

Mini-animals

Anne Woodfield, Michael Dockery & Mick Hoult



An ASAB Science resource for Years 2 and 3



Mini-animals

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Introduction for teachers

What is a mini-animal?

A mini-animal is essentially a small one. For Year 2 and Year 3 children we can conveniently think of them as being no larger than a common butterfly, such as a red admiral or a peacock.

In reality, a mini-animal is a small invertebrate, i.e. an animal without a backbone. This resource looks at mini-animals living on land, i.e. terrestrial invertebrates. So these mini-animals would include spiders, earthworms, bees, ants, ladybirds, slugs, snails, etc..

Most animal life on earth is invertebrate so there are always plenty of animals within school grounds to provide illustrations of the astonishing variety of life in this group of animals, especially in spring, summer and early autumn.

Health and safety points

The vast majority of British invertebrate life is safe for teachers and supervised children to collect and examine. However, wasp, bee and hornet stings are potentially dangerous and so avoid handling them. Others are also capable of delivering stings and bites (like dragonflies, ants, spiders and some centipedes) and ladybirds can exude a yellow fluid from their `knees` which is bitter and poisonous. Hairy caterpillars can cause irritation and are best avoided.

So most invertebrates can be handled with care, though the best way to do so is with brushes, plastic bowls, saucers, Petri dishes and other containers. Educational suppliers can provide a vast array of equipment but often homemade substitutes are just as good. However, some apparatus

will be needed, such as hand lenses – mini-animals are obviously small and to get a close look at their structures, scales, legs, hairs, etc. a good hand lens or magnifying glass is crucial.

Naturally, teachers will need to remind pupils of the need to wash their hands before and after handling animals, soil, leaves, plants, cages/containers, etc..

Animal welfare points

All invertebrates lack a skeleton and if their outer body (exoskeleton) is punctured their vital organs and fluids will be lost and they will die. So it is crucial to press home the message that pupils must handle them very carefully. To achieve this a set of small, soft brushes is vital when moving them or collecting them for closer inspection.



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Background notes for teachers

Contents

This ASAB resource is aimed at teachers of Year 2 and Year 3 children. It consists of:

- 1 suggested activities;
- 2 an introductory Powerpoint presentation that focuses on 20 mini-animals, hopefully some of the common ones that pupils are likely to find on a sports field or playground and in gardens. After a brief introduction to the top 20, we offer some clues as to what may be important factors to consider when trying to identify the animals, such as the number of legs, colour, size, habitat, etc.;
- 3 a poster (wall chart, A3 in size) showing the 20 mini-animals we have focused on;
- 4 a series of worksheets;
- 5 `suggested` answers for the worksheets, where relevant;
- 6 card games;
- 7 background notes for teachers;
- 8 helpful websites.

Rather than provide a large amount of information about mini-animals in general and then more details about the ones we expect may be most likely to be seen by children, we have concentrated on our `top twenty` mini-animals.

It is likely that if ten teachers were asked, "Which mini-animals are we most likely to see in your school grounds?", or outside if the children are taken on a visit to a suitable habitat, there would not be agreement in the lists. Indeed, we are sure you might suggest others that we should have included in our `top twenty` but we have our list and the resource focuses on them.

Suggested activities

1. Familiarisation work

Use the Mini-animals PowerPoint to familiarise the children with common mini-animals and their features. This will help children to identify mini-animals when undertaking field work.

2. Mini-animal fieldwork

Use the school grounds for observing, identifying and recording mini-animals.

- Working in pairs or small groups let children explore the different habitats of the school grounds looking for mini-animals.
- Encourage children to identify the mini-animals they see.
- Ask children to record which animals they see and where they see them.
- Ask children to observe mini-animals with magnifiers or to photograph them with a digital camera.
- Discuss which mini-animals were found and where they were found. Children can make graphs of their findings.
- Children can undertake further research using information books and the internet.

Note the health and safety/animal welfare information provided in the introduction to this resource pack.

Use the poster and labelled cards in the resource pack for identifying the mini-animals. Use related worksheets A, B, C and D.

3. Sorting Activities

- Ask the children to sort mini-animals using different criteria, e.g. wings/no wings, can fly/cannot fly, etc.
- Ask the children to sort the mini-animals in different ways using Venn and Carroll diagrams.

