MARVELLOUS MINIBEASTS

AGES 7-11

Curriculum resource pack

WWT is one of the UK's leading providers of outdoor learning. We welcome over 50,000 learners per year to our Wetland Centres where we provide unique opportunities for learners of all ages and abilities to interact with wetland wildlife from the UK and across the world.

We are open all year round with sessions for every season. Whether you're looking for curriculum-linked learning or simply a fun day out, there really is something for everyone. To find out more about our school visits programme please visit **learningzone.wwt.org.uk.**

Why wetlands?

WWT works across the UK to save, restore and build wetlands for wildlife and people. Wetlands are one of the most important habitats on earth – storing huge amounts of CO_2, providing a natural way of stopping flooding and serving as a home for huge numbers of different creatures. Spending time in wetlands is also proven to improve mental health and wellbeing!

Using this resource pack

This resource pack contains activities designed to cover key curriculum content as well as outdoor activities designed to promote nature connection and a love of the natural world. This is accompanied by supporting resources that can be printed or used on screen with your pupils. At the end of the pack you will find a short quiz that can be used to reinforce and assess pupils' learning. This pack covers a wide range of science curriculum themes. You may want to use it to structure a longer term scheme of work. Alternatively, you may want to choose to complete only those activities that are relevant to your topic.

CURRICULUM LINKS

England

KS2: Science

- Recognise that living things can be grouped in a variety of ways
- Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
- Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals
- Give reasons for classifying plants and animals based on specific characteristics
- Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat
- Construct and interpret a variety of food chains, identifying producers, predators and prey
- Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution
- Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird describe the life process of reproduction in some plants and animals

Northern Ireland

KS2: Around the world

- How living things rely on each other within the natural world
- Ways in which people, plants and animals depend on the features and materials in places and how they adapt to their environment
- Features of, and variations in places, including physical, human, climatic, vegetation and animal life
- Causes that affect the movement of people and animals

Curriculum links continued...

Wales

KS2: Science and Technology

- I can explore relationships between living things, their habitats and their life cycles
- I can describe how living things compete for specific resources and depend on each other for survival
- I can describe the features of organisms and recognise how they allow them to live, grow and reproduce for survival in their environment

Scotland

Second: Sciences

- I can identify and classify examples of living things, past and present, to help me appreciate their diversity. I can relate physical and behavioural characteristics to their survival or extinction
- I can use my knowledge of the interactions and energy flow between plants and animals in ecosystems, food chains and webs
- By investigating the lifecycles of plants and animals, I can recognise the different stages of their development
- By exploring the characteristics offspring inherit when living things reproduce, I can distinguish between inherited and noninherited characteristics

Second: Social Issues

- By comparing my local area with a contrasting area outwith Britain, I can investigate the main features of weather and climate, discussing the impact on living things
- To extend my mental map and sense of place, I can interpret information from different types of maps and am beginning to locate key features within Scotland, UK, Europe or the wider world

INDOOR ACTIVITIES

YOU WILL NEED:

Minibeast cards (one set per group)
Food chain cards (one set per group)
Butterfly life cycle cards (one set per group)
(For all accompanying resources see the end of this pack)
Minibeast key (one copy per group)
Migration map (one copy per group)
Garden habitat sheet (one per group)

Other relevant resources

Activities:

- Make your own bug hotel
- Garden bug hunt spotter sheet

School visits:

- We have a wide range of relevant sessions available for KS2. Visit our Learning Zone to find out more **learningzone.wwt.org.uk**

NOTE: **Where you see a Q this indicates a question to ask your pupils.**

INDOOR ACTIVITIES

Activity 1: Classification

- Hand out a set of minibeast cards to each group.

Q **Do you know what we mean by vertebrates and invertebrates?**

Activity 1 continued... **4**

- If pupils aren't sure, explain the difference between the two:

Key word
VERTEBRATE
An animal that has a backbone.

Key word
INVERTEBRATE
An animal that doesn't have a backbone.

Q **Do you think we are vertebrates or invertebrates?**

- Get pupils to feel their backbone to show that we are vertebrates.

Q **Do you think the animals on the cards are vertebrates or invertebrates?**

- Explain that all of the animals on the cards are invertebrates. They don't have a backbone. Some have a soft body (such as the slugs and worms) whilst others have an exoskeleton, a hard covering on the outside of their bodies (like the insects and spiders).

Key word
INSECT
- Insects have six legs
- They have three main body parts (a head, a thorax, and an abdomen)
- They have a pair of antennae on top of their heads
- Insects have an exoskeleton - a hard, shell-like covering on the outside of their body

Key word
ARACHNID
- Arachnids have eight legs
- They don't have antennae
- They have two main body parts (a cephalothorax and an abdomen)

Key word
MOLLUSC
- Molluscs don't have legs
- They have a soft body without segments
- Many molluscs have a shell (sometimes this is hidden inside their body!)

Key word
WORM (ANNELID)
- Worms don't have legs
- They have long, narrow bodies
- They have a head and a tail end

Key word
CRUSTACEAN

- Crustaceans have a hard exoskeleton or shell
- They breathe through gills, meaning they can live underwater (though not all of them do)

Key word
MYRIAPOD

- Myriapods have lots of legs (usually more than 20)
- Their bodies are usually split into segments

- Hand out a copy of the invertebrate key to each group.
- Explain that scientists often use keys to help them to identify the different groups animals belong to. A key is a series of questions each with two possible answers. The answers lead you to the next question and eventually to the group of animals.
- Demonstrate how to use the key to identify which group the garden spider belongs to.
- Ask each group to use the key to identify which group each of the other animal belongs to.
- Get each group to feed back one animal at a time. Check that each group has the correct answer.

