Science@School | Book 4B

Habitats

Teacher's Guide

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The pupil book explained unit by unit

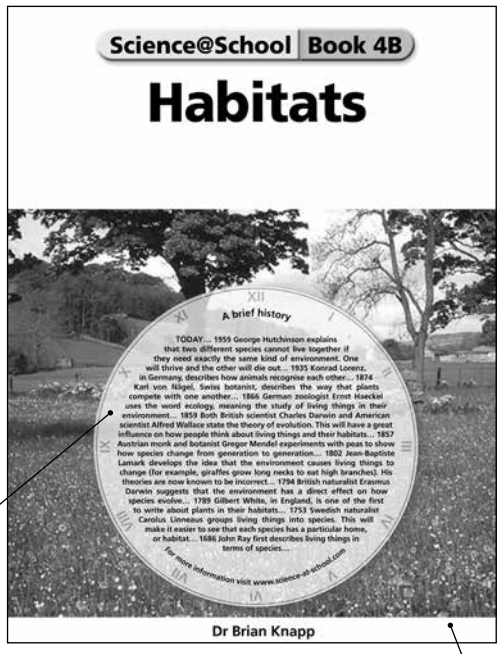
Although the pupil book – *Habitats* – is clear and simple, a great deal of care and thought has been given to the structure and the content of each double page spread or unit. The worksheets and activities in this *Teacher's Guide* also link directly to the pages in *Habitats*.

It is possible to use *Habitats,* and the worksheets and activities, without reading this section, but we would strongly recommend that you take a short time to familiarise yourself with the construction of the pupil book.

The units are arranged in sequence, to help you with your lesson planning. In this section, a brief description of the content of each unit is given, together with hints on how to start or support it. List 1 (Starting a unit with a demonstration) on page 11 sets out the resources that you could use to do the demonstrations where suggested. The activity associated with each unit is also briefly described to help you see how the unit and activity work together.

Title page

The book begins on the title page (page 1). Here you will find information about science and technology in the form of a clock. You may want to use this to set the scene for the study of the book's contents. You may choose to focus on an event which ties in with your work in history, before moving onto the rest of the book. Alternatively, you may wish to skip over this page and return to it later. It is not a core part of the book, but helps the children see how the work they are doing now fits in with the work of scientists and engineers in the past. It may also be used to stimulate more able pupils to research the people and events that are described here.



A time clock giving additional historical information about the topic.

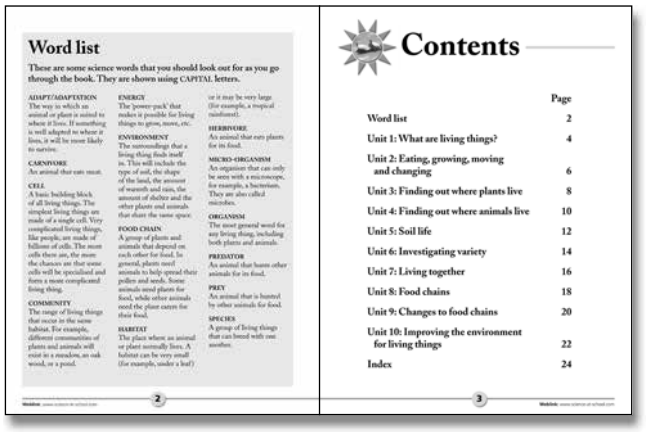
This picture shows a grassy meadow with dandelions and buttercups in full Sun.

Word list and contents

The core content of the book begins with a word list on page 2. This is a glossary, brought to the front for the pupils' attention. Pupils could be encouraged to look at the list and see how many of the words they already recognise.

One of the important things about science is the precision with which words are used. However, many scientific words are also common words, often used in a slightly different way from how they would be used in science. The word list presents the opportunity for pupils to consider the words they already know, and the meanings they are familiar with.

When your teaching unit has been completed, you may want to invite pupils to revisit this list and see if their understanding of the words has been enhanced or changed in any way. A visual dictionary is also given on the CD.



The entire contents are shown on page 3. It shows that the book is organised into double page spreads. Each double page spread covers one unit.

The units

Heading and introduction

Each unit has a heading, below which is an introductory sentence that sets the scene and draws out the most important theme of the unit.

Body

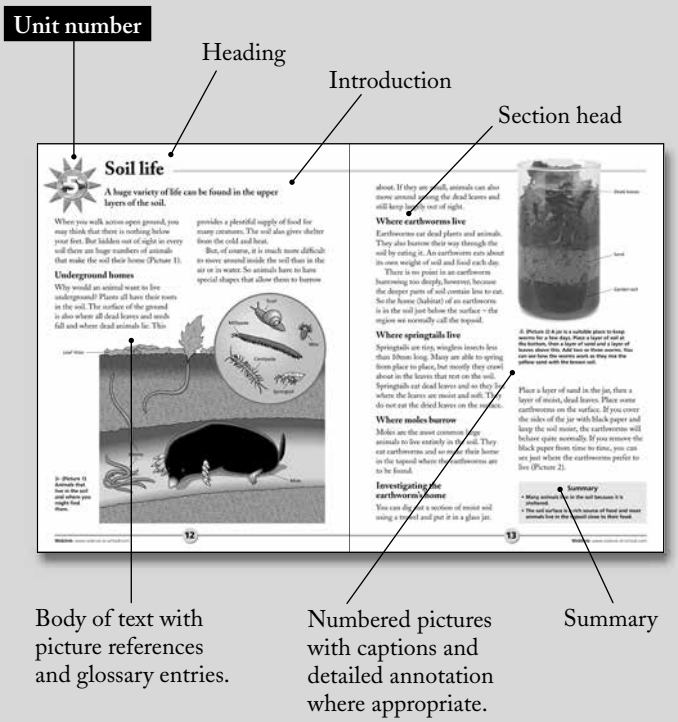
The main text of the page then follows in a straightforward, easy-to-follow, double column format.

Words highlighted in bold capitals in the pupil book are defined in the word list on page 2. A visual dictionary is also given on the CD.

The glossary words are highlighted on the first page on which they occur. They may be highlighted again on subsequent pages if they are regarded as particularly important to that unit.

Summary

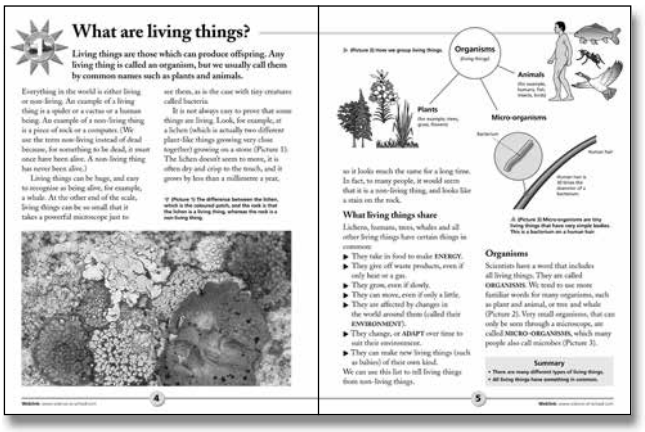
Each unit concludes with a summary, highlighting and reinforcing the main teaching objectives of the unit.



1 What are living things?

You may like to begin by giving each group of children a dry broad bean seed and a similar-sized pebble. Ask them if the two things appear to be living, then ask them how they may test them to see if they are alive. Look for answers about putting them in moist soil, then let the children plant the objects in plant pots. Ask the children to make predictions about what may happen, then allow them to check the pots regularly over the following few days.

The unit begins by dividing everything into living things or non-living things and gives examples of each. A non-living thing is also distinguished from something which is dead. A fascinating close-up photograph of lichens challenges the readers to consider that some living things may not look alive. This is followed by listing seven features of living things – to make the concept of life extremely clear. The unit briefly mentions grouping and ends by introducing the term 'organism'.



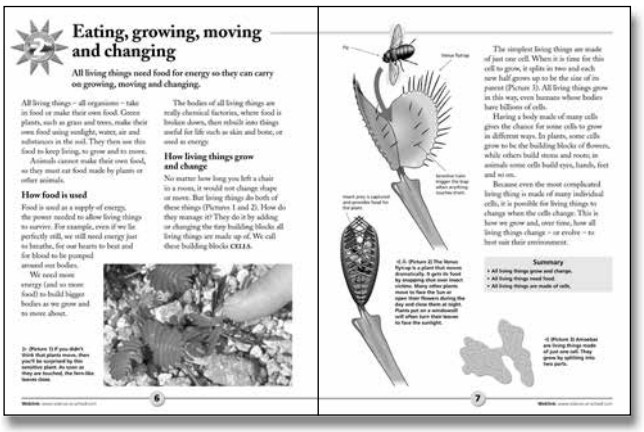
The whole unit provides foundation work, not only for the other units in this book but also for other books in the series.

In the complementary work, the children can review their ideas on the grouping of living things and develop them into an understanding of woody and non-woody plants, flowering and non-flowering plants and animals with and without backbones. In the activity, the children make a survey of living things around the school.

2 Eating, growing, moving and changing

You may like to begin by giving each group a small ball of Plasticine and telling them to imagine it is a simple living thing. Give the children some more Plasticine and tell them to add it to the first so that they have made the living thing grow. Now ask the children to divide the ball of Plasticine into two. By doing this they have made it breed and produce offspring. Give the children some more Plasticine, so they can let the offspring 'grow' and 'breed' a few times. Tell the children this is how a population of simple organisms is built up. Let the children arrange the offspring into a ball.

The unit begins by stating that all living things need food, and goes on to compare how plants and animals obtain their food. The need for food to supply energy, and materials for growth, is emphasised. The concept of cells is introduced to consider growth and development in greater detail. Movement in plants is illustrated by a sensitive plant and the Venus fly trap. The latter plant not only



demonstrates unusual movement, but also unusual feeding for plants.

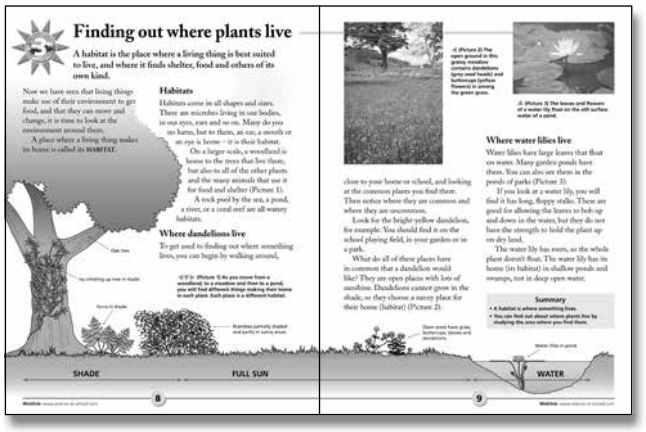
In the complementary work, the children can make observations on how their pets move and eat. In the activity, the children set up a home for snails and make observations on the way they move, eat and even breed.

3 Finding out where plants live

This unit introduces the term 'habitat' as the home of a living thing. You may like to remind the children that living things have certain characteristics, such as feeding and moving, and a habitat provides everything a living thing needs to survive. You could suggest to the children that humans are very complicated living things, and the young need places to sleep, get food, play and learn.

If the children live locally, you could suggest that the neighbourhood is their habitat, and produce a large, simple map showing homes, shops, play areas and the school. Some children could show the paths they make through the habitat as they go out to play, go to the shop or go home from school. Remind the children that plants are different. They cannot move from place to place, so when you see a plant growing, you are also seeing it in its habitat.

The unit begins by defining the word 'habitat' then moves on to consider the different sizes of habitats. The small habitat of a microbe living on a human body is compared to the large woodland habitat of a tree. Instructions are given on how to



find the habitat of a dandelion. After comparing land habitats in shade and in full sunlight, the unit ends by considering the habitat of the water lily and how the water lily is adapted to live there.

In the complementary work, the children can review the activity they did in Unit 1 to look for plants in their habitats. In the activity, the children learn how to use a decision tree key to identify six common plants and discover their habitats.

4 Finding out where animals live

You may like to begin by presenting the children with a clear polythene bag which contains moss and a piece of rotting wood. Make sure you have some woodlice in the bag. Tell the children that this could be a habitat for animals and you are going to investigate it. Gently tip out the contents of the bag into a large white tray. With luck, more creatures may come marching out of the wood and moss.

Let the children gently collect the animals in jars and remind them that in animal studies they must treat all animals with great care and do them no harm. Tell the children that this is just one way of investigating animal habitats.

The unit begins by pointing out that plants and animals share the same habitat, and moves on to show how an animal's habitat can be identified. This can be simply done by looking for where an animal is present (its habitat) and for places where it is not present (not its habitat). A suggestion is made about how to find the habitat of the woodlouse. This is clearly illustrated with a photograph and a diagram. These are followed by instructions on how to make

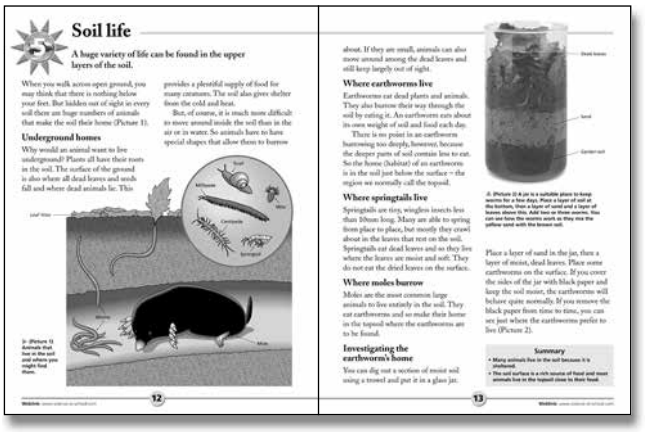
an investigation into woodlouse behaviour. A clear photograph shows how to set up a pitfall trap to catch ground beetles, and the unit ends by describing the habitat of the bumble bee and the honey bee.

In the complementary work, the children can investigate the effect of light on woodlice, and the catches of pitfall traps. In the activity, the children investigate how woodlice respond to damp conditions.

5 Soil life

Whether or not you introduced the previous unit as suggested, you might like to begin by holding up a clear polythene bag of soil. Ask the children what animals they might expect to see when you tip the soil onto a white tray. When you have written the names of the animals on the board, tip out the bag and check them off your list as the class identifies them. Let the children compare their predictions with the animals they found.

The unit begins by suggesting that as you walk over open ground, you are not aware of the huge number of animals present beneath your feet. The text then goes on to pose the question "Why would anything want to live underground?" The question is answered by a description of how the ground provides food and shelter. A beautiful illustration about soil life is supported by text explaining how earthworms move through the soil, and why springtails and moles are found near the soil surface. The unit ends by suggesting an activity to investigate earthworm behaviour.



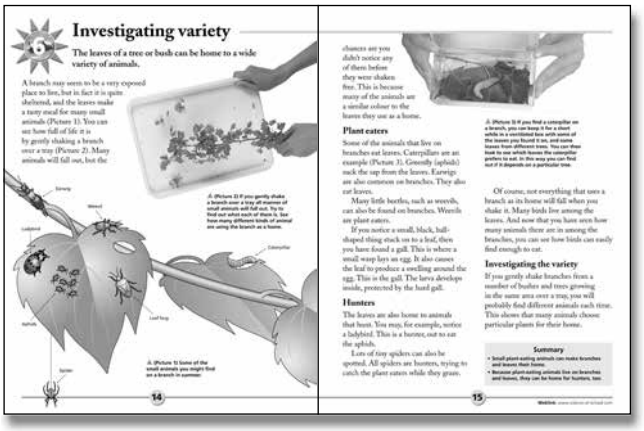
In the complementary work, the children can set up a wormery and make observations on the activities of earthworms. In the activity, the children use a key to help them identify some of the animals they find while investigating the habitat of the soil.