Use the related worksheets E and F and pictures of mini-animals for sorting. Enlarge the worksheets if necessary so that children can work in pairs or small groups.

4. Labelling a mini-animal

- Ask the children to label a mini-animal.

Use related worksheet G.

5. Card Games

- Children can play card games to learn the names of mini-animals and become familiar with their features.

The resource pack contains cards for:

1. Snap;
2. Pelmanism game;
3. Facts – match the facts to the picture.

Background notes for teachers

The following is a collection of background details about each of the mini-animals in our list.

The details are for the **adult stages only** (with the exception of the moth caterpillar and the ladybird larva), with **just ONE species example provided**. So it would be important to tell the children that the drawings/photographs show only ONE species and therefore all caterpillars, for example, won't look like the large yellow underwing larva that is illustrated here: some, like the vapourer, are very colourful and hairy – see UK Moths website.

In the text, M = male, F = female.



A. Butterfly (large white – *Pieris brassicae*)

Length	wingspan 60 mm
Number of legs	6
Number of offspring	eggs laid in batches from 5 to 100
Habitat	gardens, fields, hedgerows on brassica plants, nasturtiums
Time of year seen	spring to late summer – 2 broods (Apr – May & Jul – Aug)
Number of wings	4
Appearance	F has 2 black spots on the top side of each forewing and similar on underside – M has no spots on top side of the forewing but two on the underside – both F and M have black edges to the top sides of forewings
Lifestyle	herbivore (feeds on nectar)
Dangerous	no
Single or group living	single



B. Ladybird (seven spot ladybird – *Coccinella 7-punctata*)

Length	6 - 8 mm
Number of legs	6
Number of offspring	around 125 eggs are laid in batches of up to 50 at a time
Habitat	gardens, fields, hedgerows on variety of plants, like roses, but usually ones close to the ground – hibernate from late October - March
Time of year seen	March/April - October
Number of wings	4 (2 are hardened (elytra) and meet in the middle of the body)
Appearance	bright red elytra with 3 spots on each, plus one just below the head in the middle of the body
Lifestyle	carnivorous (eats aphids and other plant pests)
Dangerous	no – but can exude a yellowish fluid which has a strong smell and a bitter taste
Single or group living	single, though several may be found on a rose bush

Background notes for teachers



C. Centipede (*Lithobius variegatus*)

Length	30 mm
Number of legs	many, one pair on each segment of the body
Number of offspring	30 – 40 eggs – the F stays around until the young are about 8 weeks old, when they are independent
Habitat	common and seen in gardens, hedgerows and woodlands - active at night so hide under logs, stones, leaves, etc. during daylight
Time of year seen	throughout the year but retreat to lower levels in the soil in winter
Number of wings	0
Appearance	shiny orange-brown body - M and F look alike
Lifestyle	predators of other soil invertebrates
Dangerous	poisonous bite to other mini-animals
Single or group living	single



D. Millipede (*Tachypodoiulus niger*)

Length	60 mm
Number of legs	many, with two pairs of legs per segment of the body
Number of offspring	potentially, a few hundred eggs
Habitat	common in the soil in gardens, woodlands and parks
Time of year seen	any time of the year but lower in soil in winter
Number of wings	0
Appearance	blackish cylindrical body
Lifestyle	plant feeder
Dangerous	no
Single or group living	single



E. Woodlouse (*Porcellio scaber*)

Length	10 – 19 mm
Number of legs	14 (7 pairs)
Number of offspring	20 – 40 young, with 1 – 3 broods per year: the female woodlouse actually carries her eggs in a special area on the underside of her body, called the marsupium
Habitat	common in gardens, fields and hedgerows, often under logs, stones, plastic, etc. during daylight because they seek dark and humid environments to avoid desiccation
Time of year seen	anytime
Number of wings	0
Appearance	black with grey - they have a flattened appearance and a segmented body protected by toughened plates
Lifestyle	feed on detritus, such as rotting leaves and vegetation
Dangerous	no
Single or group living	group living when under stones, but forage singly