Insects	Arachnids	Molluscs	Worms (Annelids)	Crustaceans	Myriapods
- Butterfly - Ladybird - Aphid - Bee - Ant	- Garden spider - Harvestman	- Snail - Slug	- Earthworm	- Woodlouse	- Centipede - Millipede

- Get pupils to play 'guess the animal' in their groups. You might want to play it as a whole class first with you choosing one of the animals and the class trying to guess.

1. Lay out all of the cards picture side up.
2. Children should take it turns to to choose one of the animals on the cards without telling the rest of the group. (they shouldn't pick it up – leave it with the other cards).
3. The rest of the pupils should ask yes / no questions about their animal (e.g. Does it have six legs? Can it fly?).
4. Once they have answered, they should remove all of the animals that are now ruled out (e.g. if they asked has it got six legs and they say no, they can remove all of the insects).
5. Keep asking questions and removing cards until there is only only have one card left.
6. Is this the animal that was chosen?

Activity 2: Habitats

Q **Do you know what we mean by a habitat?**

A habitat is simply a place (or type of natural environment) where plants and animals live.

Q **Do you know what we mean be a micro-habitat?**

A micro-habitat is a much smaller habitat that forms part of a larger habitat. For example, a log pile may be a micro-habitat in a garden (the main habitat).

- Give out a garden habitat sheet to each group.
- Explain that the habitat shown is a garden and ask if anyone can see any micro-habitats. Take a few examples to make sure that pupils have got the idea.
- Challenge each group to identify and label as many micro-habitats as they can.
- Get each group to feed back giving one micro-habitat at a time. Allow groups to label any that they didn't have on their list.

Micro-habitats include:

> Pile of stones
> Stone wall
> Log pile
> Compost heap
> Plants
> Bushes
> Flowers
> Leaves
> Grass / lawn

- Give out a copy of the minibeast cards to each group if they don't already have them.
- Get each group to use pieces of wool or string to connect each creature to the micro-habitat where it might live.
- They can turn over each card afterwards and look at the micro-habitats listed under 'where to find them'. to check if they were correct. If not, they can always move the wool or string.
- Get each group to feed back one creature and where it lives. Ask them to explain why this is a good place for this creature to live.

Activity 3: What do animals eat?

Q **Do you know what we mean by a herbivore? What about a carnivore? An omnivore? A detritivore?**

- Explain the meaning of each term:

Key word
CARNIVORE
An animal that eats other animals.

Key word
HERBIVORE
An animal that eats plants.

Key word
OMNIVORE
An animal that eats both animals and plants.

Key word
DETRITIVORE
An animals that feeds on dead plants and animals.

- Give a set of the minibeast cards to each group if they don't already have them.
- Ask each group to turn the cards over and look at what each animal eats.
- Challenge them to group the animals into herbivores, carnivores, omnivores and detritivores (some of the animals that are detitivores could also fit into one of the other groups but for the purposes of this activity they should place any animal that could be considered a detritivor in this group.)
- Go over each animal in turn, checking pupils' understanding.

Herbivores	Carnivores	Omnivores	Detritivores
- Butterfly - Snail - Aphid - Bee	- Centipede - Spider - Ladybird	- Harvestman - Ant	- Woodlouse - Millipede - Earthworm - Slug

Activity 3 continued...

Q Why are detritivores so important?

If we didn't have detritivores, the dead stuff would just stay there and would start to pile up. Detritivores are vital to a healthy natural world. They're the earth's natural recyclers.

Food chains

Q Do you know what we mean by a food chain?

Key word
FOOD CHAIN

A food chain shows how each living thing gets food and how energy is passed from creature to creature. They are displayed using arrows. To get the arrows the right way round, you can think of the arrow as meaning 'is eaten by'.

E.G. PLANT > SLUG > CENTIPEDE

The plant is eaten by the slug. The slug is eaten by the centipede.

- Ask each group to look again at what each creature on the minibeast cards eats.
- Challenge them to construct a food chain using two or three creatures and the plant card.
- They can then use the labels to show whether each creature is a herbivore, carnivore, omnivore or detritivore.
- Get each group to present their food chain to the rest of the class.

Q Do you know what we mean by the following words: producer, consumer, predator, prey?

Key word
PRODUCER

A living thing that makes its own food.
The main producers are plants.
They make their food from the sun.

Key word
CONSUMER

A living thing that eats other plants or animals.

Key word
PREDATOR

An animal that catches and eats other animals.

Key word
PREY

An animal that is caught and eaten by other animals

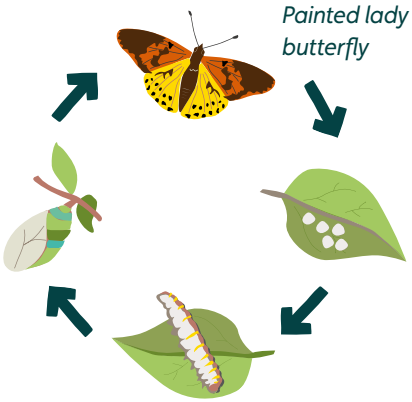
- Get each group to look back at their food chain and use the labels to show whether each living thing is a producer, consumer, predator or prey (they may be more than one of these).
- Groups to feed back to the rest of the class - check pupils' understanding.