6 Investigating variety

You could begin by brainstorming with the class about the living things in a park or around the school. Write their answers on the board. Start by asking for the names of plants, then for the names of insects, then birds and finally mammals. By the end you may have a board full of names. Tell the children that even more living things can be found if they look even closer at their surroundings, then let them open at page 14 and begin.

It is not just surprising that life exists on the Earth, but that there is such a great diversity of life on the planet. This unit makes this point by considering the variety of life just among the leaves of a bush or tree.

The unit begins by showing that a branch is both a shelter and a feeding place for a wide variety of animals. A large, clear diagram illustrates some common animals that may be found on a branch. The supporting text explains how the animals can be divided into plant eaters and hunters. The important point is made that each type of animal



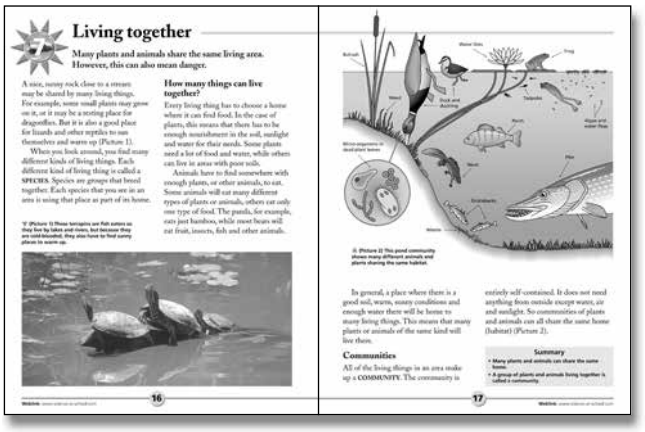
only eats leaves from specific plants, and this must be remembered when rearing caterpillars. The unit ends by inviting the reader to shake branches from a number of bushes and trees and see what falls out.

In the complementary work, the children can shake a branch, as suggested on page 15, to find the variety of life living there. In the activity, the children examine leaves on bushes and trees to find out about the animals that feed on them.

7 Living together

You could begin by asking the children what living things may be found in a pond. Write the names on the board. If they do not mention water plants you must add them to the board as you go along. Ask the children which of the animals are large and which are small. Challenge them to think why a large animal like a pike does not eat all the other animals in the pond. They should answer that some animals are camouflaged to blend in with the plants or to hide away in them. Suggest to the children that living things survive together in a habitat because they help each other in different ways.

The unit begins by showing how a simple feature in a habitat, such as a rock, can be used by several different kinds of living thing. The text moves on to define the word 'species' and establishes that a habitat may be home to many different species. The needs of plant and animal species are compared, and the unit ends by showing how plant and animal species live together and form a community. The concept of the community is illustrated by a large colourful picture of life in a pond.

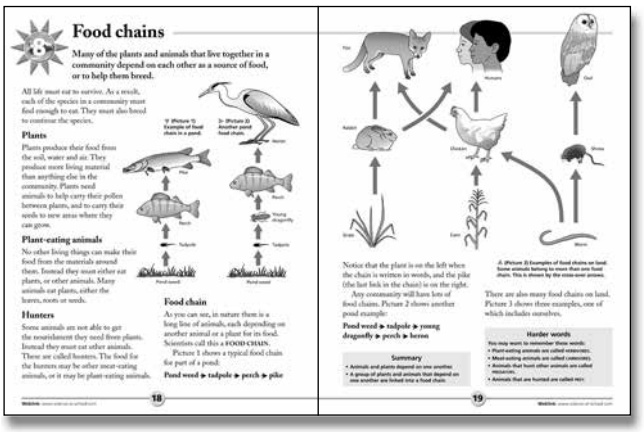


In the complementary work, the children can use secondary sources to find out about communities of living things in other parts of the world. In the activity, the children make a simple pond community and keep records in a notebook over a period of several weeks.

8 Food chains

You may like to begin by asking the children what they ate in their last meal. Suggest a selection of plant-based foods such as crisps and bread and ask the children where these foods came from (for example, potatoes and wheat). Write the sources on the board. Ask about meat and milk and trace them back to grass. Ask the children what all the sources of the foods have in common and look for an answer about them being all plants. Now trace a path from one of the plant foods to one of the children. Write the path on the board. Challenge the children to write some food paths leading to themselves and review them later, when the children have learnt about food chains,

The unit opens by explaining that all forms of life need food. The text moves on to show that all species in a community need food so that they can survive and breed. Plants are distinguished from animals by their ability to make food from raw materials, while animals can be distinguished from each other by the food they eat. The simple division of plant eaters and hunters is developed into the



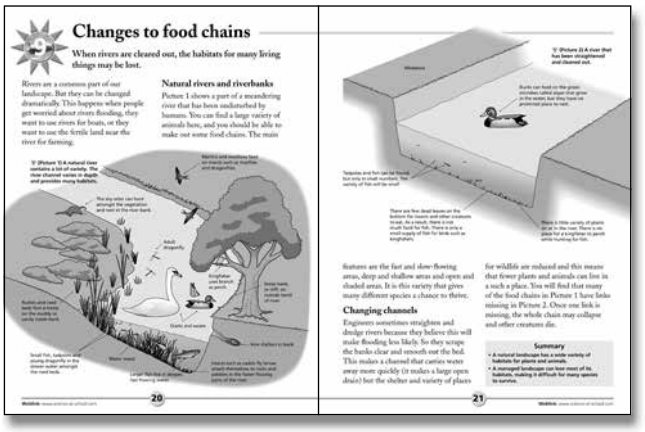
concept of the food chain. This is exemplified by two food chains from a pond. The unit ends by showing how three simple food chains can be linked together.

In the complementary work, the children can select ten foods and construct food chains from them. In the practical activity the children find out how much food a group of animals consumes in a few days, and make calculations to find out how much a single animal consumes.

9 Changes to food chains

Begin by asking one child to stand up and be an oak tree. Ask another child to stand up and be a squirrel. Say that the squirrel eats acorns and put a length of yarn between them to represent a food chain. Using just one 'oak tree' child, set up the following two food chains in a similar manner: oak, bark beetle, woodpecker; and oak, woodmouse, owl. Tell the class that you are chopping down the oak tree and ask the 'oak tree child' to sit down. Ask the class what will happen to the squirrel, bark beetle and woodmouse and look for answers that they would die because they would have no food. Let each child sit down as its animal is pronounced dead. Follow this with asking about the woodpecker and owl. When all the children have sat down, let them think about how destroying one living thing can affect others.

This unit builds on the previous one by showing how food chains can be damaged or destroyed when humans change a natural habitat. A large, detailed picture of a natural river habitat shows the variety of wildlife that can live there. This is then contrasted



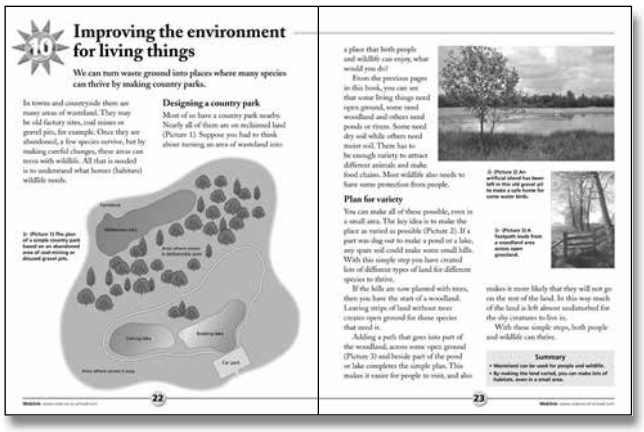
starkly with a river that has been straightened and dredged for human use.

In the complementary work, the children can find out about natural and human causes of habitat change. In the activity, the children compare the soil and leaf litter of a wood with that in a flower bed, and think about ways in which humans have changed the woodland habitat.

10 Improving the environment for living things

You may like to begin by telling the children that you are thinking of turning into a frog. When they have recovered from their speculations ask them if the classroom will need changing to accommodate you. If the children need help, tell them that you will lose water through your skin and eat earthworms and slugs. The children may respond by suggesting damp surroundings, soil for the earthworms, and plants for the slugs to eat. They may suggest that you need somewhere to hide away from predators such as foxes, or a pond to swim in. Now tell the children they have worked in the same way as a country park manager when he or she is trying to attract wildlife.

The unit begins by identifying areas in towns and countryside which could be improved for living things. The text explains that improvements can be made by using our knowledge of how living things survive together in their habitats. Suggestions are made for planning a country park, which call for the establishment of ponds, woods and dry areas.



A design for a simple country park is illustrated and discussed, and the use of the footpath to reduce disturbance to the habitats is described.

In the complementary work, the children can find out about country parks. In the activity, the children use their knowledge to improve habitats around the school for a wide range of animals.

Index

There is an index on page 24.

Using the pupil book and photocopiable worksheets

Introduction

There is a wealth of material to support the topic of habitats in the pupil book and in the *Teacher's Guide*. On this and the following three pages, suggestions are made on how to use the worksheets and their associated teacher's sheets, and how to integrate them for lesson planning. On the page opposite you will find the resource lists for introductory demonstrations, the complementary work and the activity worksheets. The learning objectives are shown on pages 12and 13.

Starting a unit

Each unit in the pupil book forms the basis for a lesson. You may like to start by reading it with the class, or begin with a demonstration (see List 1). Always begin the unit by reading the introductory sentences in bold type. This helps focus the class on the content of the unit and to prepare them for the work.

The first part of the main text introduces the content, which is then developed in the headed sections. The illustrations are closely keyed to the main text, and the captions of the illustrations develop the main text content.

With less skilled readers, you may prefer to keep to the main text and discuss the illustrations when they are mentioned. With more skilled readers, you may want to let them read the captions for themselves. Each unit ends with a summary. The children can use this for revision work. They can also use it to test their understanding by trying to explain the points made in the summary.

You can find the learning objectives for each unit of this *Teacher's Guide*.

The style and content of the unit also make it suitable for use in literacy work, where the needs of both English and science are met. You may wish to use the unit as a topic study in literacy work, or you may want to perform an activity in science time and follow it up with a study of the unit during literacy work.

Using the comprehension worksheets

Each unit in the pupil book has one photocopiable comprehension worksheet in this *Teacher's Guide* to provide a test. The learning objectives are for these comprehension worksheets and relate directly to the knowledge and understanding component of the science curriculum.

The comprehension worksheets begin with simple questions and have harder questions towards the end.

The worksheets may be used singly, after each unit has been studied, or they may be used along with other worksheets to extend the study.

The teacher's sheet, which is opposite the comprehension worksheet, shows the answers and background information to the unit. This teacher's sheet also carries a section on work complementary to the study topic. This work may feature research using other sources. It may also have value in literacy work.

Using the activity worksheets

The activities are designed to develop skills in scientific enquiry. The learning objectives for practical skills associated with each unit are given here. The activities may be small experiments, may focus on data handling or comprise a whole investigation.

Each activity section is a double page spread in this *Teacher's Guide*. On the left hand page is a photocopiable activity worksheet to help the children in practical work, or it may contain data for the children to use or interpret. The page opposite the worksheet is a teacher's sheet providing a step-by-step activity plan to help you organise your work. Each plan has a set of notes which provide hints on teaching or on the use of resources. The activity plan ends with a conclusion, which you may like to read first, to help you focus on the activity in your lesson planning.

Planning to use a unit

The materials in this pack are very flexible and can be used in a variety of ways. First, look at the unit and activity objectives. Next, read the unit in the pupil book, and the associated worksheet and activity units in this *Teacher's Guide*. Finally, plan how you will integrate the material to make one or more lessons. You may wish to add more objectives, or replace some of the activity objectives with some of your own.

Safety

The practical activities feature equipment made from everyday materials or available from educational suppliers. However, make sure you carry out a risk assessment, following the guidelines of your employer, before you do any of the practical activities in either the pupil's book or the *Teacher's Guide*.

Resources

The three lists below show the resources needed to support the photocopiable worksheets.

- List 1 shows resources for demonstrations suggested for starting a unit.
- List 2 gives resources needed for the complementary work featured on the teacher's sheet associated with each comprehension worksheet.
- List 3 details those resources needed for the 10 activity worksheets.

List 1 (Starting a unit with a demonstration)

▼ UNIT

1. Each group will need a broad bean seed and similar-sized pebble and a plant pot of compost, and a place to keep the pot while the seeds sprout.
2. Each group will need a small ball of Plasticine and a larger lump to make extra models.
3. Large, simple map of the neighbourhood around the school.
4. A clear polythene bag containing a piece of rotten wood, moss, woodlice, a white tray.
5. A clear polythene bag with soil and the following soil animals in it – slugs, snails, millipedes, earthworms.
6. –
7. –
8. –
9. A roll of yarn, scissors.
10. –

List 2 (Complementary work)

Each group will need the following items:

▼ UNIT

1. A selection of large photographs, or specimens of the following: moss, ferns, broad-leaved tree, conifer, flowering plants, including weeds and garden flowers, beetle, spider, snail, slug, fish, frog. Large photographs of reptiles, birds and mammals.
2. The sprouting broad bean in its plant pot from the introduction to Unit 1. If the children have pets, they can make notes about them at home.
3. The worksheets from Unit 1.
4. (a) A tray with damp paper towels in the bottom, black card, clear transparent sheet, clock, supply of woodlice.
   (b) A jar for a pitfall trap, cardboard cover, trowel, and a place to set up the trap.
5. A large plastic jar, sieved garden soil, sand, sheet of polythene with holes in, elastic bands, black card, damp leaves, pieces of carrot, potato and other vegetables.
6. Access to a bush, white tray or newspaper.
7. Secondary sources about animal communities around the world (especially on the African plains).
8. Secondary sources about how food is produced.
9. Secondary sources about how habitats are changed by volcanoes, fire, pollution and large human populations.
10. Secondary sources about how wastelands are turned into country parks. A trip to a country park.

List 3 (Activity worksheets)

Each group will need the following items:

▼ UNIT

1. Supervised access to the school grounds or supervised walk around a park.
2. A plastic container, such as a large sweet jar or an aquarium tank. The jar will need a polythene sheet with a hole in it and an elastic band. The tank will need a sheet of clear plastic and some Plasticine supports. Each container will need moist soil, grass tussocks, stones or plant pots broken in half. The snails will need a regular supply of food. A selection can be made from cabbage, lettuce, mashed potato, flour paste and rolled oats crushed with chalk.
3. Supervised access to the school grounds or supervised walk around a park.
4. A tray, cotton wool, a black card to cover the tray, 30 woodlice, a container to hold the woodlice (keep them in moss), a clock.
5. Depending on resources, and the ability and attitude of the children, use one of the following: (1) Access to soil in the school grounds or an area of ground partially covered with stones. (2) If working in the classroom – bags of soil including some turf, white tray or newspapers, collecting jars, paint brush, pooter (optional), magnifying glass.
6. Access to a hedge or trees.
7. Clear plastic container (tank or bottle) with loose fitting lid, washed gravel, water plants (Canadian pondweed or hornwort), water snails, pond water, windowsill out of direct sunlight, magnifying glass (optional).
8. Clear plastic container (tank or bottle) with loose fitting lid, common stick insects and privet leaves in small water jar, or caterpillars and leaves of the appropriate food plant, weighing machine (optional).
9. Access to woodland soil and leaf litter, access to soil and leaf litter from a flower bed. White tray or newspapers, collecting jars, paint brush, pooter (optional), magnifying glass.
10. –

Learning objectives

Comprehension worksheets

The table below shows the learning objectives for knowledge and understanding associated with each unit in the pupil book, using the comprehension worksheets in this *Teacher's Guide*:

Unit 1

- Living things have a range of characteristics.
- Living things are arranged into groups.
- Living things are also called living organisms.

