert White*  
FIELD  
STUDIES  
CENTRE

## Arachnids (Arachnida)

Arachnids, like insects, first appeared on the planet over 400 million years ago. There are now around 100,000 species of arachnid. Life cycles usually include egg, nymph and adult stages. Their exoskeleton must be moulted to allow growth. Most Arachnids have 8 legs. The arachnids you are likely to meet on a minibeast hunt in the UK can be further divided into harvestmen, mites and spiders.



Harvestman

Harvestmen can easily be distinguished from spiders by their long legs and oval bodies which have no obvious segments.

### Life Style

They tend to be omnivores living on insects, plants and fungi. They use their second pair of front legs, which are longer than the rest, as sensors.

Harvestmen cannot produce silk so cannot make webs

### Palpa

Smell, touch and reproduction

### Cephalothorax

The head and thorax are fused

### Abdomen

Reproduction and digestion



Mite

Mites have a single oval body with no obvious segmentation. They are much smaller than harvestmen, most being microscopic.

### Life Style

Mites can live in a variety of habitats. They can be detritivores or parasitic on plants, animals and fungi.



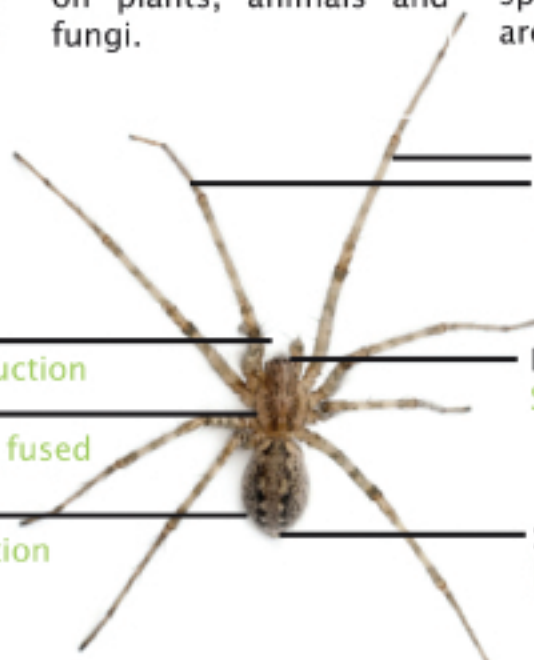
Spider

Spiders have two clear body segments.

### Life Style

Most spiders are predators feeding on insects and other spiders.

Spiders have spinnerets that can produce a variety of different silks. Most spiders make webs which are used to catch prey.



### Legs

8 jointed legs attached to the cephalothorax

### Eyes

Sense light

### Spinneret

Make silk

A Typical Spider



# MINIBEAST

## Focus Card



### Centipedes, Millipedes (Myriapoda) & Woodlice (Crustacea)

Centipedes, millipedes (Myriapoda) and woodlice (crustacea) (as well Arachnids (arachnida) and insects (insecta)) are all Arthropods and, as such, they all share common traits such as an exoskeleton, jointed legs and segmented body. The earliest arthropods (for example the trilobites) appeared on the earth over 500 million years.

#### Centipedes

Centipedes are carnivorous, hunting invertebrates during the night. They can be found in leaf litter and in damp crevices.



#### Millipedes

Millipedes are often found in leaf litter and soil. Most millipedes are detritivores eating rotting plants and fungi.



#### Woodlice

Woodlice are related to shrimps and lobsters. They need to live in damp places as they lose water through their bodies. Woodlice are detritivores eating rotting plants and fungi. Woodlice look after their eggs until they hatch in a specially designed pouch.