Activity 4: Life cycle of a butterfly

Q **Do you know what we mean be a life cycle?**

- A life cycle shows how a living thing is born, grows into an adult and then has babies of its own. All living things have a life cycle, although they can be quite different.
- Give a set of butterfly life cycle cards to each group. This shows the four stages of a butterfly life cycle.
- Challenge each group to cut out the pictures and arrows and stick them onto a separate piece of paper in the correct order to show the life cycle.
- See below for the correct answer.

Answer



Painted lady butterfly

The egg stage:

- The female lays many pale-green eggs in a row on a leaf.
- After seven days the baby caterpillars start to hatch.
- They eat their way out of the egg and then eat the shell.

The caterpillar stage:

- Caterpillars are examples of larvae.
- The caterpillar spends its life eating; as it grows bigger it sheds its old skin and emerges with its new body.
- After two weeks of being a caterpillar, it attaches itself with silk and hangs upside down on a leaf.
- Then the caterpillar's skin splits exposing the chrysalis.

The chrysalis stage:

- A chrysalis (or pupa) hangs on the leaf for one week.
- Inside the chrysalis the caterpillar is changing its body into a butterfly.

The butterfly stage:

- After one week the chrysalis splits open and the butterfly emerges.
- The creature has changed from egg to caterpillar to chrysalis to butterfly in just four weeks - what an amazing transformation!

Q Do you know / remember what we mean by metamorphosis?

Key word
METAMORPHOSIS

When an animal's body changes completely as it goes through its life cycle. For example, a tadpole looks very different to an adult frog, so we say the animal has gone through metamorphosis. A baby otter looks like a smaller version of the adult otter. Otters don't go through metamorphosis.

Q Does a butterfly go through metamorphosis?

Yes, the adult butterfly looks very different and is a different shape to the caterpillar.

Activity 5: Migration

- Explain that lots of different animals migrate and that although it's hard to believe, because they are so small and delicate, this includes some butterflies. One of these is the painted lady.
- Painted lady butterflies migrate from the Sahal in Africa all the way to the UK and back again (they migrate in steps).

Step 1:
From the Sahal (the area just below the Sahara desert) to the coast of North Africa (just above the Sahara desert).

Step 2:
From the coast of North Africa to mainland Europe.

Step 3:
From mainland Europe to the UK.

- Often the life cycle takes place at each new location and it's the new generation of butterflies that make the next step of the migration.
- These tiny butterflies that weigh less than gram and have a brain the size of a pinhead can travel up to 100 miles per day. They can fly at speeds of up to 30mph and at a height of over 500 metres. Nature really is amazing!
- Give out a copy of the Migration Map to each group along with an atlas / world map.

- Get each group to label:
  - the seven continents and five oceans
  - the equator
  - the northern and southern hemispheres
  - the Mediterranean sea
- Now challenge each group to use the information above (you could display each of the steps on the board) to plot the migration of the painted lady butterfly onto their map.
- **NOTE:** It doesn't have to be exact so long as step one takes it over the Sahara, step 2 takes it over the Mediterranean and step 3 takes it from the European mainland to the UK.
- Ask pupils to imagine they are a painted lady butterfly flying all that way. Get them to discuss in their groups how they might feel and what challenges and obstacles they might face on the way.
- Get each group to feed back to the rest of the class.

Activity 6: Adaptations

- Give out a set of minibeast cards to each group if they don't already have them. The creatures on the Minibeast Cards have developed different adaptations to protect themselves from predators. Some have become camouflaged so that predators can't see them whilst other taste bad to put predators off. Some have developed venomous bites or stings while others have a shell to protect themselves.

Q **Can you find an animal on the Minibeast Cards that you think might protect itself using camouflage?**

- Ask each group to make a group of all the animals they think might use camouflage to protect themselves.
- Get each group to feed back one animal at a time.
- The aphid and rose chafer beetle, among others, use camouflage to help protect them from predators. Perhaps more surprisingly, so does the painted lady butterfly. Although brightly coloured on the tops of their wings, the underside is really well camouflaged.

Q **Which do you think might taste bad to predators?**

- The harvestman, earthworm, millipede and ladybird produce nasty tasting chemicals to put predators off eating them. Slugs produce a mucus (a slimy substance) that can be distasteful as well as making it more difficult for predators to pick them up. Many creatures that are unpleasant to eat are brightly coloured like the ladybird to warn predators that they either taste bad or are poisonous.

Activity 6 continued...

Q **Which do you think might have a venomous bite or sting?**

- The centipede and spider have venomous bites. Ants either have a venomous bite or spray an acid called formic acid to deter predators. Bees have a venomous sting.

Q **How do you think woodlice and snails protect themselves?**

- Snails retreat into their shell when they feel threatened and woodlice roll into a ball.
- Get each group to design and draw an imaginary minibeast, showing how it would protect itself from predators.

OUTDOOR ACTIVITY

Activity 7: Minibeast hunt

- Get the children to go on a minibeast hunt in their groups. They should list each creature they found and where they found it.
- Get each group to choose one animal they found and answer the following questions about it...

Q

1. **What do you think it is?**
2. **What group of animals do you think it belongs to?** *(insect, arachnid, mollusc, worm / annelid, crustacean, myriapod)*
3. **Can you see any adaptations that might make it suited to this micro-habitat?**
4. **What do you think this creature might eat? Watch it carefully and you might find out!**
5. **Do you think it is herbivore, carnivore, omnivore or detritivore?**
6. **Can you think of a food chain that might include this creature?**
7. **Think about the creature's life cycle. Do you think it goes through metamorphosis?**

- Each group should then choose their favourite animal they found and think about the following questions...