Background notes for teachers



F. Wasp (common wasp - *Vespula vulgaris*)

Length	17 – 18 mm
Number of legs	6
Number of offspring	queens produce several hundreds of eggs in a nest in a season
Habitat	the nest can be found in trees but often in buildings, such as garden sheds, loft space in roofs, etc. – the queen hibernates over winter in cool places like garden sheds and cellars
Time of year seen	queens emerge on warm days in March but most wasps are seen from May to September/October
Number of wings	4
Appearance	black and yellow markings, with wings folded lengthwise along the body when at rest
Lifestyle	omnivores – feed on nectar and rotting fruit but will also catch insects to feed to the larvae - workers may live for several weeks and queens for 2 or 3 years
Dangerous	painful sting and, unlike honey bees, can sting many times
Single or group living	live in a large group in a nest



G. Shield bug (hawthorn shield bug - *Acanthosoma haemorrhoidale*)

Length	13 mm
Number of legs	6
Number of offspring	around 200 eggs, in batches of 20 or so, the eggs being laid on the under-sides of leaves
Habitat	gardens, woodlands, hedgerows
Time of year seen	spring to summer - hibernate in autumn/winter
Number of wings	4
Appearance	shiny green with black and dark red markings, M and F similar
Lifestyle	herbivores, eating leaves of trees and shrubs and especially hawthorn berries
Dangerous	no
Single or group living	single



H. Earthworm (*Lumbricus terrestris*)

Length	80 mm
Number of legs	0
Number of offspring	eggs are produced in a cocoon, and they may have between 3 and 20 cocoons per year, with 1 – 20 eggs in each cocoon
Habitat	found in soil beneath grassland, woodland (especially deciduous woodland) and crops – their presence can be seen by worm casts on the surface – each earthworm has M and F organs (so are hermaphrodites)
Time of year seen	any month of the year
Number of wings	0
Appearance	pink-brown body, consisting of many segments
Lifestyle	feed on fallen plant material, like leaves, and eat soil from which they extract organic matter
Dangerous	no
Single or group living	single

Background notes for teachers



I. Crane fly (*Tipula paludosa*)

Length	16 mm
Number of legs	6
Number of offspring	100 - 300
Habitat	commonly seen in gardens and grassland
Time of year seen	in late summer and early autumn
Number of wings	2 – wings transparent but with brown patches
Appearance	large gangling flies with very long and slender legs – their legs break off easily, which is useful when they are escaping predators
Lifestyle	feed on nectar
Dangerous	no
Single or group living	single



J. Bluebottle (*Calliphora erythrocephela*)

Length	11 mm
Number of legs	6
Number of offspring	up to 600 eggs
Habitat	very common in all terrestrial habitats, including our homes
Time of year seen	in most months but much less likely in winter
Number of wings	2
Appearance	has a shiny blue body and reddish eyes – the F is attracted to meat on which she lays her eggs
Lifestyle	feed on liquids, and often carrion and decaying matter
Dangerous	no (though they can contaminate meat if it is left out)
Single or group living	single



K. Snail (Garden snail - *Helix aspersa*)

Length	shell diameter up to 40 mm
Number of legs	0, just one large muscular foot
Number of offspring	may be up to 100 eggs
Habitat	common and widespread in gardens, woods and hedgerows – are hermaphrodites so a pair can mate and then lay their own eggs
Time of year seen	any month, but seeks a sheltered site for the winter
Number of wings	0
Appearance	has a marbled brown and black shell
Lifestyle	herbivores
Dangerous	no
Single or group living	single

Background notes for teachers



L. Slug (large red slug - *Arion ater*)

Length	120 mm
Number of legs	0, just one large muscular foot
Number of offspring	an individual can lay up to 300 eggs – they are laid in batches of 10 – 50 in damp places, for example, in moist soil or under logs
Habitat	common and widespread and found in all terrestrial habitats – are hermaphrodites
Time of year seen	any month but shelters in cold weather
Number of wings	0
Appearance	orange-red and black forms - have visible tentacles and move their foot by means of waves of muscular contractions and slime – contracts its shape if touched
Lifestyle	feeds on plant material
Dangerous	no
Single or group living	single



M. Ant (black garden ant - *Lasius niger*)

Length	3 – 9 mm
Number of legs	6
Number of offspring	queens can lay around 5000 eggs in a season
Habitat	common in gardens and frequently nest under stones and brickwork, occasionally comes into houses
Time of year seen	spring to autumn
Number of wings	none, except for mating period in mid-summer when winged Ms and Fs are produced to establish new nesting colonies
Appearance	blackish-brown
Lifestyle	live in a nesting colony – young are fed a secretion from aphids, carrion and other surface-living insects
Dangerous	no
Single or group living	group living