Unit 2

- Plants and animals obtain their food in different ways.
- Living things are made of cells.
- Some plants move in animal-like ways.

Unit 3

- The habitat is the natural home of a living thing.
- Habitats vary greatly in size.
- Habitats are found both on land and in water.

Unit 4

- The presence of an animal in a place indicates that the place is the animal's habitat.
- Darkness and dampness can be important conditions for some animals.
- The presence of food and breeding areas are needed in an animal's habitat.

Unit 5

- Some animals live in the soil because it provides them with food and shelter.
- Soil animals are adapted for moving through the soil.
- There is a wide diversity of animals in the soil.

Unit 6

- A wide variety of animal life may be found on bushes and trees.
- Some animals use camouflage to hide.
- The animals can be divided into plant eaters and hunters.

Unit 7

- A habitat is the home to many different kinds of living thing.
- Each different kind of living thing is called a species.
- A group of plants and animal species that live together form a community.

Unit 8

- Plants produce food for animals.
- A food chain shows the passage of food between living things.
- Food chains can be linked together to form a food web.

Unit 9

- A natural habitat can have a wide variety of different species living in it.
- When a natural habitat is modified by humans, the number of species living in the habitat falls.
- Species disappear from a habitat when links in food chains are broken.

Unit 10

- Wastelands can be converted into country parks.
- A variety of habitats should be made in each country park.
- Careful planning of the park helps the survival of the plants and animals in it.

Learning objectives

Activity worksheets

The table below shows the learning objectives for practical skills associated with each unit in the pupil book, using the activity worksheets in this *Teacher's Guide*:

Unit 1

- Identify some common living things in their surroundings.
- Fill in a table.
- Extract data from a table.

Unit 2

- Use simple materials safely.
- Make accurate observations.
- Complete an extensive investigation.

Unit 3

- Use a key to identify some common plants.
- Describe the habitat of a plant.

Unit 4

- Make a prediction and compare it with data.
- Handle living things with care.
- Draw a conclusion from data.

Unit 5

- Use a key to identify some soil animals.
- Handle living things with care.
- Draw conclusions from data.

Unit 6

- Make accurate observations.
- Fill in a table.
- Draw conclusions from data.

Unit 7

- Use simple materials safely.
- Make accurate observations.
- Complete an extensive investigation.
- Compare data and identify the most significant components.

Unit 8

- Use simple materials safely.
- Make quantitative measurements.
- Perform simple calculations on data.
- Handle living things with care.

Unit 9

- Make accurate observations.
- Record and display data.

Unit 10

- Use data in making plans.

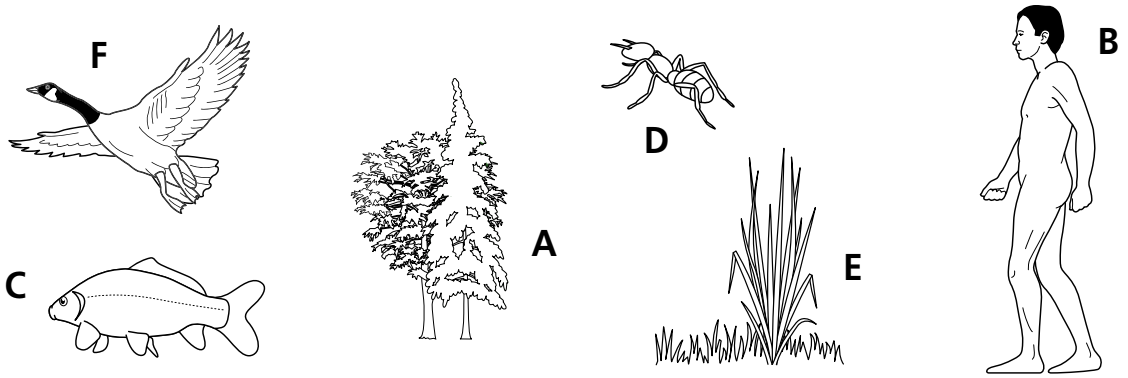
1

Name: ..... **Form:** .....

See **pages 4 and 5** of *Habitats*

What are living things?

Living things are those which can produce offspring. Any living thing is called an organism, but we usually call them by common names such as plants and animals.



Q1. These living things can be divided into two groups. What are the groups called?

✎..... ✎.....

Q2. Divide the living things into the two groups. Write down the name of the group, then next to each name write the letter of the living thing you wish to put in that group.

✎..... ✎.....

Q3. Name two examples of non-living things.

✎..... ✎.....

Q4. Some living things grow on rocks and look as if they are stains on the rock. What are they? ✎.....

Q5. State three things that all living things have in common.

✎.....

✎.....

✎.....

Q6. What are very small living things called?

✎.....

Teacher's sheet: comprehension

See **pages 4 and 5** of *Habitats*

Answers

1. **Plants and animals.**
2. **Plants – A, E. Animals – B, C, D, F.**
3. **Rock, computer, etc.**
4. **Lichens.**
5. **Feed, grow, move, give off waste, affected by changes in the environment, adapted to the environment, make more living things (breed).**
6. **Micro-organisms or microbes.**

Complementary work

(a) Make a collection of large photographs or specimens of the following: moss, ferns, broad leaved tree, conifer, flowering plants, including weeds and garden flowers, beetle, spider, snail, slug, fish, frog, large photographs of reptiles, birds and mammals. Ask the children to sort them into plants and animals. Ask the children to sort the plants into woody and non-woody plants, then into flowering and non-flowering plants. Discuss the presence of skeletons and backbones in some animals, then ask the children to sort the animals into animals with backbones (vertebrates) and animals without backbones (invertebrates).

Teaching notes

There are seven characteristics of living things but all of them do not need to be considered at this level. They are feeding, moving, respiring, excreting, growing, reproducing and sensing changes in their surroundings.

Plants are distinguished from animals in the following ways: Plants move as they grow while animals can move the whole of their bodies from place to place. Plants make their own food from air, water and sunlight, animals have to feed on plants or other animals. Plants have a green substance (chlorophyll) to trap energy in sunlight, animals do not have this substance. Plants use a substance called cellulose to give them support (think of crunchy celery), animals support their bodies with bones or hard outer skeletons (as in insects).

Living things adapt to changes over many generations through evolution.

Fungi used to be considered a plant, but today they are put in a separate kingdom. Seaweeds belong to the algae group. They are sometimes classified with plants for simplicity but are really part of another kingdom, which includes many micro-organisms.

Horsetails may be found growing in waste places. They are non-flowering plants related to the ferns.

Animals which do not have a skeleton and backbone inside their bodies to support them may have a skeleton on the outside of the body (insects and spiders) or a lack of skeleton altogether. These animals, which include earthworms and slugs, have fluid-filled body cavities that help them maintain their shape.

Name: ..... **Form:** .....

Based on **pages 4 and 5** of *Habitats*

Looking at living things

Try this...

1. Have a look around the outside of your school for the living things listed below. Take this sheet and fill in the table as you walk around. Put a dash if you cannot find them in any place.

2. If you find living things in other places add them to the table. There are three blank rows that you can use.

3. If you find some other living thing you would like to record, write its name in a blank box in column 1, then put a tick in the appropriate location.

Living thing	**Place found**							
	Wall	Path	Edge of path	Lawn	Flower bed			
Lichen								
Moss								
Fern								
Grass								
Snail								
Slug								
Earthworm								
Woodlouse								
Spider								
Beetle								
Butterfly								
Fly								
Bee								

Looking at the results.

4. In which place did you find the most living things? ✎.....

5. Which living thing was found in the largest number of places? ✎.....

Teacher's sheet: activity

Based on **pages 4 and 5** of *Habitats*

Introducing the activity

(a) Ask the children if they have seen any living things on their way to school today. Write their answers on the board. Tell the children they are going to look for living things in their surroundings a little more scientifically. They are going to look in different parts of their surroundings and make a survey.

Using the sheet

(b) Give out the sheet, let the children fill in their names and form then go through task 1 (see note (i)).

(c) Go through tasks 2 and 3.

(d) Let the children try tasks 1 to 3.

(e) When the children have returned to the classroom, go through tasks 4 and 5, then let the children try them.

Completing the activity

(f) Let the children compare their results.

(g) You may let the children write up their activity. They could write about the route they took, or draw a map of their walk and write, on the map, the names of the living things they found and the positions of features such as the walls, paths and flower beds (see note (ii)).

Conclusion

The variety of life around the school depends on whether it is surrounded just by playgrounds or whether it has some lawns and gardens. Even in a school playground, it is possible to find lichen, moss and grass. There are also woodlice, spiders and flies. Grass is one of the most widely spread plants, and flies are one of the most widely spread animals.

Teaching notes

(i) Make sure that the children's work outside is in accordance with school policies. Show the children how to fill in the table by giving an example, such as putting a tick in a box which shows that a lichen has been seen on a wall. The children only put a tick to show the presence of the living thing in a particular place. They do not have to put a tick for each lichen or butterfly they see.

(ii) You could provide the children with a map of the school grounds on which they could write their observations.

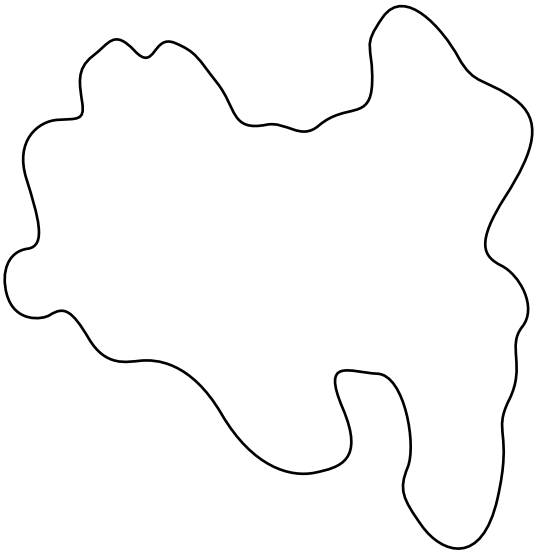
2

Name: ..... Form: .....

See **pages 6 and 7** of *Habitats*

Eating, growing, moving and changing

All living things need food for energy so they can carry on growing, moving and changing.



Q1. The picture above shows a very simple living thing. Draw how it reproduces.

Q2. What do green plants use to make food?

✎.....

✎.....

Q3. Where do animals get their food?

✎.....

Q4. What happens when you touch the leaves of a sensitive plant?

✎.....

Q5. What are all living things made of? ✎.....

Q6. Living things evolve. What does evolve mean?

✎.....

✎.....

Teacher's sheet: comprehension

See **pages 6 and 7** of *Habitats*

Answers

1. **The amoeba divides up, so any drawing showing division into two smaller parts would be correct.**
2. **Sunlight, water, air and substances in the soil.**
3. **From plants and other animals.**
4. **They close up.**
5. **Cells.**
6. **Change over time to best suit the environment.**

Complementary work

(a) If the children have kept their sprouting broad bean from the introduction to Unit 1, they could keep it growing, measure its growth and note the development of its leaves. If space provides, the beans could be grown to produce flowers.

(b) The children could observe how their pets move and feed, and make a report or a display of their observations.

Teaching notes

It is believed that life on Earth began over two billion years ago. The first forms of life were cell-like and developed from chemicals in the oceans. These cells grew and reproduced by simple division. At first they probably just formed colonies of single cells. Later some cells formed groups and became multicellular organisms, with different cells doing different 'jobs'. All plants and animals developed from these early, simple life forms.

The Venus fly trap and other carnivorous plants have developed this way of feeding because they live in habitats where the soil provides them with insufficient minerals for growth. The plants get the minerals they need from the insects that they trap.

When plants, such as sensitive plants and the Venus fly trap, move suddenly, the movement is not caused by muscles, as in animals. It is brought about by changes in the amount of water in the plant cells. The rapid change in water content, as water moves between groups of cells, causes the movement.

You may like to link the practical activity in this unit with the practical activity in Unit 7, to compare a land and freshwater habitat.

Name: ..... **Form:** .....

Based on **pages 6 and 7** of *Habitats*

Observing snails

Try this...

1. Set up a habitat for snails using a tank or large jar. Put moist soil in the bottom of the container to a depth of seven centimetres.

2. Add some tussocks of grass to cover the soil.

3. Make a shelter from half a plant pot or a few stones.

4. Put in the snails and cover the container with a plastic sheet.

5. Make sure there are some holes or gaps in the plastic sheet through which air can pass to the snails.

6. Make a drawing of your snail container and label it.

7. Give the snails different foods and find out which ones they eat. Write down what you find out here.

✎.....

✎.....

8. Write down any other discoveries you make about the snails.

✎.....

✎.....

2 Teacher's sheet: activity

Based on **pages 6 and 7** of *Habitats*

Introducing the activity

(a) Tell the children that they are going to set up a home for a group of living things and observe them for a while (see note (i)).

Using the sheet

(b) Give out the sheet, let the children fill in their names and form, then go through tasks 1 to 3 (see note (ii)).

(c) Let the children carry out tasks 1 to 3.

(d) Go through tasks 4 and 5, then let the children try them.

(e) Let the children try task 6.

(f) Let the children try task 7 by putting cabbage leaves and lettuce leaves into the container (see note (iii)).

(g) Let the children try out task 8 over a few weeks (see note (iv)).

Completing the activity

(h) Let the children present a report of their observations to the whole class. Let them compare and discuss their observations.

Conclusion

Snails can be kept in containers of moist soil. They will eat cabbage, lettuce, mashed potato, rolled oats crushed in chalk, and flour paste. A snail has a muscular part of its body called the foot with which it holds onto the ground. It makes ripple like movements on the surface of the foot to help it move along. A snail also moves on a trail of slime. Snails may make a paper-like door to their shells when they are inside them (see note (v)).

Note: After the investigation, the snails should be released back into their habitat.

Teaching notes

(i) You may wish to show the children some snails and ask them how the snails could be cared for. You could steer the children's answers towards the setting up of a snail container or 'snailery'.

(ii) The containers should be made of plastic. They could be a plastic sweet jar covered with a polythene sheet held in place with an elastic band. The sheet should have some small holes in it. If the container is a tank, it could be covered by a clear plastic sheet held in place with Plasticine. There should be a gap between the sheet and the top of the container to let air in.

(iii) Snails will eat cabbage, lettuce, mashed potato, oats rolled in crushed chalk, and flour paste smeared on the side of the container. The children could try other vegetables, such as carrots and the leaves of some garden plants.