Q **Imagine you are the animal you found. What might you be thinking and feeling?**

Q **What is it you love about this animal?**

Q **What could you do to help protect this animal or provide it with a home to live?**

RESOURCES

Mini-beast key: Invertebrates: p15

Food chain cards: p16

- To make the cards, cut along the dotted lines.

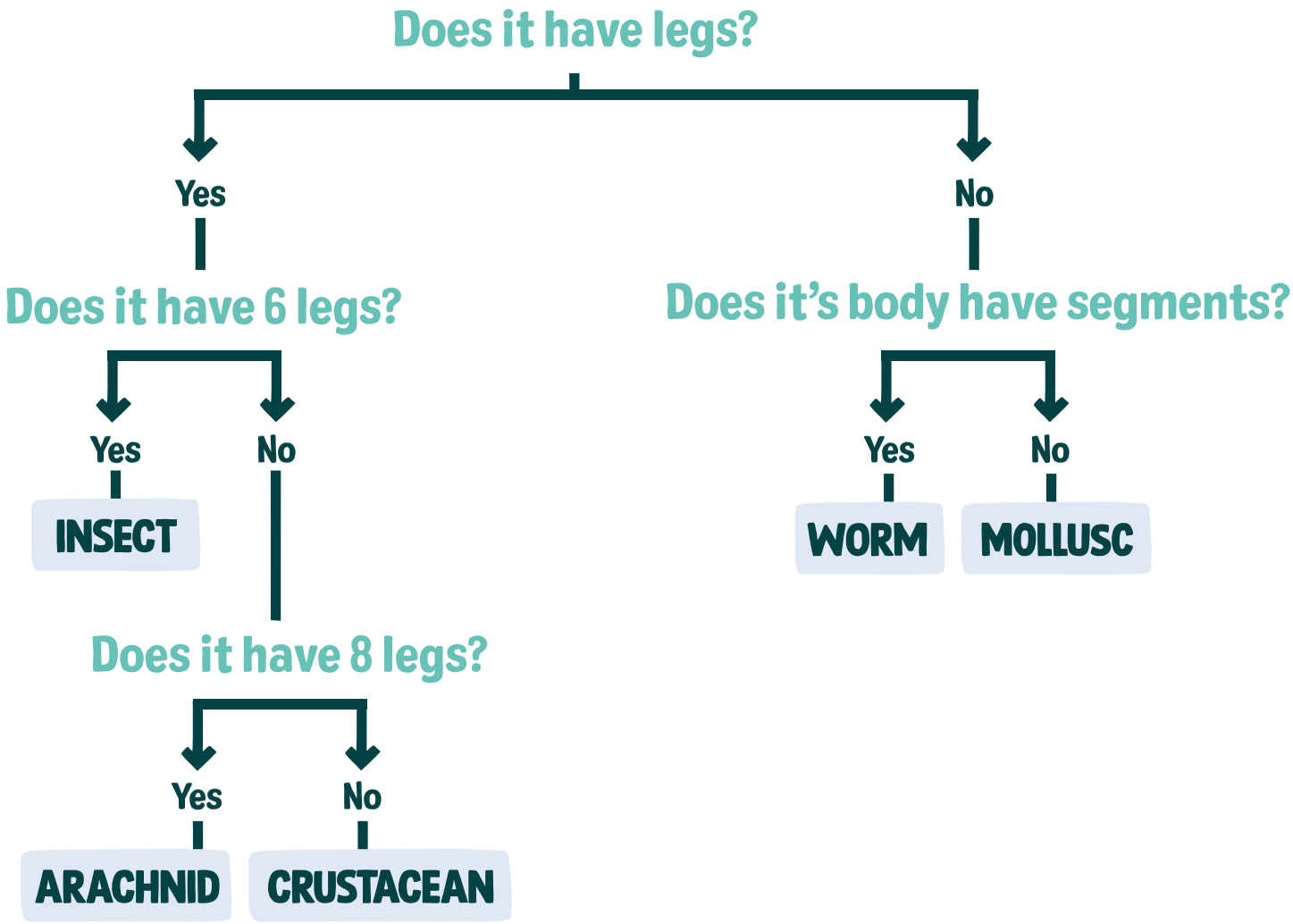
Minibeast cards: p20

- To make the cards, cut the line across the width of your paper then fold each half in half again so you end up with a picture on one side and the information on the other. Stick the two sides together with glue.
- Include the Plant picture at the bottom of this page.

Butterfly cycle cards: p28

- These are not in order. Cut out the cards and rearrange in the correct order and tick onto another piece of paper.