N. Spider (garden spider - *Areneus diadematus*)

Length	12 mm
Number of legs	8
Number of offspring	several hundred per season, but it varies according to the size and nutritional state of the female: the eggs are laid in a cocoon or egg sac
Habitat	commonly seen in gardens, fields, hedgerows and woodland
Time of year seen	most evident in spring and summer
Number of wings	0
Appearance	F much larger than M – both are grey-brown in colour – the F is often seen hanging upside down in the centre of her web, often constructed between two rose bushes – F has a row of white dots down the centre of her abdomen with white streaks across the abdomen that give the appearance of a cross
Lifestyle	predator of other insects
Dangerous	no
Single or group living	single

Background notes for teachers



O. Caterpillar of moth (large yellow underwing - *Noctua pronuba*) – probably the most widespread and abundant macro-moth in UK

Length	50 mm
Number of legs	3 pairs of `real` legs and 5 other pairs of prolegs that are lost at pupation
Number of offspring	several hundred eggs laid in batches over a number of nights by the adult F – eggs hatch about a week later and the caterpillars feed above ground on mild nights
Habitat	common and widespread throughout the British Isles and in almost every terrestrial habitat
Time of year seen	from September to June
Number of wings	0
Appearance	two forms, brown and green
Lifestyle	herbivores, feeding on grasses and many other flowering plants, like dock and dandelion
Dangerous	no
Single or group living	single

P. Dragonfly (common hawker - *Aeshna juncea*)



Length	70 mm
Number of legs	6
Number of offspring	1000 - 1200 but the number of eggs laid depends on the nutritional state of the female
Habitat	common and widespread species, associated with ponds, lakes and canals, though also feeds away from water
Time of year seen	June – Sept/Oct
Number of wings	4
Appearance	transparent wings, held away from the body at rest – abdomen is dark brown with some blue markings and yellow spots – blue eyes
Lifestyle	predator of other flying insects
Dangerous	no
Single or group living	single



Q. Aphid (black bean aphid - *Aphis fabae*)

Length	2 – 3 mm
Number of legs	6
Number of offspring	capable of huge rate of reproduction
Habitat	very common, widespread and abundant on shrubs like roses
Time of year seen	early spring to late summer
Number of wings	wingless, but winged forms appear later in summer
Appearance	blue-black in colour
Lifestyle	sap sucking bug on garden shrubs – eaten by ladybirds but are `milked` and tended by ants to obtain their honeydew
Dangerous	no
Single or group living	live in large groups

Background notes for teachers



R. Ladybird larva (7 spot ladybird - *Coccinella 7-punctata*)

Length	12 mm
Number of legs	6
Number of offspring	(see adult ladybird above)
Habitat	found on a wide variety of plants and eat a number of aphid species
Time of year seen	mid-June to mid-August
Number of wings	0
Appearance	dark blue to black with yellow spots
Lifestyle	active predator of aphids
Dangerous	no (but larvae may develop cannibalistic tendencies if prey are few)
Single or group living	single



S. Grasshopper – common field grasshopper (*Chorthippus brunneus*)

Length	18 – 25 mm, F large than males
Number of legs	6
Number of offspring	eggs laid in summer in batches of around 12 or so in the soil which hatch in spring
Habitat	widespread and common on dry grassland
Time of year seen	June - Sept
Number of wings	4
Appearance	grey-brown in appearance – grasshoppers have shorter antennae than crickets and powerful hind legs for jumping – likely to hear this species on warm sunny days
Lifestyle	herbivorous, feeding on grasses and other low vegetation
Dangerous	no
Single or group living	single



T. bumblebee (buff-tailed bumblebee - *Bombus terrestris*)

Length	15 – 24 mm
Number of legs	6
Number of offspring	700 -1000 eggs, most are workers (F) and the rest are Ms and new queens
Habitat	queen builds her nest underground, often using an old mouse nest
Time of year seen	queen emerges from hibernation in early spring and workers emerge after she lays her first batch of eggs – Ms don't appear until later in the summer in time for mating with newly emerged queens
Number of wings	4
Appearance	has black/yellow stripes and buff coloured 'tail' or end to the abdomen
Lifestyle	workers gather nectar and pollen for larvae in nest – able to 'rob' the nectar from tubular flowers by cutting a hole in the base of the flower to reach in for the nectar - all species of bumblebees are very important pollinators of flowers, fruit trees and agricultural crops
Dangerous	can sting but reluctant to do so unless defending their nest
Single or group living	group living

Worksheets

The following worksheets have been provided.