(iv) The containers should be sprayed with water to keep them from drying out. The food should be changed before it decays, snail droppings may need removing by you, from time to time. You may find snail eggs in the soil. A snail egg is about 4mm long and white. If the snail eggs are put in a moist container they may hatch in 20 to 30 days. The children could then try to rear and measure the young snails.

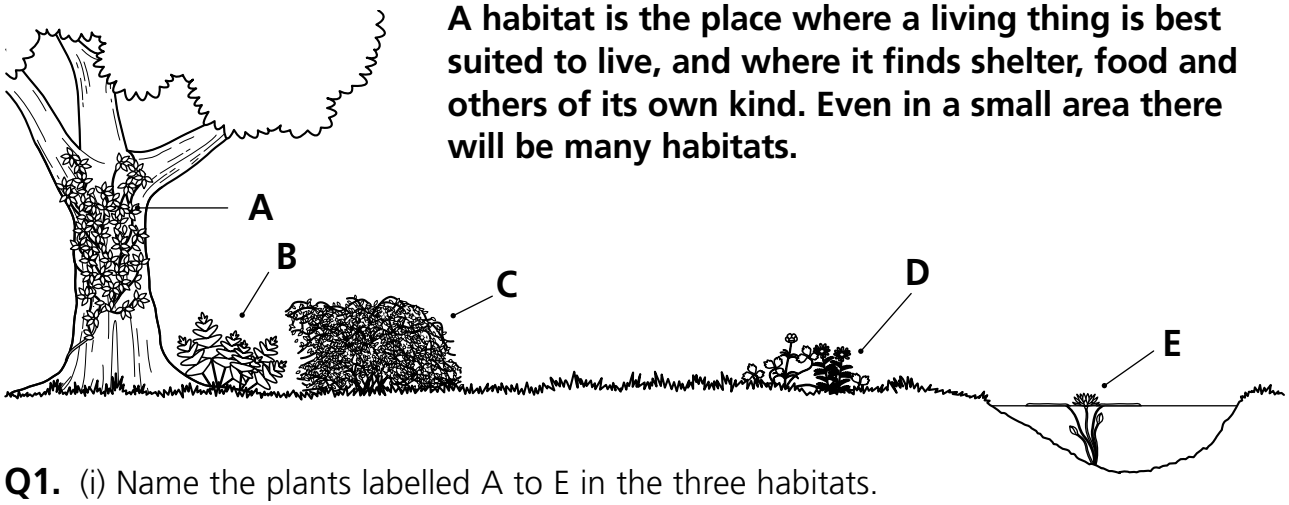
(v) If the conditions become dry in the container the snails will make a covering called an epiphragm over the opening in their shells.

3

Name: ..... **Form:** .....

See **pages 8 and 9** of *Habitats*

Finding out where plants live



A habitat is the place where a living thing is best suited to live, and where it finds shelter, food and others of its own kind. Even in a small area there will be many habitats.

Q1. (i) Name the plants labelled A to E in the three habitats.

A ✎..... B ✎..... C ✎.....

.

D ✎..... E ✎.....

(ii) Shade in the shady habitat.

Q2. What is a habitat in which trees are found? ✎.....

Q3. Name a watery habitat. ✎.....

Q4. (i) Name two habitats of the dandelion.

✎..... ✎.....

(ii) What do the habitats have in common? ✎.....

✎.....

Q5. (i) Why does a water lily have floppy stalks?

✎.....

(ii) What would happen to the stalks if the plant was brought onto the land? Explain your answer.

✎.....

✎.....

Teacher's sheet: comprehension

See **pages 8 and 9** of *Habitats*

Answers

1. **(i) A = ivy, B = fern, C = bramble, D = buttercups and daisies (and dandelions), E = water lily.**
   (ii) The area under the tree should be shaded in (up to midway through the brambles).

2. **Woodland.**

3. **Sea, pond, river, coral reef, etc.**

4. **(i) Playing field, garden, park.**
   (ii) They are open places with lots of sunshine.

5. **(i) They let the leaves bob up and down in the water. (ii) They would collapse because they do not have the strength to hold the plant up.**

Complementary work

(a) The children can look at their tables from Unit 1 and see if the wall, path, edge of the path, lawn, flower bed, etc, are habitats for plants. They could then write down the habitats of lichens, moss, ferns and grass.

Teaching notes

The work in the previous units served to establish the concept of living things and to show that each living thing has certain needs. These needs are met by the surroundings of the living thing.

Another name for surroundings is habitat. If a living thing is in its habitat, it has a chance to grow and to breed so that its species may survive. This does not mean that all individuals will survive, but enough of them will breed to allow the species to continue.

As plants cannot move about, they must get everything they need from the environment around them. Their most important needs are air, water, sunlight and minerals from the soil. If a plant is healthy, then its habitat is supplying all its needs.

It is important for the children to understand that a large habitat is made up from a collection of smaller habitats. For example, in a wood there are also clearings, and rotten logs, which are smaller habitats within the woodland habitat.

Habitats can change naturally. For example, the trees at the edge of a wood grow out into a field, they change the open, sunlit habitat of the field to one of shade. In time this affects the plants that grow there. Plants needing a large amount of light fail to survive, while shade-loving plants from deeper in the wood spread out into the edge of the field. This type of slow change is happening all the time.

The decision tree key used in the practical activity is a simple introduction to keys. When the children have mastered using this key, they can easily move to the slightly more complex key in *6A Adapting and surviving*.

3

Name: ..... Form: .....

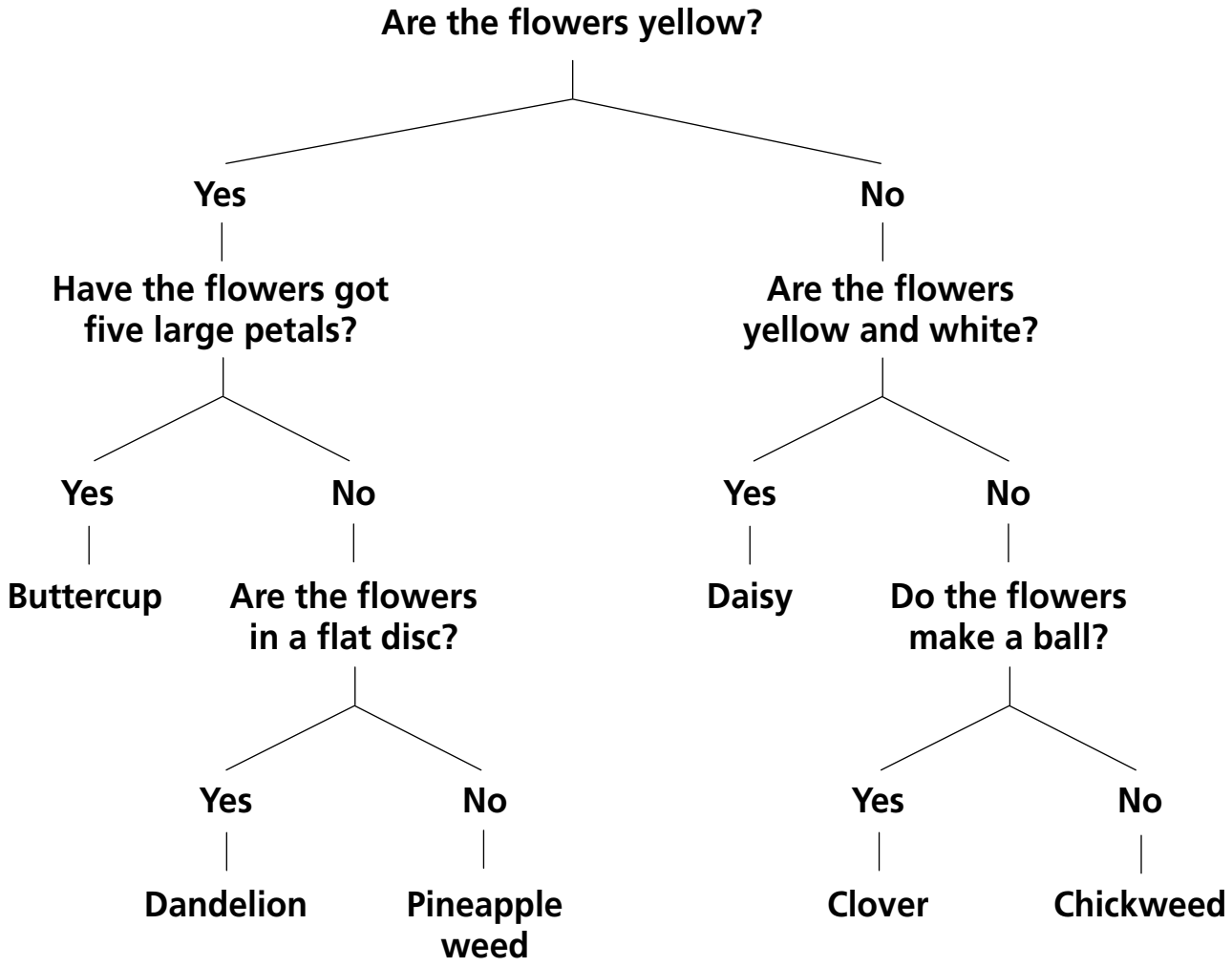
Based on **pages 8 and 9** of *Habitats*

Using a plant key

Try this...

1. Look at the plant key and make sure you know how it works.

2. Use the plant key to identify some of the plants growing outside.



3. On a separate sheet of paper write down the habitat of each plant you identify.

Looking at the results.

4. Do any plants share the same habitat? Name them and describe the habitat.

5. Do any plants live on their own in a habitat? Name them and describe the habitat.

Teacher's sheet: activity

Based on **pages 8 and 9** of *Habitats*

Introducing the activity

(a) You may wish to begin by asking the children how they can tell a buttercup from a daisy. When they answer, make a decision tree key on the board. The first line could be: 'Is the flower yellow?' Under this, write 'Yes' and 'No'. Under 'Yes', you could write 'Buttercup' and under 'No' you could write 'Daisy'. Tell the children that this way of identifying living things is called a key and that large keys can be built up to identify more plants.

Using the sheet

(b) Give out the sheet and let the children fill in their names and form, then go through task 1 (see note (i)).

(c) Go through tasks 2 and 3, then let the children try them (see note (ii)).

(d) When the children are back in the classroom go through tasks 4 and 5.

(e) Let the children try tasks 4 and 5.

Completing the activity

(f) Let the children compare their results.

Conclusion

The buttercup, daisy, clover and dandelion may be found together on lawns. Buttercups may be found at the edges of lawns. Daisy, dandelion and clover may be found at any point on a lawn. Pineapple weed is found in waste places. Chickweed may be found in damp, shady places (see note (iii)).

Teaching notes

(i) Compare the start of the key with the one you made on the board. Show that this key starts with 'Are the flowers yellow?'. Show that at the first decision, no plants are identified and more decisions have to be taken. Follow the key through to identify a buttercup or daisy, and any of the other four plants, so the children can see how they follow the key to identify a plant. Tell the children that the key does not cover all the plants that they are likely to meet, so if they find a flower with three small yellow petals, the key could not be used to identify it. This does not matter because in this study only the six plants are needed.

(ii) Make sure that the children's work outside is in accordance with school policies.

(iii) Buttercup, daisy, dandelion and clover are very well known and you can probably identify them from their leaves, too. The pineapple weed is less well known and is similar to groundsel, although it has a much larger and rounder head of small flowers. If the head is squashed a pineapple scent is released. Chickweed is common in damp places. The white flowers are tiny and may sometimes be closed. The plant has a weak stem which straggles over the ground. You may think that its leaves and stems look a little like water-cress but they are not related.

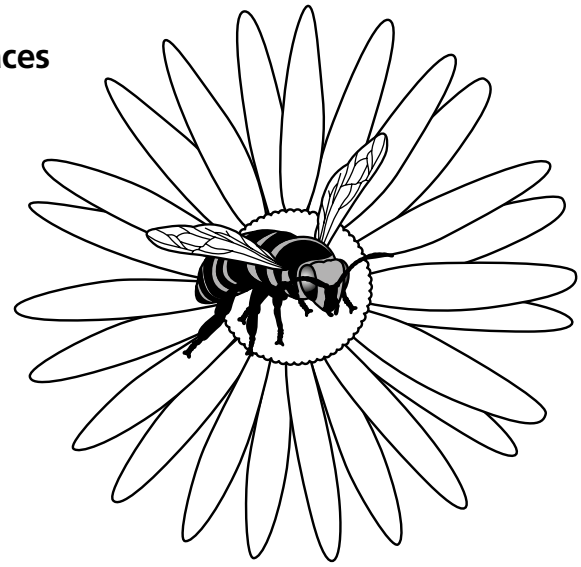
4

Name: ..... **Form:** .....

See **pages 10 and 11** of *Habitats*

Finding out where animals live

Even in a small area there will be many different kinds of places where animals live.



Q1. (i) What is the animal in the picture?

✎.....

(ii) What is the animal doing?

✎.....

✎.....

Q2. What is the habitat of the woodlouse?

✎.....

Q3. What are conditions like in the habitat of the woodlouse?

✎.....

Q4. Name another animal that shares the same habitat as the woodlouse.

✎.....

Q5. If you put some woodlice in a box with damp wood and dry grass, where would you predict the woodlice to gather? Explain your answer.

✎.....

✎.....

Q6. Why do you find bees in open ground in summer?

✎.....

✎.....

Teacher's sheet: comprehension

See **pages 10 and 11** of *Habitats*

Answers

1. **(i) A bee; (ii) It is finding food for itself and the nest.**
2. **Piece of rotting wood.**
3. **Wet and dark.**
4. **The ground beetle.**
5. **The woodlice would gather under the damp wood. They prefer dark, damp conditions.**
6. **The flowers that the bee feeds on grow in open ground.**

Complementary work

(a) The children could try the following after they have done the activity on pages 32 to 33. The children can carry out an investigation to discover how light affects where woodlice choose to live. You may want the children to use their experience in the practical activity to help them plan and carry out the investigation.

The investigation should feature a tray covered in damp paper towels. A black card should cover one half of the tray and a clear plastic sheet should cover the other half. Place the woodlice in the centre, and after ten minutes their positions are noted. They should all be in the dark half of the tray.

(b) The children could set up pitfall traps. They should make a little cardboard shelter to rest on pebbles above the trap to keep out rain. The traps can be set up in an afternoon and checked the following morning.

Teaching notes

Woodlice are invertebrates. They are in the group called the Crustacea. This includes crabs and lobsters. A feature of crustaceans is that they do not have an outer skin that prevents water from escaping. Insects and spiders have this outer skin, which allows them to live in dry habitats. Woodlice must stay in damp surroundings so that they do not lose too much water, by evaporation, from their body. If the children have made some studies on evaporation, you may like to add this example to their work. At night, when dew falls, the air close to the ground becomes humid and the woodlice can venture out to search for food. In the morning, when it becomes light, the woodlice return to living under logs and stones.

Earthworms, centipedes and millipedes also require damp surroundings because their skins also allow water to evaporate. If you find a dead earthworm on a path during the day, it may have been killed by long exposure to sunlight.

It is important to make sure that all the animals that have taken part in investigations and demonstrations are returned safely to their habitats. Pitfall traps should be emptied within about 18 hours of being set up, and the captured animals should be recorded and released.