MINIBEAST KEY: INVERTEBRATES



CARNIVORE

CARNIVORE

CARNIVORE

CARNIVORE

CARNIVORE

CARNIVORE

OMNIVORE

OMNIVORE

OMNIVORE

OMNIVORE

OMNIVORE

HERBIVORE

HERBIVORE

HERBIVORE

HERBIVORE

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FOOD CHAIN CARDS

Cut

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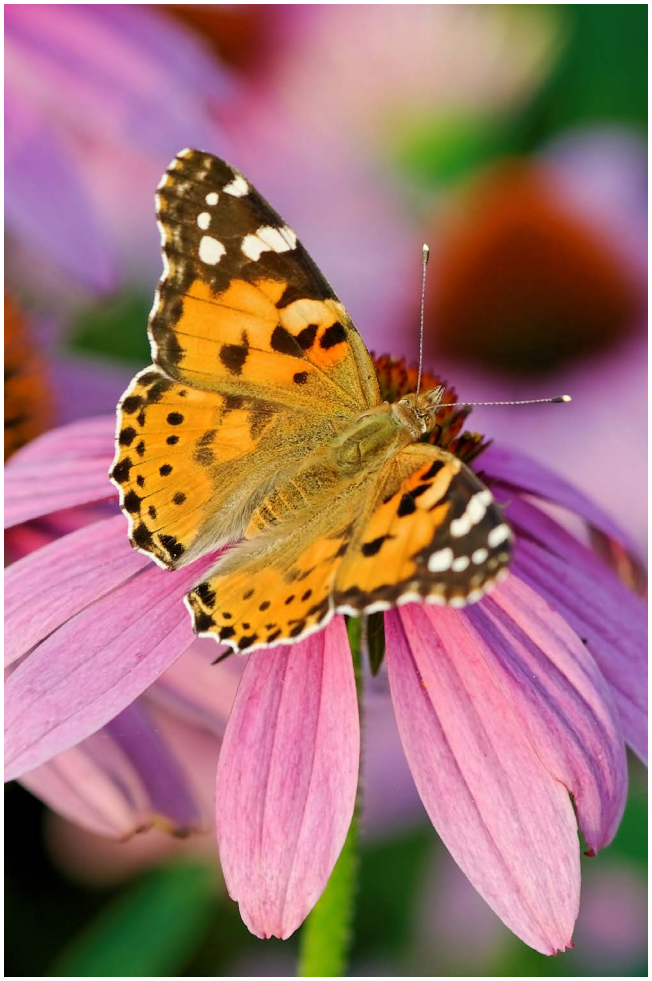


Fold

Cut

PAINTED LADY BUTTERFLY

Classification: Insect

No. of legs: 6

Diet: Thistle plants as caterpillars; nectar as adults

Where to find them: On plants as caterpillars; anywhere there are flowers as adult butterflies

Did you know? Painted ladies do not hibernate like most other butterflies. Instead they migrate.

Cut

Fold

HARVESTMAN

Classification: Arachnid

No. of legs: 8

Diet: Smaller insects, snails, worms, plants and fruit

Where to find them: In leaf litter, among leaves and in grass

Did you know? Harvestmen aren't spiders but they are related to them. They don't spin webs and aren't venomous

Fold

GARDEN SPIDER

Classification: Arachnid

No. of legs: 8

Diet: Insects and woodlice

Where to find them: On buses and plants

Did you know? Spider silk is as strong as the material used to make bulletproof vests.

Cut

Cut

Fold

EARTHWORM

Classification: Worm/Annelid

No. of legs: 0

Diet: Decaying plant matter

Where to find them: In soil

Did you know? It's not true that if you cut a worm in half it makes two new worms. Although they can regenerate to a small degree, usually both halves die.

Fold

Cut

Cut

SLUG

Classification: Mollusc

No. of legs: 0

Diet: Plants, decaying animals and plants, fungi and earthworms

Where to find them: On plants

Did you know? Slugs can stretch their bodies to make them 20 times longer when they need to squeeze through tiny holes!

Fold

SNAIL

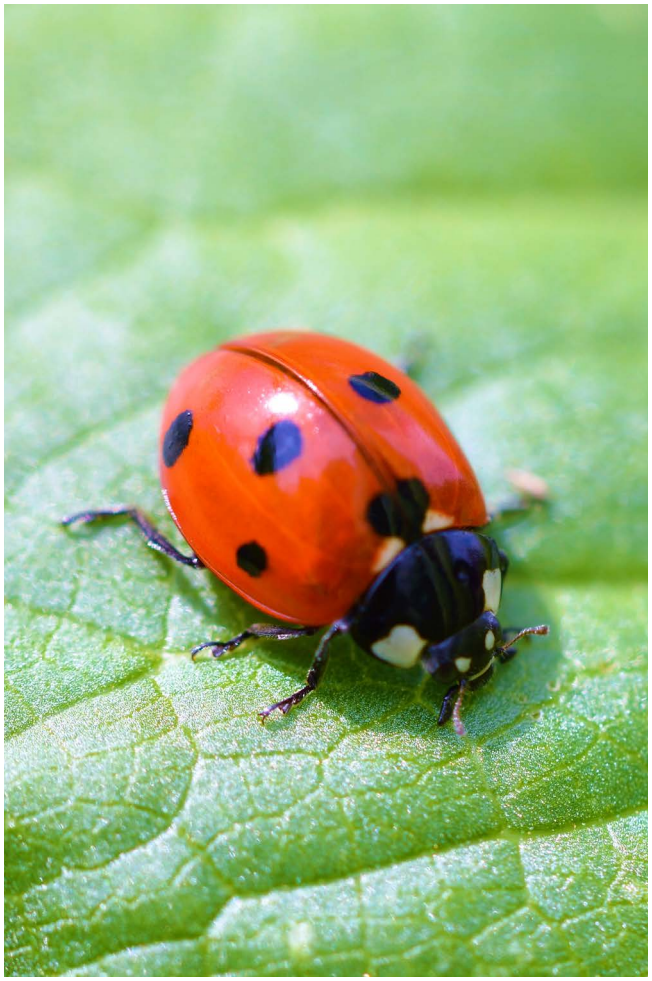
Classification: Mollusc

No. of legs: 0

Diet: Leaves and fungi

Where to find them: On plants, under rocks and logs

Did you know? The world's smaller land snail could fit through the eye of a needle



Fold

Cut

LADYBIRD

Classification: Insect

No. of legs: 6

Diet: Aphids and small insects

Where to find them: On plants

Did you know? Ladybirds are brightly coloured, warning predators of their bitter taste