A. What did you find on your mini-animal hunt?

Two versions:

1. 8 specific mini-animals in centre of 8 sheets, each with 4 questions
2. space for children to draw or record the mini-animal they find and the same 4 questions

B. Looking for mini-animals – habitats

Four versions - children record, or draw, 4 mini-animals that were found in four habitats, viz:

1. hedges and trees
2. fields and lawns
3. under logs and stones
4. flying in the air

C. Number, habitat and reasons for locations of mini-animals found on a hunt.

Two versions, both using a series of concentric circles:

1. with images of 8 common mini-animals
2. with blanks, for children to draw, record or find images of mini-animals found

D. Questions following up a mini-animals hunt – 6 questions to answer on one sheet

E. Sorting mini-animals by specific characteristics

Five versions:

1. number of legs – 4 categories (0, 6, 8 >8)
2. wings/no wings
3. live in the soil/do not live in the soil
4. < 6 legs/6 or more legs
5. blank circles for children to produce their own classifications, e.g. smooth/hairy

F. Carroll and Venn diagrams – several versions:

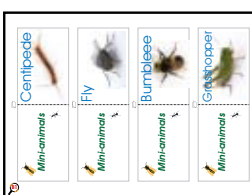
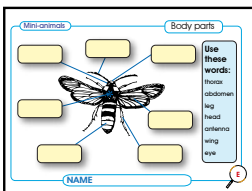
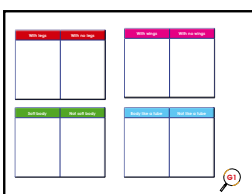
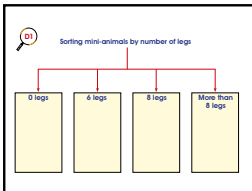
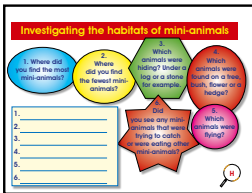
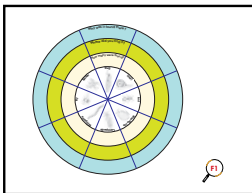
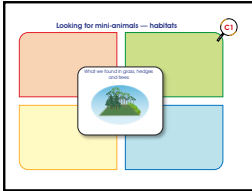
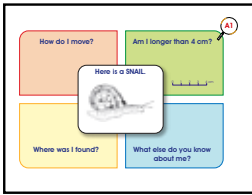
1. Carroll: simple form, two categories in each, with 4 examples
2. Carroll: more complex form, 4 categories in each, with 2 examples
3. Venn: three examples, with three intersecting circles in each example [Year 2 or above]

G. Identifying body parts. A large drawing of an adult moth is shown with 7 body parts to be identified using a given set of labels.

H. Labels and cards

Three versions:

1. Labels - card with both the name and the image of each mini-animal for the Snap game
2. Label as 1, but with the name and image separated into 2 cards for the Matching (Pelmanism) game [see the brief outline of each game below and the descriptions of each of the twenty mini-animals]
3. Image and a general description of each mini-animal for class/group activities.