4

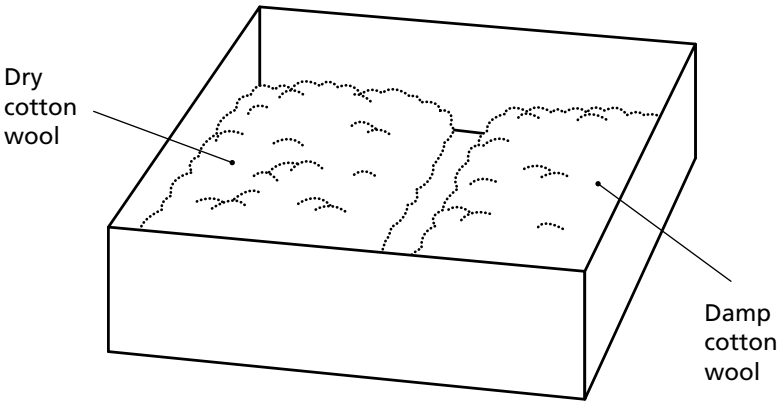
Name: ..... **Form:** .....

Based on **pages 10 and 11** of *Habitats*

Investigating woodlice

Try this...

1. Set up a tray like the one shown in the diagram.



2. Predict where the woodlice will gather after they have been put in the centre of the tray.

✎.....

3. Put ten woodlice in the centre of the tray.

4. Cover the tray with a piece of dark paper for ten minutes.

5. Remove the cover and count the number of woodlice under the damp cotton wool and the dry cotton wool. Make a note of the results on a separate piece of paper.

6. Remove the woodlice and repeat steps 3 to 5 with fresh woodlice.

7. Repeat step 6.

8. Draw a table and put all of your results in it.

Looking at the results.

9. What do the results show?

✎.....

✎.....

10. How do the results match your prediction?

✎.....

Teacher's sheet: activity

Based on **pages 10 and 11** of *Habitats*

Introducing the activity

(a) Use this activity after the children have read about, or tried, the activity on page 11 about where woodlice choose to live. Explain that, in science, the results of each investigation are checked by performing other investigations, and the children can check what they have read with this investigation.

Using the sheet

(b) Give out the sheet and let the children fill in their names and form then go through task 1 (see note (i)).

(c) Let the children perform task 1.

(d) Go through task 2, then let the children try it (see note (ii)).

(e) Go through tasks 3 to 5, then let the children try them (see note iii)).

(f) Go through task 6, then let the children try it.

(g) Go through task 7, then let the children try it (see note (iv)).

(h) Go through task 8, then let the children try it (see note (v)).

Completing the activity

(i) Let the children complete tasks 9 and 10.

(j) Let the children compare their results (see note (vi)).

Conclusion

When woodlice are placed in a position where they can choose between damp and dry surroundings they choose to move into damp surroundings.

Teaching notes

(i) The children should take care not to get the damp cotton wool too wet!

(ii) You may need to read the parts about woodlice in the pupil's book with the children to help them make a prediction.

(iii) You may need to remind the children to treat the woodlice with great care and not harm them.

(iv) The children should realise that they are repeating the experiment twice.

(v) The table should have three columns. The heading of column 1 is 'Trial'. The heading of column 2 is 'Number in dry cotton wool'. The heading of column 3 is 'Number in damp cotton wool'. The numbers 1, 2 and 3 should be in the 'Trial' column.

(vi) You may want the children to plan an investigation to test the effect of light. See complementary activity (a) on page 31.

Trial	No. in dry cotton wool	No. in damp cotton wool
1		
2		
3		

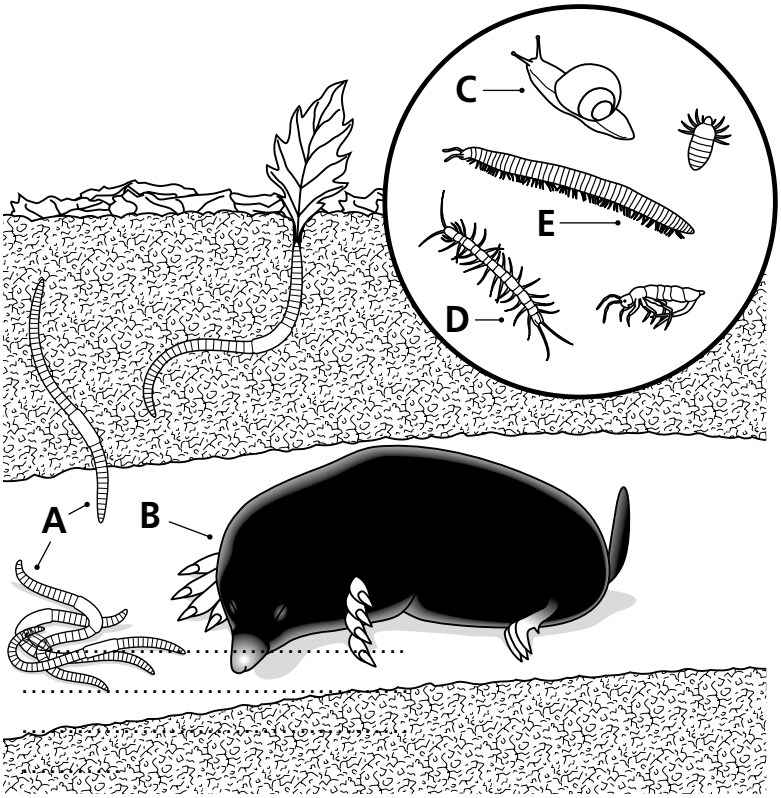
5

Name: ..... **Form:** .....

See **pages 12 and 13** of *Habitats*

Soil life

A huge variety of life can be found in the upper layers of the soil.



Q1. Name the animals labelled A to E.

A ✎.....

B ✎.....

C ✎.....

D ✎.....

E ✎.....

Q2. Name three things that soil animals could eat.

✎..... ✎..... ✎.....

Q3. How do earthworms burrow through soil?

✎.....

Q4. (i) In which part of the soil do earthworms live? ✎.....

(ii) Why do they live there?

✎.....

Q5. (i) What kind of animal is a springtail?

✎.....

(ii) Where would you expect to find springtails in the soil? Explain your answer.

✎.....

✎.....

✎.....

Teacher's sheet: comprehension

See **pages 12 and 13** of *Habitats*

Answers

1. **A = earthworms, B = mole, C = snail, D = centipede, E = millipede.**
2. **Plant roots, dead leaves, seeds, dead animals. Also, moles eat worms.**
3. **By eating the soil.**
4. **(i) The topsoil. (ii) There is more food there.**
5. **(i) A tiny, wingless insect. (ii) In moist, dead leaves. The soft, moist leaves are easier to eat than dry leaves.**

Complementary work

(a) The children could set up a wormery as suggested in the pupil's book. They should cover the top with a sheet of polythene with holes in it, and secure it with an elastic band. The surface of the soil should have some damp leaves in it. The children can put pieces of carrot, potato and other vegetables on the surface and find out which ones the earthworms nibble. You may ask the children to predict what will happen to the layer of sand as the earthworms burrow (it will become wavy and eventually mix in with the soil).

Teaching notes

Earthworms belong to a group of worms called Annelids. They have a segmented body. Each segment contains more or less identical parts of the main internal organs, which join up through the internal walls separating the segments. The earthworm has four pairs of hairs, or bristles, on the underside of its body which help it to move. The earthworm moves by extending some of its segments while contracting others. The earthworm sticks out its bristle in these segments so they grip the sides of its burrow while the extended parts move forwards. These parts then contract while the others then elongate and catch up. Inside each segment is a cavity of water which supports the muscles as they move the earthworm. The earthworm also has a reflex action. This works when the earthworm is attacked and makes the earthworm shoot backwards in its burrow.

Springtails are wingless insects. They are very numerous in the soil. Under one square metre of fertile grassland there may be as many as 45,000 springtails. The spring is a forklike structure under the tail of the insect. When it feels threatened, it releases the fork so that it pushes down strongly and throws the insect into the air. The springtail is not related to the flea, a more well-known jumping insect. The flea does not have a spring, but leaps by using its long back legs.

Centipedes and millipedes also have segmented bodies. They do not have a hundred legs or a thousand legs. You can tell them apart because centipedes have only one pair of legs on their body segments and are fast movers; while millipedes have two pairs of legs on their body segments and move more slowly.

The decision tree key used in the practical activity is similar to the key used on page 28. When the children have mastered using this key they can easily move to the slightly more complex key in *6A Adapting and surviving*.

5

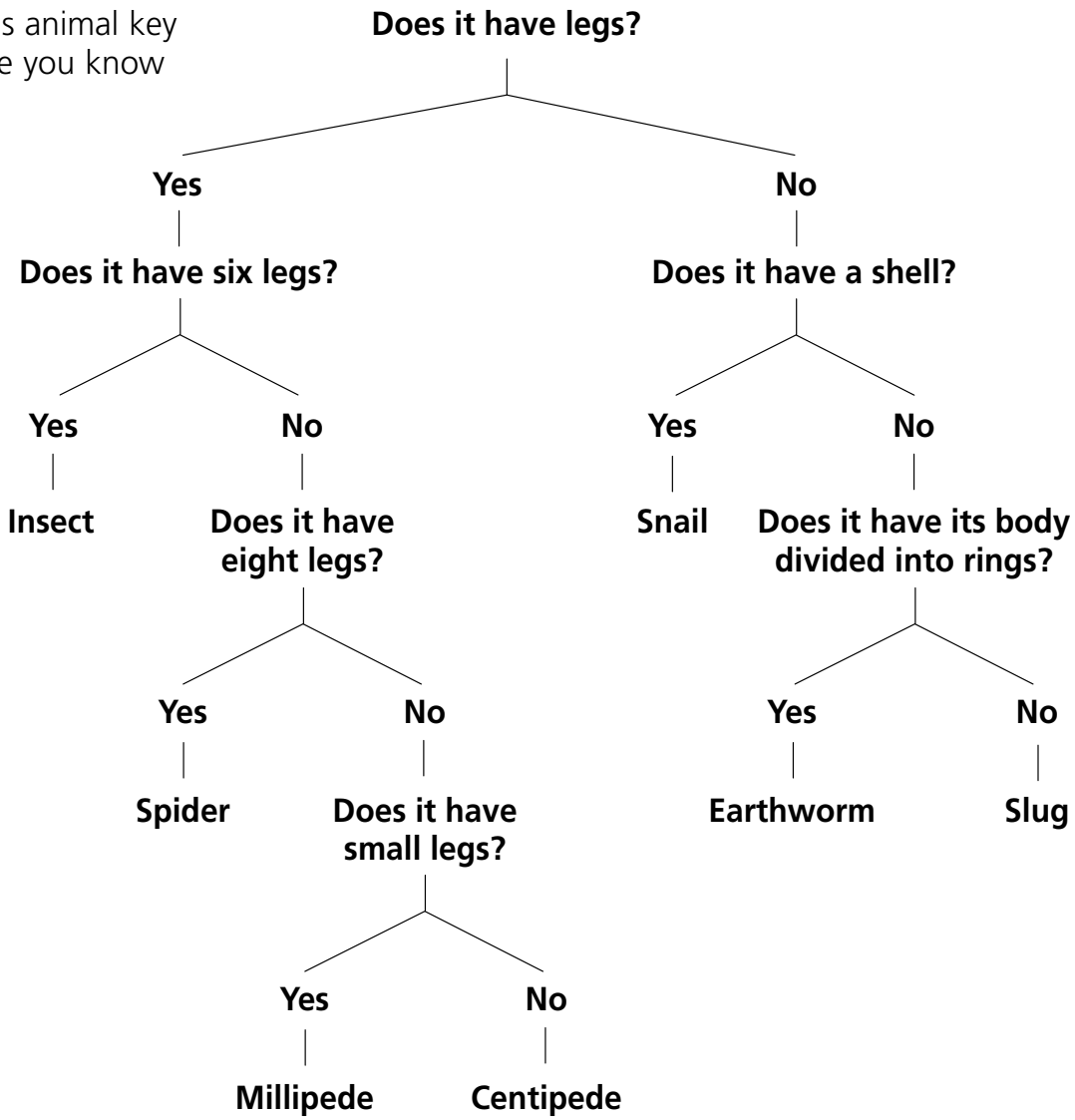
Name: ..... Form: .....

Based on **pages 12 and 13** of *Habitats*

Identifying soil life

Try this...

1. Look at this animal key and make sure you know how it works.



2. Use the key to identify some of the animals that you find in the soil.

3. For each soil sample that you examine, count the number of animals that you identify. Record your results on a separate sheet.

Looking at the results.

4. Which animals were most numerous?

5. Which animals were present only in very small numbers?

Teacher's sheet: activity

Based on **pages 12 and 13** of *Habitats*

Introducing the activity

(a) You should introduce this activity after the children have used the key on page 28 to identify plants.

Remind the children of how some of them squirmed when they looked at soil life. In this activity they are going to use a key to identify different kinds of soil life and find out which animals are most common and least common (see note (i)).

Using the sheet

(b) Give out the sheet, let the children fill in their names and form. Go though task 1 then let the children try it (see note (ii)).

(c) Let the children try tasks 2 and 3 (see note (iii)).

(d) Let the children try tasks 4 and 5.

Completing the activity

(e) Let the children compare their results and conclusions.

Conclusion

The numbers of each animal depends on the soil. The least numerous are probably centipedes and spiders. The most numerous may be earthworms or insects. Large numbers of different soil animals shelter under stones. These include beetles, millipedes and slugs. As the stones are lifted up, earthworms may be seen withdrawing into their burrows (see note iv)).

Teaching notes

(i) The worksheet for this activity is designed to work in a variety of scenarios, according to the availability of the resources and the attitude of the children. It may be used outside, where they could turn over stones and bricks on the ground to find the soil animals resting underneath. You could let them dig in the ground, or you could provide them with bags of soil you have collected and do the entire activity in the classroom.

(ii) If the children have used the plant key in Unit 3 you could ask them how they would design a very simple key to identify an insect and a slug. The key could begin with the question 'Does the animal have legs?' In the 'Yes' arm of the key would be 'Insect', and in the 'No' arm of the key would be 'Slug'.

(iii) If the children are working outside make sure that it is in accordance with your school policies. If working inside, make sure the children have white trays or newspaper, jars and a paint brush to gently collect animals that wander off.

(iv) Centipedes and spiders are active carnivores and are probably present only in small numbers. When a centipede is disturbed, it runs away quickly and may not be caught. Millipedes usually sleep coiled up during the day and may be more easily handled. You must stress that the children handle the animals with care and not harm them.