Cut

Fold

APHID

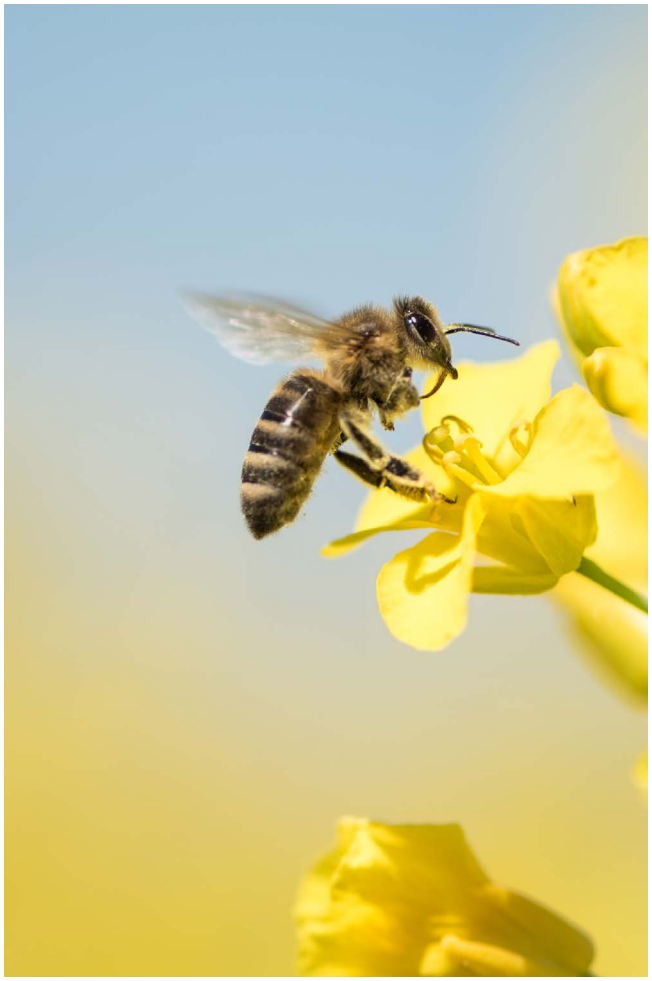
Classification: Insect

No. of legs: 6

Diet: Sap from plants

Where to find them: On plants

Did you know? Ants 'milk' aphids for the honeydew they produce!



Fold

BEE

Classification: Insect

No. of legs: 6

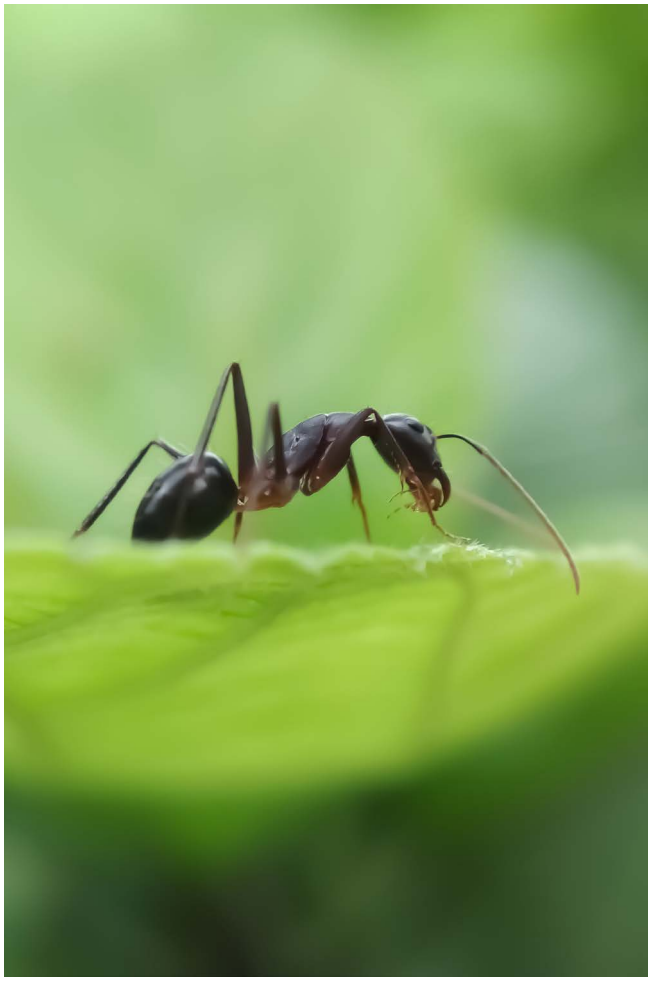
Diet: Nectar and pollen

Where to find them: On plants

Did you know? Bees are not aggressive and will only sting if they feel threatened

Cut

Cut



Fold

ANT

Classification: Insect

No. of legs: 6

Diet: Small insects, spiders, fruit and honey

Where to find them: In soil, under stones

Did you know? Some species of ants can bring 100,000 insects a day back to their nest each day

WOODLOUSE

Classification: Crustacean

No. of legs: 14

Diet: Dead plant and animal matter

Where to find them: Damp places such as under stones and logs, in wall crevices and in compost heaps

Did you know? Woodlice actually have gills like fish and need water on their gills to breathe. This is why they can only survive in damp places

CENTIPEDE

Classification: Myriapod

No. of legs: 30-354 (1 pair of legs per body segment)

Diet: Earthworms, spiders, slugs worms, woodlice and insects

Where to find them: Centipedes need moist habitats as they rapidly lose water. They can be found in soil and leaf litter, under stones and dead wood, and inside bogs

Did you know? Most centipedes are venomous!