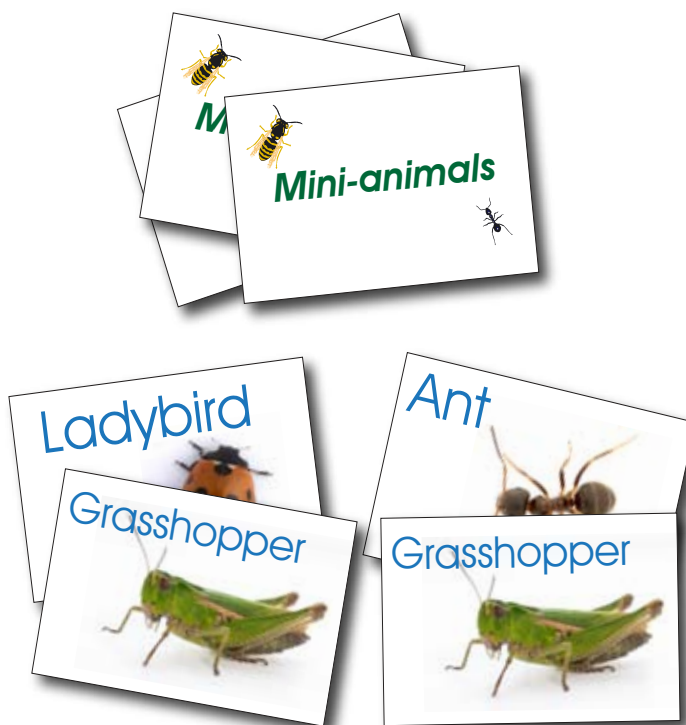


Descriptions of the card games for worksheet H, versions 1 and 2

1. Snap - 40 cards

Print off two of the 'Snap' cards: cut, fold and laminate.

The cards are shuffled, dealt out to the players who collect them in their own pack, with the picture or word face down. The game begins with the conventional 'Snap' rules and continues until one player has all the cards.



2. Memory game (Pelmanism) – 40 cards

The cards are shuffled and then placed face down on a table. Twenty cards have pictures of each of the twenty animals and a further twenty cards have just the name of the animal: the picture and name cards are different in colour (red or green) so each child, when it is their turn, picks up one animal picture card (red) and one animal name card (green). The first player selects a card and leaves it face up; they then select another and leave that face up too. If the picture and the name match, the player keeps the pair but if the pair do not match the cards are turned over and the next player has their turn. The game relies on the children remembering the position of the cards as they are turned up. The winner is the child (children) with most pairs when all the cards are taken.



Descriptions of the mini-animals for worksheet H, version 3

The descriptions provided here are the names of the twenty mini-animals and a couple of details about each one. Again the descriptions are for the adult stages, with the exception of the ladybird larva and the moth larva.

A. Large white butterfly	common in gardens and allotments – female lays eggs on cabbage plants
B. Seven spot ladybird	has 7 black spots on the red wing cases – common on our roses - eats small green or black insects called aphids
C. Centipede	long, thin animal with several pairs of legs – hunts other animals in the soil at night – hides under logs and stones during the day
D. Millipede	long, thin animal with even more legs than centipedes - feeds on plants in the soil or on the surface
E. Woodlouse	flat, grey animal with 7 pairs of legs - feeds on dead plants - hides under logs and large stones during the day
F. Common wasp	yellow and black insect that can sting - nest in holes in trees and even garden sheds – queen lays hundreds of eggs each year
G. Hawthorn shield bug	has the shape of a shield – it sucks sap from leaves and is harmless – green in colour so is well-camouflaged among leaves
H. Earthworm	animal found in all soils in gardens, woodlands and fields – feeds on leaves and also eats soil to get its food – has no legs
I. Crane fly	has very long legs which can break off easily to escape from predators – transparent wings – seen in late summer and autumn
J. Bluebottle	a common insect with a large blue shiny body and red eyes – feeds on liquids and rotting food

K. Garden snail	has a black and brown shell – common in gardens – eats leaves of many plants and fungi
L. Large red slug	found in gardens – moves along a trail of slime – shrinks if touched – eats plants and fungi
M. Black garden ant	often nests under stones in gardens – sometimes comes into our homes – a few male and female ants have wings in the summer when they leave to start new nests
N. Garden spider	female much larger than male – female often hangs upside down in her web, which is often between two plants in the garden – has a cross-shape on her body
O. Moth caterpillar	has several pairs of legs for moving around – green or brown in colour – eats grasses and other plants – stays in soil during the winter
P. Common hawk	large insect with transparent wings held away from its body when resting – seen near ponds and canals – has large eyes, blue in colour, to see its prey
Q. Black bean aphid	small blue/black insect found on roses – sucks sap from plants – is the prey of ladybirds and their larvae
R. Ladybird larva	eats aphids and found on plants like roses – blue/black in colour with yellow spots
S. Common field grasshopper	brown insect with large hindlegs for jumping – eats grasses – gives a loud call on a warm sunny day
T. Buff-tailed bumblebee	yellow and black but has a light brown end to its body – queen hibernates but emerges in spring to make a nest and lay eggs to develop into workers