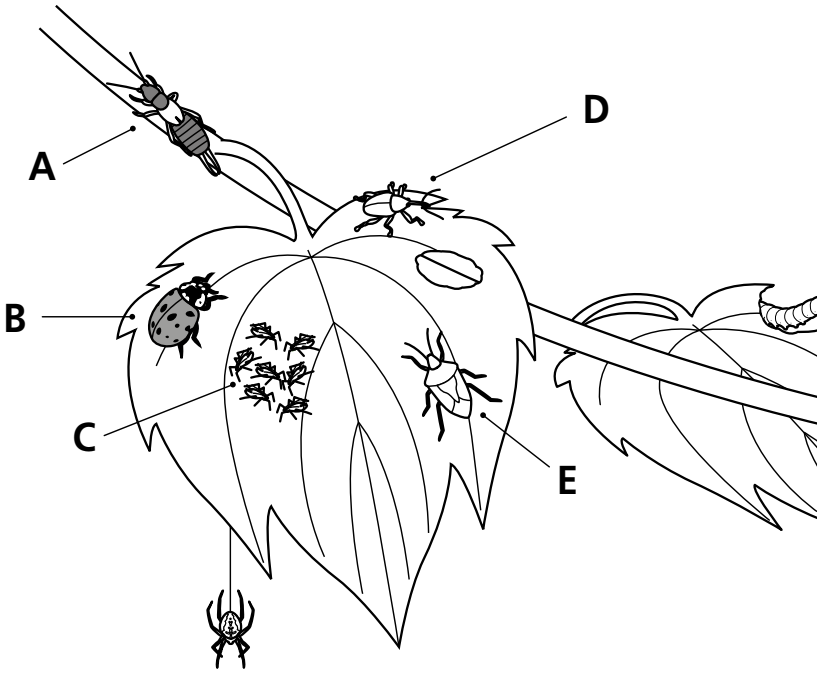
6

Name: ..... **Form:** .....

See **pages 14 and 15** of *Habitats*

Investigating variety

The leaves of a tree or bush can be home to a wide variety of animals.



Q1. Name the animals labelled A to E in the diagram.

A ✎.....

B ✎.....

C ✎.....

D ✎.....

E ✎.....

Q2. Why are animals living on a branch difficult to see?

✎.....

Q3. Which kind of animal sucks sap? ✎.....

Q4. (i) What is a small, black, ball-shaped thing on a leaf called?

✎.....

(ii) What made this object? ✎.....

(iii) What is inside the object? ✎.....

Q5. Name two animals that are hunters on the branch.

✎..... ✎.....

Q6. Name two reasons why animals live on branches.

✎.....

✎.....

Teacher's sheet: comprehension

See **pages 14 and 15** of *Habitats*

Answers

1. **A = earwig, B = ladybird, C = greenfly (aphid), D = weevil, E = leaf bug.**
2. **They are similar in colour to the leaves.**
3. **Aphid.**
4. **(i) A gall; (ii) a small wasp; (iii) egg and larva of the wasp.**
5. **Ladybird, spider, bird.**
6. **It is sheltered. There is a source of food.**

Complementary work

(a) The children can try the activity suggested on page 15 of the pupil's book. Make sure they are supervised in accordance with school policies. You could let them capture the animals that fall from the branch and put them in collecting jars while they make drawings of them. They may find that they have discovered animals which are not featured on the page.

The children should keep their work because when they study *6A Adapting and surviving* in this series they make a more detailed study of life on branches which also features a key. They could use the key with their drawings to see if they can identify the animals.

Teaching notes

The insect group is divided up into many smaller groups. On a branch you may find members of the beetle group. They have two pairs of wings, but one pair is made into wing cases which fold across the back and protect the more delicate wings underneath. The ladybird is easily seen because of its red and black wing cases. The weevil is a member of the beetle group.

Although the earwig looks a little like a beetle, it is in a group of its own. The sex of an earwig can be told by looking at the pincers on its tail. The male earwig has curved pincers and the female has straight pincers. Earwigs tend to fly at night.

The bug group (also called the Hemiptera group) is huge and contains small insects like bedbugs, and large insects like cicadas, which live in warmer climates and which the children may have seen on holiday. Aphids also belong to the bug group. Bugs have two pairs of wings that fold across the back. The wings may be clear and used for flying, or the upper pair may have harder parts that offer protection.

Moths and moth caterpillars may be found on branches.

Each type of caterpillar can only survive on a very small number of plants. Many caterpillars have died because they have been collected and given the wrong food plant, or even just grass! If caterpillars are to be kept and reared it is important to note the plant they are feeding on and to provide a constant supply of suitable leaves.

6

Name: ..... **Form:** .....

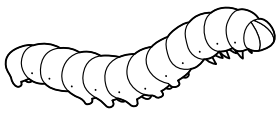
Based on **pages 14 and 15** of *Habitats*

Looking at leaves

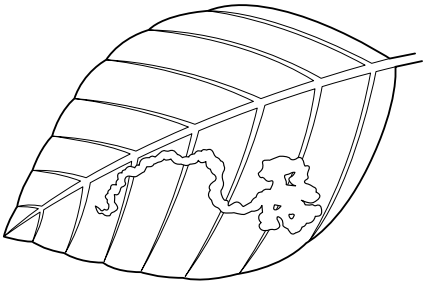
Try this…

1. Here are some things to look out for on leaves. Try to learn how they look.

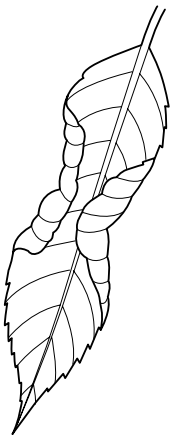
Aphid
(green, black, white)



Caterpillar



Paths of leaf miner
(live inside leaf)



Work of leaf roller
(young develop inside roll)

2. Look at some leaves. Each time you find a leaf with one or more of the animals above record it in the table. Call the first leaf you find with an animal on it 'Leaf 1', then enter the number and colour of the aphids on the leaf (if any), the number of caterpillars (if any) and tick the box if leaf miners or leaf rollers are present.

Leaf	Aphids	Colour of aphids	Caterpillars	Leaf miners	Leaf rollers
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Looking at the results.

3. Which animal was most frequently found? ✎.....

4. Which leaves had more than one animal? ✎.....

5. Which leaf had the highest number of aphids? ✎.....

6. What colour were the aphids found in the survey? ✎.....

Teacher's sheet: activity

Based on **pages 14 and 15** of *Habitats*

Introducing the activity

(a) You may introduce this activity by asking the children about the parts of the plant. Look for answers about the root, stem, leaves and flowers. Show the children some large photographs of woodland and countryside habitats and ask them what parts of the plants make up most of the pictures. Look for an answer about leaves. Remind the children that these are the food-making organs of the plant, and so they are often the parts attacked by animals in need of a meal. Tell the children they are going to have a look at leaves to see what is feeding on them.

Using the sheet

(b) Give the children the sheet, let them write their name and form on it, then go through task 1 and let the children try it (see note (i)).

(c) Let the children carry out task 2 (see note (ii)).

(d) Go through tasks 3 to 6 with the children, then let them try it.

Completing the activity

(e) Let the children compare their results.

(f) You could let some children do a longer activity in which they make a table for fifty leaves, and record leaves both with and without animals. By trying this exercise they will gain a picture of how much a plant or a hedge is being attacked by animals for food.

Conclusion

This will depend on the plants surveyed but may show that aphids were the most frequently found animals. The colour most frequently found was probably the green aphid. A leaf may have aphids, caterpillars and a miner or roller (see note (iii)).

Teaching notes

(i) After a short time, ask the children to turn over their sheets and tell you how they could distinguish between the different animals. Some flies, weevils and moths are leaf miners. Some mites, aphids and weevils are leaf rollers.

(ii) The children could look at trees or bushes in a hedge. Make sure their outdoor activity is in accordance with school policies. In this activity the children should only record a leaf when they find something on it.

(iii) Some plants may have an infestation of feeding caterpillars.

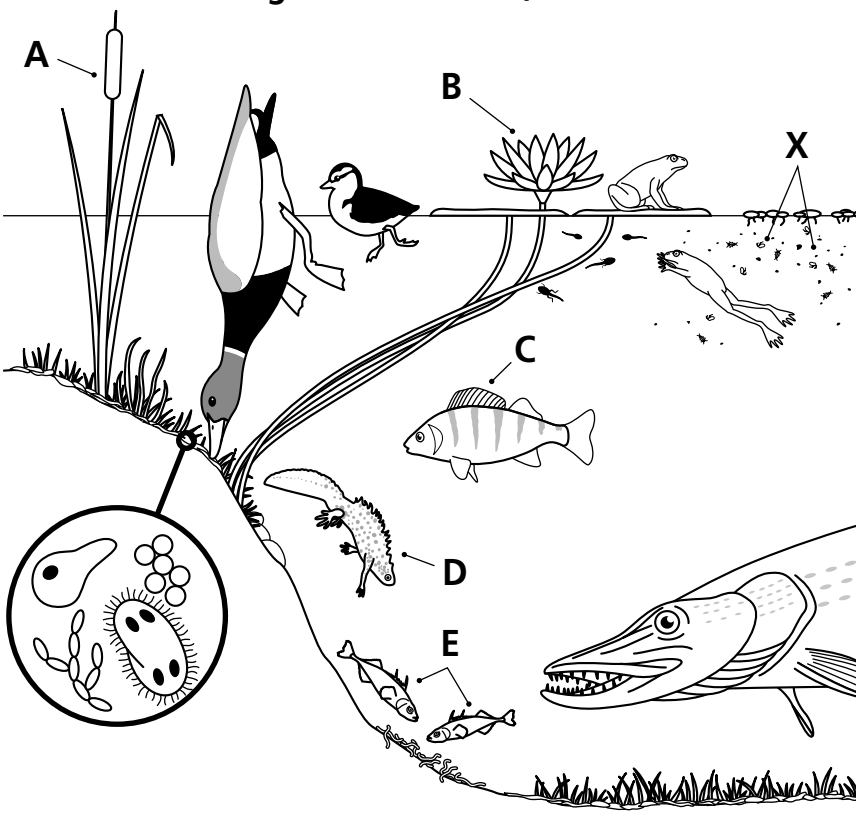
7

Name: ..... **Form:** .....

See **pages 16 and 17** of *Habitats*

Living together

Many plants and animals share the same living area. However, this can also mean danger.



Q1. Name the living things labelled A to E in the diagram.

A ✎.....

B ✎.....

C ✎.....

D ✎.....

E ✎.....

Q2. What are the two living things in the water at X?

✎.....

✎.....

Q3. What is each different kind of living thing called? ✎.....

Q4. (i) Describe a terrapin. ✎.....

✎.....

(ii) What do terrapins eat? ✎.....

Q5. What do plants need in a habitat?

✎.....

Q6. (i) What is a community?

✎.....

(ii) What does a community need from the outside?

✎.....

(iii) What is the home of a community called? ✎.....

7 Teacher's sheet: comprehension

See **pages 16 and 17** of *Habitats*

Answers

1. **A = bulrush, B = water lily, C = perch, D = newt, E = sticklebacks.**
2. **Algae and water fleas.**
3. **A species.**
4. **(i) It is like a tortoise because it has a shell, four legs, and a long neck. It is cold-blooded and warms up by lying in a sunny place. (ii) Fish.**
5. **Sunlight, water, nourishment in the soil.**
6. **(i) All the living things in an area; (ii) water, air and sunlight; (iii) a habitat.**

Complementary work

(a) The children could use secondary sources to find out about the communities of animals in other parts of the world (for example, the grassland community of the African plains).

Teaching notes

Terrapins are not found naturally in Britain. They live in warmer climates. The terrapins in the photograph live in Belize. You may wish to raise the issue of people keeping pet terrapins until they feel they are too large (for example, when they attain the size of a dinner plate), then releasing them in ponds and lakes. These animals are not part of the natural communities, and although they may find plenty to eat, they damage natural food chains in the community.

The living things in a community are not just linked by food chains, but in many other ways as well. Some plants may rely on trees for shade. Many plants may rely on insects for pollination, and some plants may rely on animals to disperse their seeds. Animals may use holes in trees as nest sites, and use the stems and leaves of other plants as nest materials. Plants can provide animals with shelter from the weather and from predators.

There are many natural history programmes on television which feature natural communities. Probably one of the best communities for children at this age to study is the grassland community of Africa, because the animals are large and the feeding relationships and the ways the animals hide from each other are very easily seen.

You may like to link the practical activity in this unit with the practical activity in Unit 2, to compare a freshwater habitat with a land habitat.

7

Name: ..... **Form:** .....

Based on **pages 16 and 17** of *Habitats*

A miniature pond

Try this…

1. Take a clear, plastic container and put a layer of gravel in the bottom. The layer should be two centimetres deep.

2. Take some water weed and push the cut ends into the gravel.

3. Pour the water in carefully so as not to wash the weeds out of the gravel.

4. Put up to six pond snails in the water.

5. Put a cover, or lid, on the container, but make sure that it does not fit tightly so air can still pass in and out.

6. Draw your container and label the gravel, weeds and snails.

7. Put the pond on a windowsill but do not let the sun shine directly on it.

8. Keep a notebook of information about your miniature pond. Write the date each time you look at the pond and, on a separate piece of paper, make notes and drawings about what you see.

9. Pick three pieces of information from your notes and write about them here.

✎.....

✎.....

✎.....

7 Teacher's sheet: activity

Based on **pages 16 and 17** of *Habitats*

Introducing the activity

(a) Use this activity after you have studied the unit in the pupil's book. Tell the children that they are going to make their own community of living things, and when it is set up all it will need is sunlight and air to keep the plants and animals alive.

Using the sheet

(b) Give out the sheet and let the children fill in their names and form, then go through task 1 (see note (i)).

(c) Let the children try task 1.

(d) Go through task 2, then let the children try it.

(e) Go through task 3, then let the children try it (see note (ii)).

(f) Go through task 4, then let the children try it (see note (iii)).

(g) Let the children try tasks 5 to 7.

(h) Go through task 8, then let the children try it (see note (iv)).

(i) Go through task 9, then let the children try it (see note (v)).

Completing the activity

(f) Let the children compare their notes (see note (vi)).

Conclusion

When water plants and snails are kept together in a jar they can both survive. As they live together, the plants may grow and the snails may breed.

Teaching notes

(i) You may use plastic aquarium tanks or large, plastic, sweet jars. The gravel should be washed before it is given to the children.

(ii) The water should be pond water.

(iii) Remind the children to treat living things with great care.

(iv) You may let the children keep making notes regularly for three weeks or more. Keep a check on the water to make sure that it does not smell. If it does, return the plants and snails to the pond.

(v) The children may have found that the snails have laid eggs on the side of the container and that the young snails can be seen developing inside them. The snails may seem to lick the side of the container as they feed. The water may have turned green due to algae on the water plants breeding rapidly.

(vi) Remind the children that the plants and snails formed a simple community. The snails ate the plants and algae but provided wastes for them to use as nutrients to help them grow. If appropriate to the work of the children, you can tell them that the plants gave out oxygen which the snails used, and the snails gave out carbon dioxide which the plants used to make food.

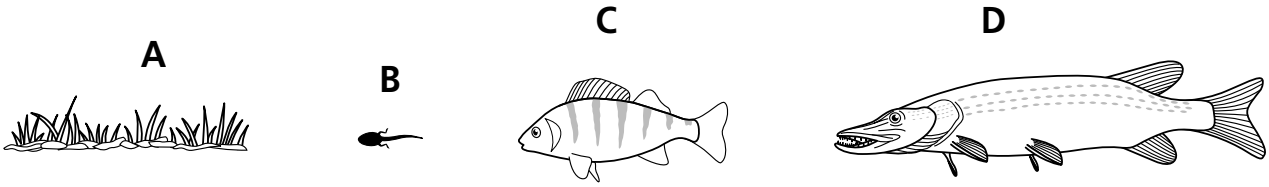
8

Name: ..... **Form:** .....

See **pages 18 and 19** of *Habitats*

Food chains

Many of the plants and animals that live together in a community depend on each other as a source of food, or to help them breed.