MILLIPEDE

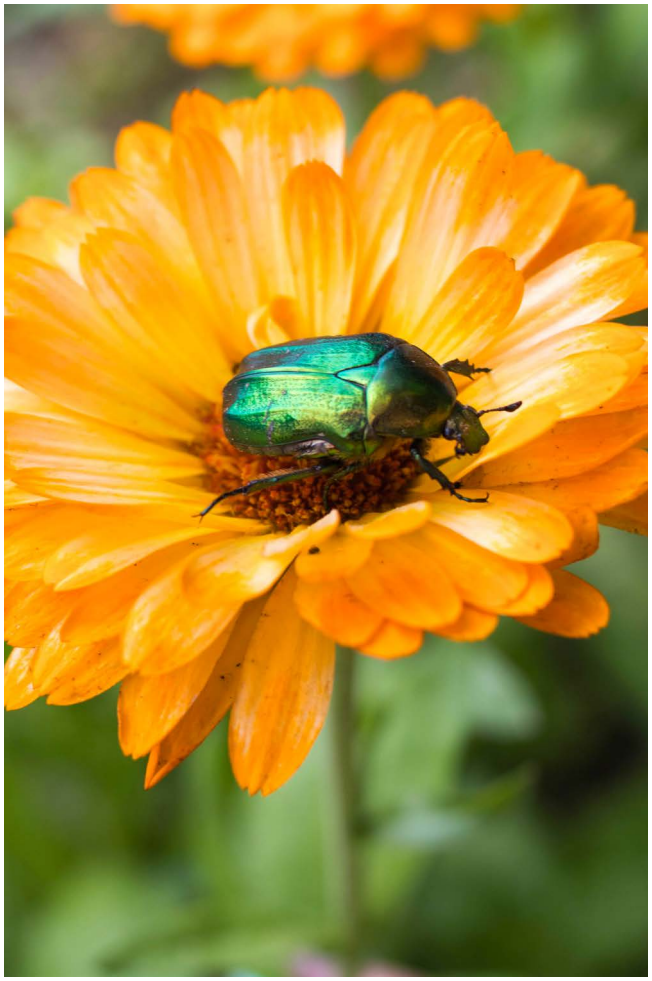
Classification: Myriapod

No. of legs: 24-750 (2 pairs of legs per body segment)

Diet: Decaying leaves and other dead plant matter

Where to find them: In leaf litter, dead wood, or soil

Did you know? Millipedes were among the first-ever land animals, which means they have been around for about 400 million years!



ROSE CHAFER BEETLE

Classification: Insect

No. of legs: 6

Diet: Slugs, snails, worms and insects

Where to find them: Under logs and stones

Did you know? There are over 350,000 different kinds of beetles in the world!

BUTTERFLY
Life cycle cards

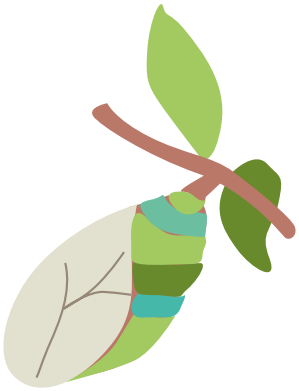
Cut

BUTTERFLY

Cut

Cut

CHRYSALIS (PUPA)



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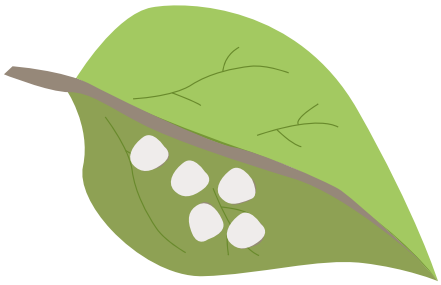
EGGS



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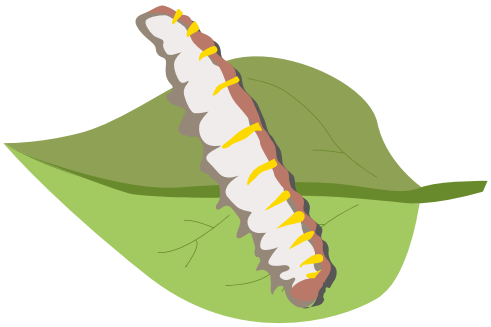
CATERPILLAR (LARVA)