Helpful websites

Here are a few websites that may be useful:

BBC

Has a list of the 'best bug sites'

www.bbccountryfilemagazine.com/best-bug-websites

BBSRC

(Biotechnology and Biological Sciences Research Council) – as well as funding high-quality research in UK, has schools-based programmes too, such as the Science Club (primary section) and on its website has a minibeast discovery pack which can be downloaded and photocopied – aimed at 5 - 12 year olds. Go to the 'Science in society' button and then the 'Young people' section.

www.bbsrc.ac.uk

UK Safari

A general site for British wildlife with lots of links.

www.uksafari.com/

Natural History Museum

www.nhm.ac.uk/

The Wildlife Trusts

National organisation for conservation in UK, with links to county trusts.

www.wildlifetrusts.org/

Down Garden Services

The website has photos of mini-animals in three categories: Friends, Animals with some bad habits and The enemy.

www.dgsgardening.btinternet.co.uk/insects.htm

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UK Moths

Has photos of almost all the 2500 moths in the UK.

www.ukmoths.force9.co.uk/

Buglife

www.buglife.org.uk/

Amateur Entomological Society

www.amentsoc.org/insects/

Butterfly Conservation

www.butterfly-conservation.org

Harlequin ladybird survey

Web-based survey following the spread of this invasive newcomer to UK. The site has ladybird identification charts and information on ladybirds.

www.harlequin-survey.org/

Bumblebee conservation

www.bumblebeeconservation.org.uk/

British Dragonfly Society

www.dragonflysoc.org.uk/index.html

'Suggested' answers for worksheets

Worksheets A – C

Pupil responses will vary depending on the habitats explored.

Worksheet D. Follow-up questions

Pupil responses will vary depending on the habitats explored.

Worksheets E

E. 1. - number of legs

0 legs – earthworm, garden snail, large red slug

6 legs – large white butterfly, seven spot ladybird, common wasp, hawthorn shield bug, crane fly, bluebottle, black garden ant, large yellow underwing larva (it has 6 'real' legs and 10 prolegs which are lost after pupation – the prolegs just help it move around as a larva), common hawkler, black bean aphid, seven spot ladybird larva, common field grasshopper, buff-tailed bumblebee

8 legs – spider

> 8 legs – centipede, millipede, woodlouse (could include the large yellow underwing larva in this group)

E. 2. - wings/no wings

wings - large white butterfly, seven spot ladybird, common wasp, hawthorn shield bug, crane fly, bluebottle, common hawkler, common field grasshopper, buff-tailed bumblebee

no wings - large yellow underwing larva, black bean aphid (only has a winged form in summer), seven spot ladybird larva, black garden ant (only has a winged form for a few days in summer when breeding occurs), centipede, millipede, woodlouse, earthworm, garden snail, large red slug, garden spider

E. 3 – in, or amongst, soil and dead leaves/not in soil and dead leaves

soil – large yellow underwing larva (when you are searching during the day – but feeds on grasses and plants above ground on mild nights), black garden ant, earthworm, woodlouse, centipede, millipede, garden snail, large red slug

not in soil – large white butterfly, seven spot ladybird, common wasp, hawthorn shield bug, crane fly, bluebottle, garden spider, common hawkler, black bean aphid, common field grasshopper, buff-tailed bumblebee, seven spot ladybird larva

E. 4 - < 6 legs/6 or more legs

< 6 legs – earthworm, garden snail, large red slug

6 or more legs - large white butterfly, seven spot ladybird, centipede, millipede, woodlouse, common wasp, hawthorn shield bug, crane fly, bluebottle, black garden ant, garden spider, large yellow underwing larva, common hawkler, black bean aphid, seven spot ladybird larva, common field grasshopper, buff-tailed bumblebee

E. 5 - See pupil response.

Worksheets F. Carroll diagrams

F. 1. Carroll diagrams with two characteristics

F. 1. 1. with legs/with no legs

with legs – large white butterfly, seven spot ladybird, centipede, millipede, woodlouse, common wasp, hawthorn shield bug, crane fly, bluebottle, black garden ant, garden spider, large yellow underwing larva, common hawkler, black bean aphid, seven spot ladybird larva, common field grasshopper, buff-tailed bumblebee

with no legs – earthworm, garden snail, large red slug

F. 1. 2. with wings/with no wings

with wings - large white butterfly, seven spot ladybird, common wasp, hawthorn shield bug, crane fly, bluebottle, common hawkler, common field grasshopper, buff-tailed bumblebee

with no wings - large yellow underwing larva, black bean aphid (only has a winged form in summer) seven spot ladybird larva, black garden ant (only has a winged form for a few days in summer when breeding occurs), centipede, millipede, woodlouse, earthworm, garden snail, large red slug, garden spider