Q1. The diagram above shows the living things in a food chain in a pond.

(i) Name the living things labelled A to D in the diagram.

A ✎..... B ✎.....

C ✎..... D ✎.....

(ii) Draw in arrows to show how food passes along the food chain.

Q2. What things in a community produce the most living material?

✎.....

Q3. Give two reasons why plants need animals.

1 ✎.....

2 ✎.....

Q4. Name two kinds of animals eaten by animal hunters.

1 ✎.....

2 ✎.....

Q5. What kind of food does a carnivore eat? ✎.....

Q6. What is the difference between predators and prey?

✎.....

✎.....

Teacher's sheet: comprehension

See **pages 18 and 19** of *Habitats*

Answers

1. **(i) A = pond weed, B = tadpole, C = perch, D = pike. (ii) The arrows point towards the right – from the food to the feeder.**
2. **Plants.**
3. **To carry pollen and to carry seeds.**
4. **Plant eating animals and meat eating animals.**
5. **Meat, other animals.**
6. **Predators hunt other animals while prey are hunted by predators.**

Complementary work

(a) The children can select ten foods that they eat, and work out the food chain that connects them to each food. This may require secondary sources on how food is produced.

Teaching notes

Almost all the food chains on the planet begin with green plants. This is because green plants have the ability to trap energy from the Sun and use it to make food. Plants make enough food for themselves and for plant eating animals. The Earth is at just the right distance from the Sun to be able to use the Sun's energy. If it was much closer, the Earth would receive too much heat energy so life could not survive. If the Earth was much further away, it would receive too little heat for life to survive. When scientists look for other planets on which life may have formed, they look for planets which are just the right distance from their star so that alien plants could trap energy and make food. This could then form the basis of food chains for alien animals.

Humans are omnivores. This means that they can eat food from both plants and animals. This can sometimes confuse children into thinking that all animals can feed in this way. It is important to point out that most animals have only a small range of foods which they can eat. If the foods are not present in the habitat they will starve. The caterpillars mentioned in the previous unit provide a good example. A caterpillar of one species will starve if given the wrong leaves – even if the leaves may be eaten by another species of caterpillar.

In 1977, communities of animals which did not rely on energy from the Sun to start the food chain were discovered at the bottom of the ocean. These animals form communities around hot-water springs called black smokers. The chemicals released in this water contain energy that certain bacteria can use, just as plants use energy from the Sun. The bacteria are, in turn, eaten by crabs and worms.

Note that the worm in the diagram on page 19 feeds on plant food. You may like to trace this back to the illustration on page 12.

8

Name: ..... **Form:** .....

Based on **pages 18 and 19** of *Habitats*

How much food do animals eat?

Try this…

1. Set up a container in which to keep some animals for a while.

2. Draw and label your container, animals and food.

3. How many animals are kept in the container?

✎.....

4. How much food is added to the container at the start of your investigation?

✎.....

5. How much food is taken away from the container at the end of your investigation?

✎.....

6. How much food has been eaten by the animals?

✎.....

7. How much food do you think was eaten by one animal?

✎.....

8 Teacher's sheet: activity

Based on **pages 18 and 19** of *Habitats*

Introducing the activity

(a) Use this activity after the children have studied food chains in the pupil's book. Tell the children that they are going to look at the first link in the food chain in more detail. This is the link between plants and animals.

Using the sheet

(b) Give out the sheet and let the children fill in their names and form, then go through task 1 (see note (i)).

(c) Let the children try task 1.

(d) Go through tasks 2 and 3, then let the children try them.

(e) Go through tasks 4 and 5, then let the children try them (see note (ii)).

(f) Go through task 6, then let the children try it (see note (iii)).

(g) Go through task 7, then let the children try it (see note (iv)).

Completing the activity

(h) Let the children compare their results (see note (v)).

Conclusion

The amount of food that animals eat can be measured. A simple calculation can be made to estimate how much food a single animal eats (see note (vi)).

Note: After the investigation, the animals should be released back into their habitat. If the animals are caterpillars, make sure they are placed back on the same type of tree they were taken from.

Teaching notes

(i) This worksheet is designed for use with a range of resources. You may like to use plastic aquarium tanks with tops, or large plastic sweet jars. You may like to use either stick insects or caterpillars. If you use the common stick insect, it feeds on privet leaves. Each type of caterpillar eats only a small number of food plants. Make sure that you can provide enough leaves from that food plant during the investigation. Do not use hairy caterpillars. Some of them are poisonous.

To prevent the privet or leaves from drying out, use small plastic containers. Punch small holes in the lids, and fill the containers with water. Put the lids back on and stick the branches through the holes in the lids. You should also spray the tank with a little water each day.

(ii) You may ask the children to count the leaves on a sprig of privet before and after the stick insects have fed. Similarly, you may like the children to count the number of leaves given to caterpillars, and then examine the leaves after a day or two. Alternatively, if you are using large quantities of privet and leaves you may like to weigh them before and after you have presented them to the animals. Keep in mind that if the leaves are allowed to dry out, they will lose weight this way. Also, the insects will not eat dry leaves.

(iii) The children could subtract the numbers of leaves or the weights given in their answers to tasks 4 and 5.

(iv) The children should divide their answer to task 6 by the number of animals in the container. In a colony of stick insects some animals may be larger than others, so will eat more. You may wish to point this out so the children can review their calculation. The caterpillars are probably all at the same stage of development and therefore the same size.

(v) If weighing has been done there may be some variation due to lack of accurate weighing technique.

(vi) This knowledge is useful in estimating whether a habitat can provide enough food for a colony of animals.

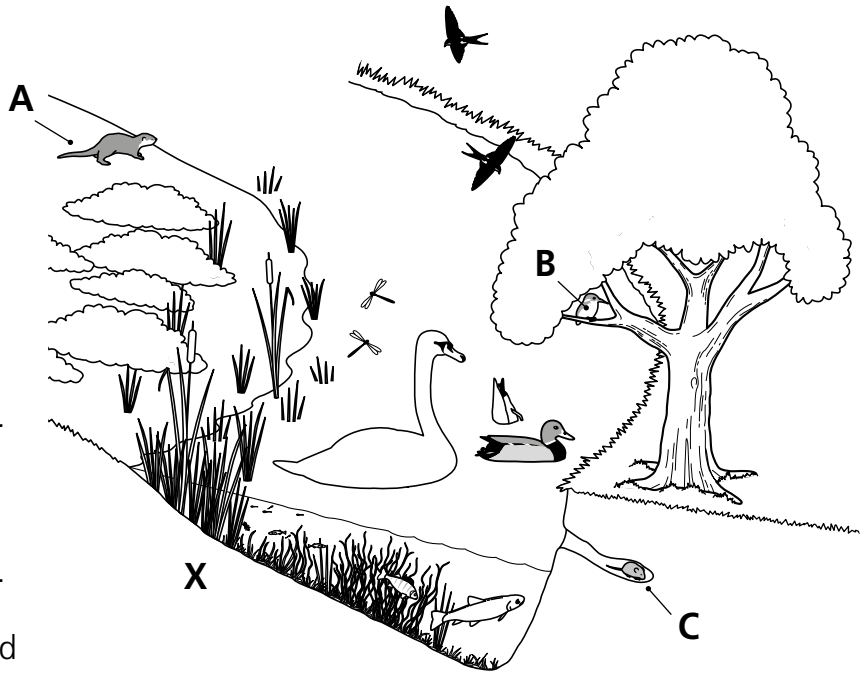
9

Name: ..... **Form:** .....

See **pages 20 and 21** of *Habitats*

Changes to food chains

When rivers are cleared out, the habitats for many living things may be lost.



Q1. (i) Name the living things labelled A to C.

A ✎.....

B ✎.....

C ✎.....

(ii) Name two kinds of plant found in region X.

✎..... ✎.....

(iii) What is happening at the part labelled C in the diagram?

✎.....

Q2. Why may people want to change a river?

✎.....

✎.....

Q3. Name two things that engineers do to rivers to change them.

✎..... ✎.....

Q4. How is wildlife affected when a river is changed?

✎.....

✎.....

✎.....

✎.....

Teacher's sheet: comprehension

See **pages 20 and 21** of *Habitats*

Answers

1. **(i) A = otter, B = kingfisher, C = vole. (ii) Rushes and reeds. (iii) The vole is digging a shelter in the river bank.**
2. **To stop floods, to use the river for boats, to use fertile land nearby for farming.**
3. **Straighten them, dredge them.**
4. **The shelter and the variety of places to live is reduced. There are fewer plants and animals of all kinds. Some plants and animals are lost completely. Missing links in the food chain can cause the food chain to collapse.**

Complementary work

(a) The children could use secondary sources to find out how habitats have been changed by volcanoes, fires, pollution and large human populations.

Teaching notes

When introducing the concept of a food chain, we usually start by saying that a plant is linked to a plant eater, and that this plant eater is linked to a meat eater, or hunter. This is fine, as it establishes that the living things are linked. Later, at an appropriate time it should be noted that a population of plants is linked to a population of plant eaters, and they are linked to a population of meat eaters. Generally, the population of the plant is much larger than the population of the plant eater, and the population of the plant eater is much larger than the population of the meat eater.

When a habitat, such as a river, is changed, the plant population may be greatly reduced. This smaller plant population can then sustain only a very small population of plant eaters, and this population may, in turn, be too small to sustain a population of meat eaters, so the meat eaters die out.

Although at this level the children only really need to know about food chains, in most communities the chains are linked together to form food webs. This means that an animal may have several foods instead of just one. If the population of one of the foods that an animal eats goes down, that animal can sometimes switch to another supply of food. If the population of the food fails to return to normal, this could have serious 'knock on' effects as other food populations start to suffer by the animal's change in feeding habits. This example serves to show that the way living things are linked together in a habitat can be very complex.

9

Name: ..... **Form:** .....

Based on **pages 20 and 21** of *Habitats*

How do habitats compare?

Try this…

1. Collect some soil and leaf litter from a woodland or hedge.

2. Collect some soil and leaf litter from a flower bed.

3. Examine each sample for animal life. Record below the animal life you find in each sample.

Looking at the results.

4. What do the results show?

✎.....

✎.....

5. How else could you compare the animal life in a wood or hedge with the animal life in a flower bed? Plan some investigations you could make and write about them here.

✎.....

✎.....

✎.....

✎.....

9 Teacher's sheet: activity

Based on **pages 20 and 21** of *Habitats*

Introducing the activity

(a) Use this activity after the children have studied Unit 9 in the pupil's book. Remind the children of how the river was changed when it was straightened for human purposes. Tell the children that the main habitat in most of Britain before humans arrived was woodland. When humans arrived they cut down the woodlands to make space for farms and towns. In time they made parks and gardens with flower beds. Tell the children they are going to compare soil from a woodland with soil from a flower bed, and think about how the woodland habitat has been changed.

Using the sheet

(b) Give out the sheet and let the children write their names and form, then go through tasks 1 and 2 (see note (i)).

(c) Let the children try tasks 1 and 2.

(d) Go through task 3, then let the children try it (see note (ii)).

(e) Let the children try task 4.

(f) Go through task 5 then let the children try it.

Completing the activity

(g) Let the children compare their results.

(h) Let the children compare their plans (see note (iii)).

(i) The animals running across the ground in both habitats may be compared by setting pitfall traps.

Conclusion

The leaf litter and soil from the woodland contains a wider variety of animals than the leaf litter and soil from the flower bed. There may also be more animals in the woodland soil and leaf litter than in that from the flower bed.

The animal life on the leaves may be compared by examining the leaves.

Teaching notes

(i) You may provide the soil for the children or let them collect it themselves. If the children are to work outside make sure that it is in accordance with your school policies.

(ii) This should take place back in the classroom. The children can study their samples in white trays or on newspaper.

Make sure the children have the means to collect and contain the animals, such as paint brushes, specimen jars and pooters (optional).

(iii) If the plans are suitable, and time and resources are available, you may let the children try some of their plans.

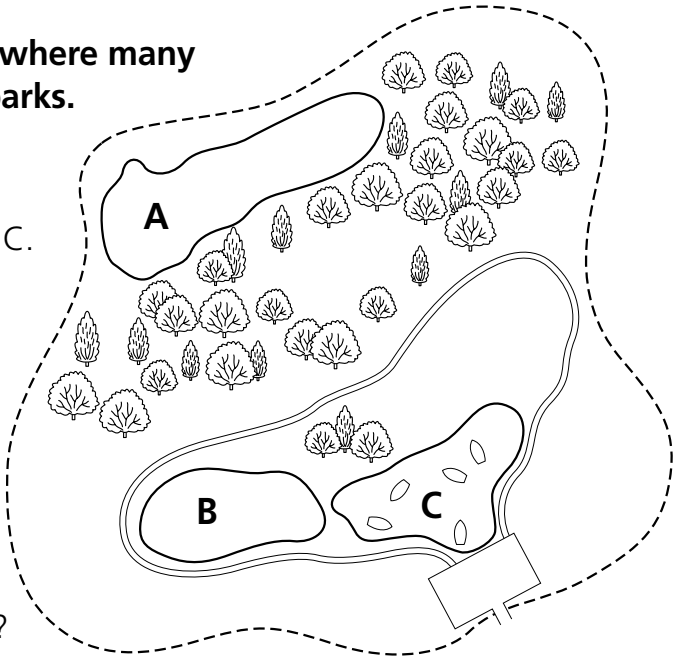
10

Name: ..... **Form:** .....

See **pages 22 and 23** of *Habitats*

Improving the environment for living things

We can turn waste ground into places where many species can thrive by making country parks.



Q1. The diagram shows a country park with three kinds of lakes labelled A, B and C.

(i) Identify each type of lake.

A ✎.....

B ✎.....

C ✎.....

(ii) Which lake has the most varied wildlife?

✎.....

Q2. Name three locations of wasteland in a town or in the countryside.

✎..... ✎..... ✎.....

Q3. What are most country parks built on? ✎.....

Q4. Why does there need to be a variety of habitats in a country park?

✎.....

✎.....

Q5. When a lake is dug out, what other feature can be made in the country park?

✎.....

Q6. How can paths in a country park help shy creatures?

✎.....

✎.....

✎.....

Teacher's sheet: comprehension

See **pages 22 and 23** of *Habitats*

Answers

1. **(i) A = wilderness lake, B = fishing lake, C = boating lake.**
   (ii) A = wilderness lake.
2. **Old factory sites, old coal mines, old gravel pits.**
3. **Reclaimed land.**
4. **To create different types of land for different species to thrive.**
5. **Hills.**
6. **People visiting the park keep to the paths and leave much of the land undisturbed so shy creatures can live there.**

Complementary work

(a) The children can use secondary sources to find out how waste lands have been changed into country parks.

(b) The children could visit a country park to see how the habitats have been constructed, and to survey the plants and animals.

Teaching notes

Probably the most noticeable animals in a habitat are birds. People often make an effort to improve the habitat for their garden birds by putting out food, and perhaps also putting up a nest box. These points could be mentioned when studying this topic.

If conditions around the school allow, you may wish to set up a feeding station. This could be a bird table, or just a nut cage. You could also set up a bird bath using a large, upturned lid.

You could extend this very visible way of helping wildlife by providing plants such as the buddleia for butterflies, and a wide range of flowering plants for bees.