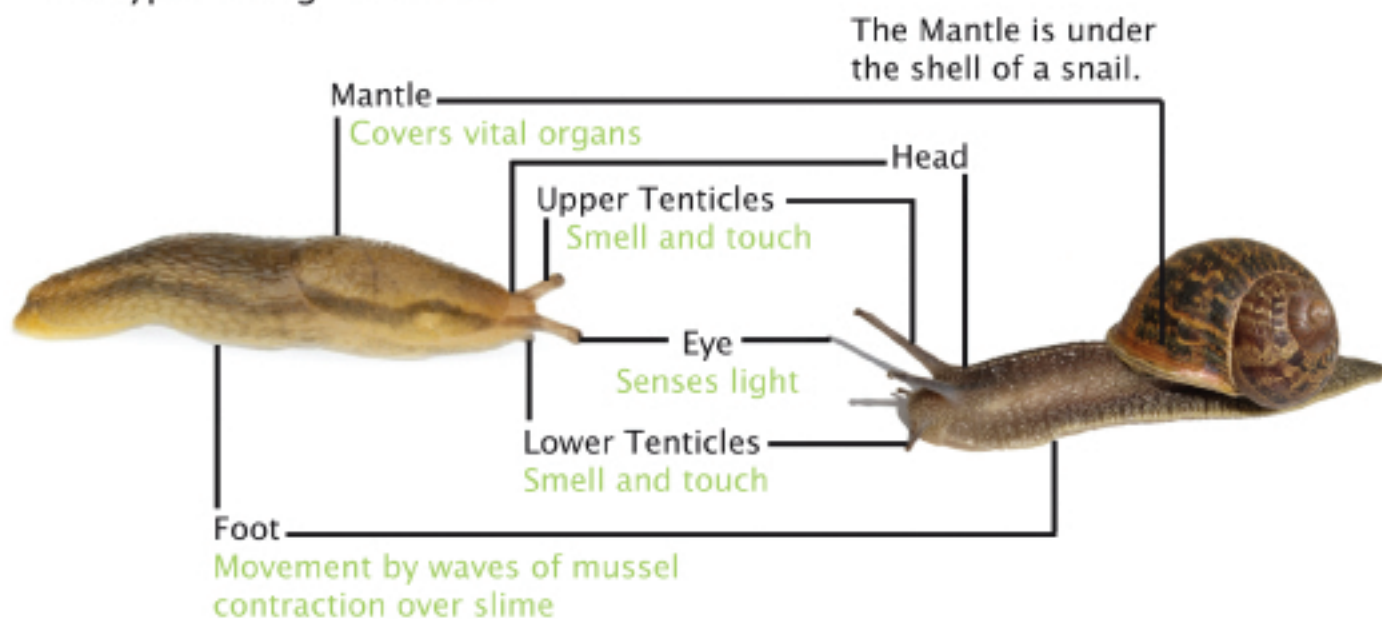




### Slugs and Snails (Mollusca Gastropoda)

Slugs and snails have three features in common with all molluscs a cloak or cape (the mantle) which often secretes a shell, a rasping tongue (radula), and similar sensing systems. There are estimated to be over 30,000 species of slugs and snails. Fossil records date back over 500 million years.

#### A Typical Slug and Snail



#### Life Cycle

Slugs and snails are mostly hermaphrodites (both male and female). Their eggs hatch into miniature versions of the parent which mature into adults.

#### Life Style

Slugs and snails in the UK are mostly herbivores (eat plants) but some are carnivorous eating earthworms and insect larva. Slugs and snails live in damp places as they easily lose moisture through their skin.





# MINIBEAST

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### Segmented Worm (Annelida)

There are over 10,000 species of segmented worm including earthworms and leeches. Fossils of their soft bodies do not form easily but there is evidence of segmented worms over 500 million years ago.

#### Earthworms

Earthworms live in soil. They need moisture to live as they breathe through their skin and would soon dry out in the sun. They eat organic matter from the soil including plant and animal debris, bacteria and fungi.



#### Leeches

Most leeches are found in fresh water and are either carnivores (feeding on invertebrates), hemophagic (feeding on blood) or detritivores (feeding on dead plant and animal matter). Some leeches are found on land, usually near still water. For example, the Horse Leech which, despite its name, feeds on insect larva, snails and earthworms.



#### Life Cycle of Earthworms and Leeches

Both Earthworms and Leeches are hermaphrodites (male and female). When they mate sperm is exchanged and a cocoon of eggs is produced. The eggs hatch into small versions of the adult which then mature into the adult form.