F. 1. 3. predator/not a predator

predator – seven spot ladybird, centipede, wasp, garden spider, common hawkler, seven spot ladybird larva

not a predator – large white butterfly, millipede, woodlouse, hawthorn shield bug, earthworm, crane fly, bluebottle, garden snail, large red slug, black garden ant, large yellow underwing larva, black bean aphid, common field grasshopper, buff-tailed bumblebee

F. 1. 4. mostly one colour/more than one colour

(Be prepared to be a little generous in your interpretation of 'mostly one colour'!)

mostly one colour – large white butterfly, centipede, millipede, woodlouse, earthworm, crane fly, large red slug, black garden ant, large yellow underwing larva, black bean aphid, common field grasshopper.

more than one colour – seven spot ladybird, common wasp, hawthorn shield bug, bluebottle, garden snail, garden spider, common hawkler, seven spot ladybird larva, buff-tailed bumblebee.

'Suggested' answers for worksheets

F. 2. Carroll Diagrams with 2 characteristics and each characteristic in two states

(Answers given by sections of the rectangles
– a, b, c, d)

a	b
c	d

F. 2. 1. Legs/wings

a - large white butterfly, seven spot ladybird, common wasp, hawthorn shield bug, crane fly, bluebottle, common field grasshopper, buff-tailed bumblebee, common hawker

b - no mini animals in this section

c – centipede, millipede, woodlouse, black garden ant, garden spider, seven spot ladybird larva, black bean aphid, large yellow underwing larva

d – earthworm, garden snail, large red slug

F. 2. 2. Yellow and black/wings

a – buff-tailed bumblebee, common wasp

b – common field grasshopper, common hawker, bluebottle, crane fly, hawthorn shield bug, large white butterfly, seven spot ladybird, black bean aphid

c – seven spot ladybird larva

d – large yellow underwing larva, large red slug, black garden ant, garden spider, garden snail, earthworm, woodlouse, millipede, centipede

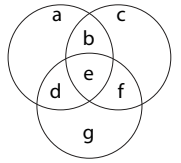
Worksheet G. Body parts

a – abdomen, b – thorax, c - eye, d - antenna, e - head, f - wing, g - leg

For Key stage two pupils

F.3. Venn diagrams with 3 characteristics

Answers given by segments of the three intersecting circles - a,b,c,d,e,f,g



F. 3. 1. Can fly/how long/mostly one colour

a – common hawker

b – seven spot ladybird, common wasp, buff-tailed bumblebee, bluebottle, common field grasshopper, hawthorn shield bug

c – seven spot ladybird larva, garden snail, garden spider

d – large white butterfly

e – crane fly, common field grasshopper

f - centipede, woodlouse, black bean aphid, black garden ant

g – millipede, earthworm, large red slug, large yellow underwing larva

F. 3. 2. Eats plants/wings/more than one colour

a – millipede, earthworm, large red slug, large yellow underwing larva, black bean aphid, woodlouse

b – large white butterfly, crane fly

c – no mini-animals in this section

d – garden snail

e – hawthorn shield bug, buff-tailed bumblebee, common field grasshopper

f – seven spot ladybird, common wasp, bluebottle, common hawker

g – garden spider, seven spot ladybird larva

2 mini-animals are not in any of the circles – centipede, black garden ant

F. 3. 3. Wings/legs/predator

a – no mini animals in this section

b – large white butterfly, hawthorn shield bug, crane fly, bluebottle, common field grasshopper, buff-tailed bumblebee

c – millipede, woodlouse, black garden ant, large yellow underwing larva, black bean aphid

d - no mini animals in this section

e – seven spot ladybird, common wasp, common hawker

f – centipede, garden spider, seven spot ladybird larva

g - no mini animals in this section

3 mini-animals are not in any of the circles – earthworm, garden snail, large red slug