If space permits a wild area, perhaps having a large rotting, moss-covered log as its focus, could be set up. Rocks could be arranged so as to provide shelter for passing frogs and toads. Tussocks of grass could be planted to provide extra shelter and food for animals that live on or just below the ground.

If changing part of the school grounds is impossible, perhaps the children could become involved with a larger-scale conservation exercise, either in Britain or overseas via the Internet.

10

Name: ..... **Form:** .....

Based on **pages 22 and 23** of *Habitats*

Improving habitats

Try this…

1. How could you improve the environment around your school to help the following animals survive? Answer in writing and with drawings.

(a) woodlice

✎.....

✎.....

(b) spiders

✎.....

✎.....

(c) bees

✎.....

✎.....

(d) butterflies

✎.....

✎.....

(e) Frogs

✎.....

✎.....

2. Choose another animal and describe how you could help it survive in the environment around your school.

✎.....

✎.....

Teacher's sheet: activity

Based on **pages 22 and 23** of *Habitats*

Introducing the activity

(a) Use this activity after the children have studied Unit 10 in the pupil's book. Ask the children about the habitats that exist around the school. They may like to refer back to their work in activity 1. Tell the children that you want them to think about how they could improve these habitats for the benefit of certain animals.

Using the sheet

(b) Give out the sheet and let the children fill in their names and form, then go through task 1 (see note (i)).

(c) Let the children try task 1.

(d) Go through task 2, then let the children try it.

Completing the activity

(e) Let the children compare their suggestions (see note (ii)).

Conclusion

The habitat could be improved for woodlice by adding more rotting logs and stones. Perhaps making damp places with moss.

The habitat for spiders may be improved by planting more bushes in which they could spin their webs to catch food.

The habitat for bees could be improved by planting more plants which produce flowers they like to feed on.

The habitat for butterflies could be improved by planting more plants which the caterpillars can feed on, and by planting more plants which produce flowers that the adult butterflies like to feed on.

The habitat for frogs could be improved by making a pond in which they can breed, and a damp area with moss and stones where the frogs can hide and feed.

Teaching notes

(i) Remind the children that they can look back at all the work they have done in their lessons on habitats and use it to help them. You may also like to provide secondary sources.

(ii) You may find that some children disagree with the ideas of others. You can use this to organise a debate, or more simply to point out to children that when new habitat sites are being considered, or people are trying to preserve old habitats, similar disagreements develop between the people involved. They may be developers, scientists, councillors and ordinary people.

QUESTIONS

Name: ..... **Form:** .....

Q1. Here is a living thing.

(i) Name a habitat in which you might find it. ✎.....

(ii) Name three things that all living things do.

Tick three boxes: Feed ☐ Walk ☐ Move ☐

Wash ☐ Breed ☐ Squeak ☐

Q2.

(i) What kind of living things are shown in the picture.

✎.....

(ii) What must these living things have to grow well?

Tick two boxes: Light ☐ Water ☐ Darkness ☐ Stones ☐

Q3. There is a word that can be used to describe living things. Which word is it?

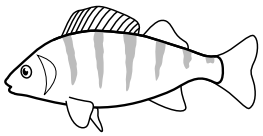
Tick one box: Organs ☐ Organisms ☐ Organisations ☐ Creatures ☐

QUESTIONS

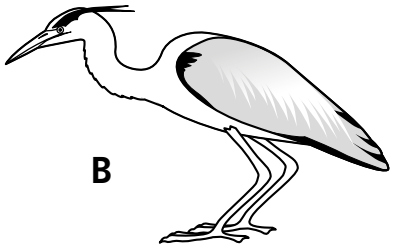
Name: ..... **Form:** .....

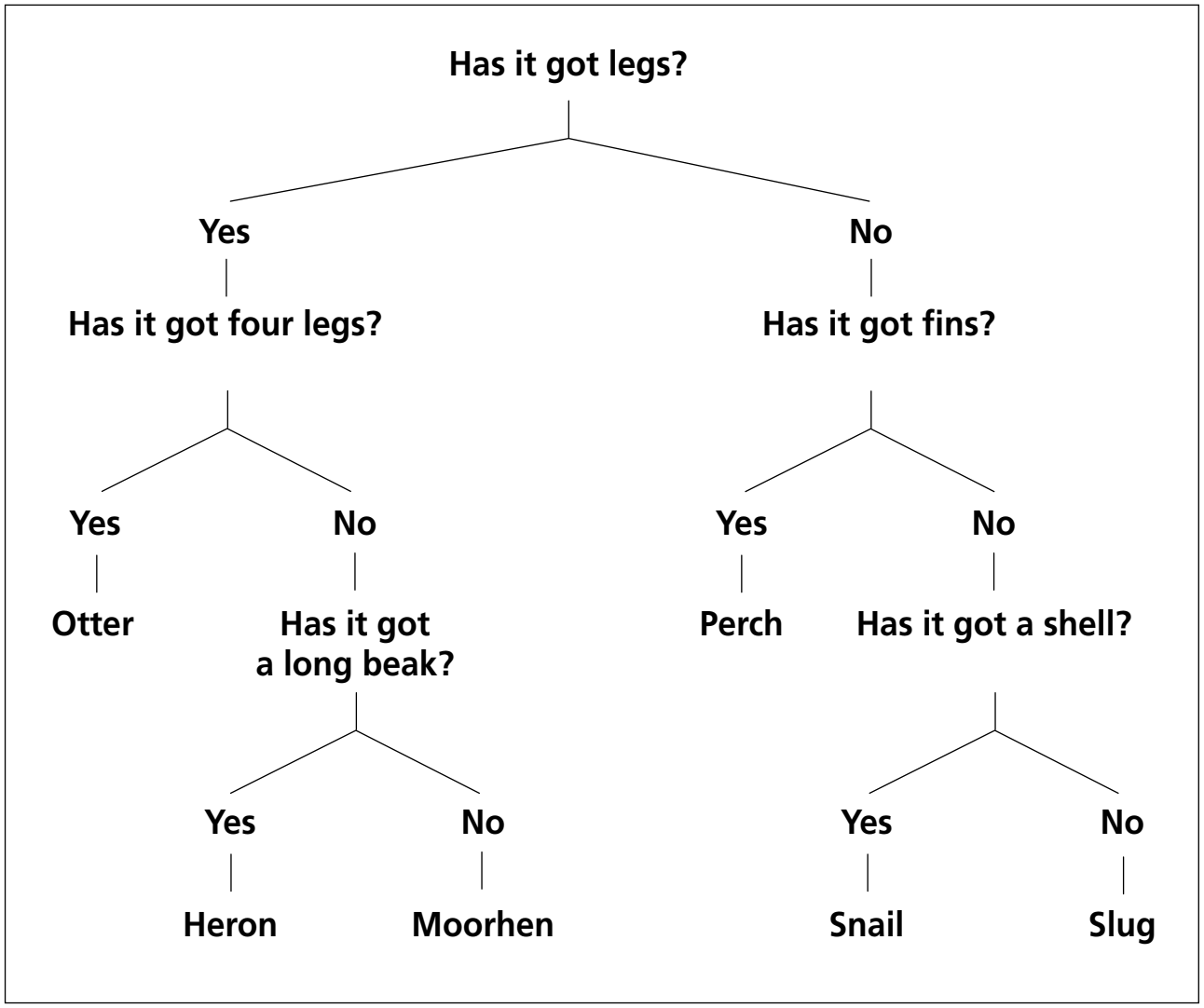
Q4. Use the key below to identify these two living things.

A



B



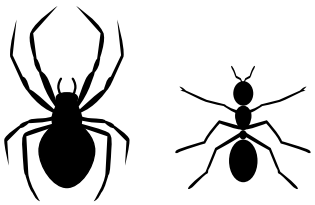


A is ✎..... B is ✎.....

QUESTIONS

Name: ..... **Form:** .....

Q5. Here is a spider and an insect.



In this space draw a very simple key to identify them.

Q6. Jane and Arif are investigating woodlice.

Jane has a container which has a light half and a dark half. She puts ten woodlice in the container and leaves them for 15 minutes. Then she counts the number of woodlice in each half. She tries her test three times. Here are her results.

(i) Why did Jane try her test three times?

✎.....

✎.....

(ii) Complete Jane's table by adding up the totals.

Trial	Light half	Dark half
1	1	9
2	0	10
3	2	8
Total		

Arif puts dry cotton wool in one half of his container and damp cotton wool in the other half. He puts ten woodlice in the centre of the container and leaves them for 15 minutes. Then he counts the number of woodlice in each half. He tries his test twice. Here are his results.

Trial	Damp cotton wool	Dry cotton wool
1	10	0
2	10	0

(iii) Arif makes a prediction before he makes his third test. What do you think his prediction will be?

✎.....

QUESTIONS

Name: ..... Form: .....

(iv) From Jane's and Arif's tests what conditions do you think woodlice prefer?

✎.....

(v) Jane and Arif wish to return their woodlice to their habitat. Where do you think they should put them?

Tick two boxes: Under a rotting log ☐ On a path ☐ Under a stone ☐

In some sand ☐ On a flower ☐ On a leaf ☐

Q7. A pitfall trap is made by sinking a plastic jar in the ground so that small animals can fall into it. Ben set up some pitfall traps close to a wall, and some further out into a field.

He counts the animals at 50cm intervals from the wall. Here are his results.

Animal	Next to wall	50cm from wall	100cm from wall	150cm from wall
Woodlouse	15	3	1	0
Slug	6	5	4	4
Ground beetle	3	2	2	2

(i) Which animals were caught most frequently close to the wall?

✎.....

(ii) Which animals were caught most frequently 50 centimetres from the wall?

✎.....

(iii) How many ground beetles were caught in all the traps? ✎.....

(iv) How does the number of trapped woodlice change as you move from the wall into the field?

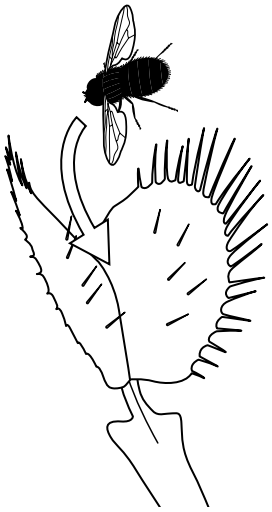
✎.....

(v) Suggest a reason for the woodlice results.

✎.....

QUESTIONS

Name: ..... **Form:** .....



Q8. This fly is approaching a Venus fly trap.

(i) What will happen when the fly lands?

✎.....

(ii) What features of life will the plant show when the fly lands?

✎.....

Q9. Arif is looking at the plants around a tree. The tree branches stretch out 4 metres from the trunk. The ground is shady under the branches. It is most shady next to the trunk and least shady under the tips of the branches. Beyond the branches there is open sunlight.

Arif counts the plants at 2 metre intervals from the trunk. Here are his results.

Plant	Next to trunk	2 metres from trunk	4 metres from trunk	6 metres from trunk
Ivy	1	0	0	0
Fern	1	4	0	0
Bramble	0	0	3	0
Buttercup	0	0	0	10

(i) How many plants were by the trunk? ✎.....

(ii) Which plant was only found in the most shady place? ✎.....

(iii) Which plant was found in the least shady place? ✎.....

(iv) Which plant was found in open sunlight? ✎.....

(v) How many plants grew under the tree? ✎.....

Q10. What is a predator?

Tick one box: Any plant ☐ An animal which eats plants ☐

An animal which eats other animals ☐ An animal ☐

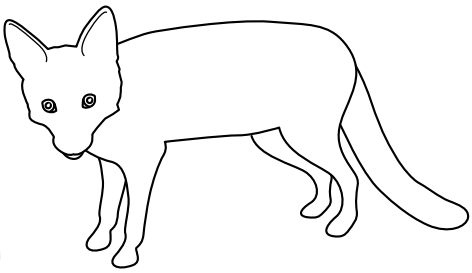
QUESTIONS

Name: ..... **Form:** .....

Q11. What is the word for a predator's food? ✎.....

Q12. This fox eats rabbits.

Rabbits eat grass.



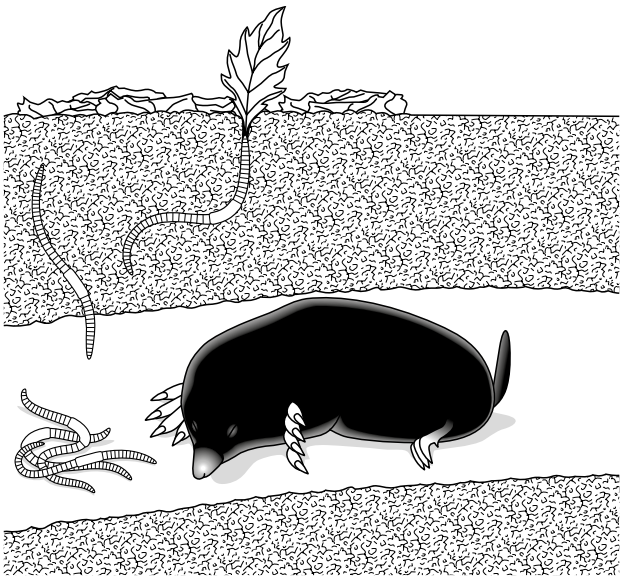
(i) Write the food chain for the rabbit, grass and fox.

✎.....

(ii) Which living thing is at the bottom of the food chain? ✎.....

(iii) Which living thing is the predator? ✎.....

Q13. Mina says that she can see a food chain in this picture of a mole in its tunnel.



(i) Write the food chain that you think Mina sees.

✎.....

✎.....

(ii) What two things do organisms get from their food?

✎.....

✎.....

Q14. How can a food chain be damaged?

✎.....

ANSWERS

1. (i) Pond. *1 mark*
(ii) Feed, breed, move. *3 marks*

2. (i) Plants. *1 mark*
(ii) Light, water. *2 marks*

3. Organisms. *1 mark*

4. A = perch, B = heron. *2 marks*

5. The key may be: Does it have six legs? Yes = insect, no = spider; or: Does it have eight legs? Yes = spider, no = insect; or: Does it have wings? Yes = insect, No = spider. *3 marks*

6. (i) To make her investigation more accurate. *1 mark*
(ii) Light half = 3, dark half = 27. *2 marks*
(iii) All the woodlice will move into the damp cotton wool. *1 mark*
(iv) They prefer dark, damp conditions. *1 mark*
(v) Under a rotting log, under a stone. *2 marks*

7. (i) Woodlice. *1 mark*
(ii) Slugs. *1 mark*
(iii) 9. *1 mark*
(iv) As you move from the wall the number of trapped woodlice decreases. *1 mark*
(v) They prefer to keep near the wall because it provides them with dark, damp conditions. *1 mark*

8. (i) The trap will close over it. *1 mark*
(ii) Movement, feeding. *2 marks*

9. (i) Two. *1 mark*
(ii) Ivy. *1 mark*
(iii) Bramble. *1 mark*
(iv) Buttercup. *1 mark*
(v) 9. *1 mark*

10. An animal that eats other animals. *1 mark*

11. Its prey. *1 mark*

12. (i) Grass → rabbit → fox. *1 mark*
(ii) Grass. *1 mark*
(iii) Fox. *1 mark*

13. (i) Leaf → earthworm → mole. *1 mark*
(ii) Energy and materials to build their body. *2 marks*

14. When a living thing is removed from a habitat, a link in the food chain is broken. *2 marks*

Total marks: 43