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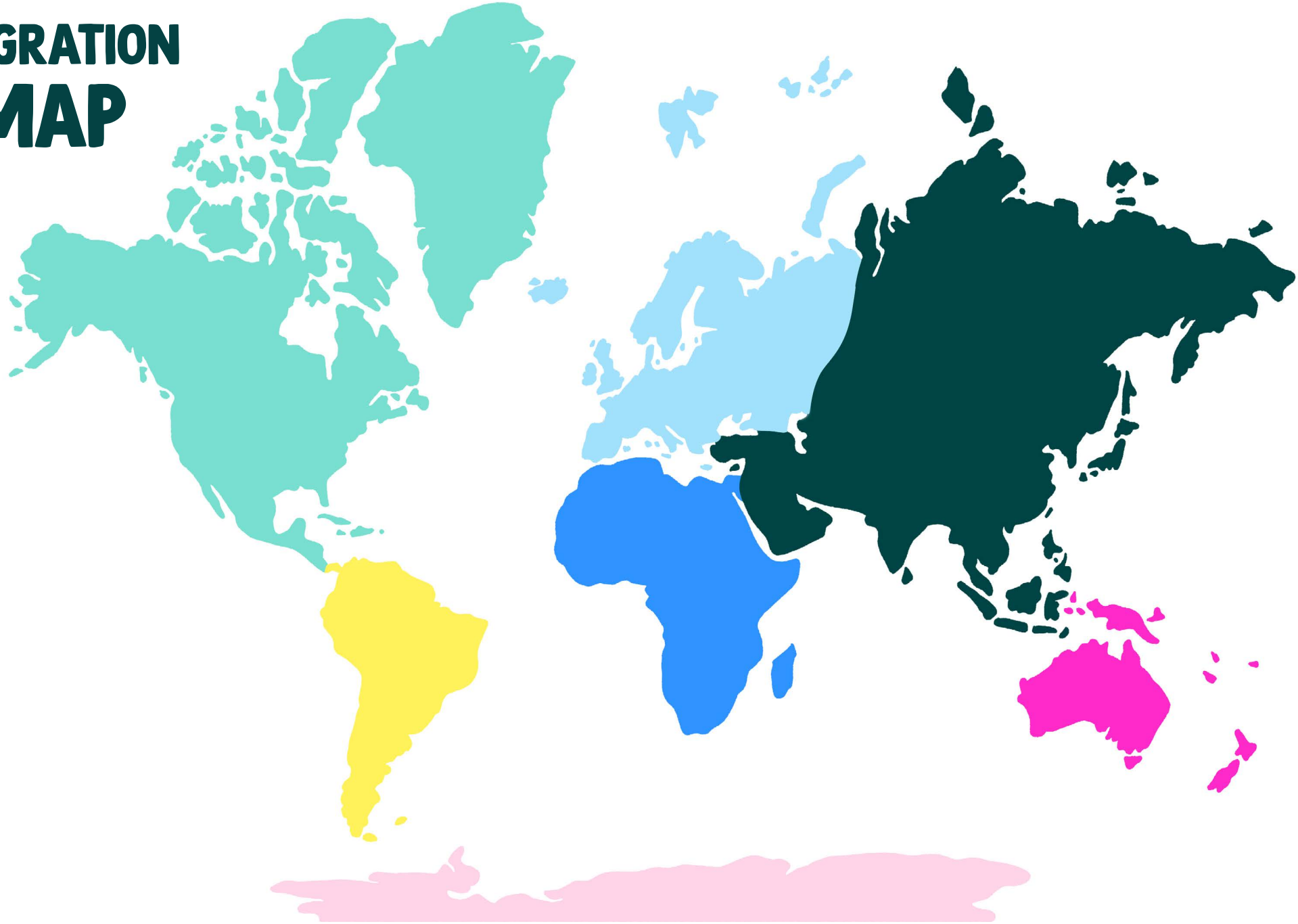
MIGRATION MAP



A GARDEN HABITAT

QUIZ: MARVELLOUS MINIBEASTS

Round 1: Picture round

All of the following animals are included in the Minibeast Cards.

Q Can you name them?

1 .....

2 .....

3 .....

4 .....

5 .....

CLUE: Centipede's have one pair of legs per body segment whereas millipedes have two.

Round 2: Classification round

For each animal below, say whether it is an **Insect**, an **Arachnid**, a **Mollusc**, a **Crustacean**, an **Annelid**, or a **Myriapod**.

Centipede

6 .....

Garden spider

7 .....

Earthworm

8 .....

Woodlouse

9 .....

Snail

10 .....

Round 3: Herbivore, carnivore or omnivore?

For each animal below say whether it is a **Herivore, Carnivore** or **Omnivore.**

Snail	Centipede	Harvestman	Earthworm	Aphid
11	12	13	14	15 .....

Round 4: Miscellaneous round

16 Q What do you call the case within which a caterpillar changes into a butterfly?

.....

17 Q Which butterfly migrates from Africa to the UK (and vice versa)?

.....

18 Q Name an animal featured on this week's Minibeast Cards that has a venomous bite or sting.

.....

19 Q Which animal featured on this week's Minibeast Cards breathes through gills?

.....

20 Q Which animal featured on this week's Minibeast Cards is an arachnid but not a spider?

.....

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We'd love to find out how you got on!

ANSWERS: MARVELLOUS MINIBEASTS

Round 1: Picture round

All of the following animals are included in the Minibeast Cards.

Q Can you name them?

1 (Painted lady) butterfly

2 Harvestman

3 Aphid

4 Centipede

5 Millipede

CLUE: Centipede's have one pair of legs per body segment whereas millipedes have two.

Round 2: Classification round

For each animal below, say whether it is an **Insect**, an **Arachnid**, a **Mollusc**, a **Crustacean**, an **Annelid**, or a **Myriapod**.

Centipede

6 Myriapod

Garden spider

7 Arachnid

Earthworm

8 Annelid

Woodlouse

9 Crustacean

Snail

10 Mollusc

Round 3: Herbivore, carnivore or omnivore?

For each animal below say whether it is a **Herivore, Carnivore** or **Omnivore.**

Snail

11 Herbivore

Centipede

12 Canivore

Harvestman

13 Omnivore

Earthworm

14 Detritivore
(allow herbivore)

Aphid

15 Herbivore

Round 4: Miscellaneous round

16 Q What do you call the case within which a caterpillar changes into a butterfly?

Chrysalis or pupa

17 Q Which butterfly migrates from Africa to the UK (and vice versa)?

Painted Lady

18 Q Name an animal featured on this week's Minibeast Cards that has a venomous bite or sting.

Centipede, spider or bee

19 Q Which animal featured on this week's Minibeast Cards breathes through gills?

Woodlouse

20 Q Which animal featured on this week's Minibeast Cards is an arachnid but not a spider?

Harvestman

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