

Unit 4B Habitats

ABOUT THE UNIT

Through this unit children will begin to understand the concept of a habitat, how it provides organisms found there with conditions for life and how animals depend on plants or other animals which eat plants for food. Throughout the unit ways in which organisms are suited to the habitat should be emphasised.

Experimental and investigative work focuses on:

- turning ideas into a form that can be tested, making a prediction
- making observations
- deciding whether the evidence supports the prediction and suggesting explanations in terms of their knowledge of science.

Work in this unit also provides opportunities for children to learn about the interdependence of living things and how the environment and living things need to be protected.

This unit takes approximately 12 hours.

WHERE THE UNIT FITS IN

Builds on Unit 2B 'Plants and animals in the local environment' and Unit 3B 'Helping plants grow well'

Children need:

- to be able to measure temperature, time and distance
- to recognise organisms as plants or animals.

Links with Units 3C, 3F, 4C, 5B, 6A and geography.

VOCABULARY

In this unit children have opportunities to use:

- words related to life processes
eg nutrition
- words relating to habitats and feeding relationships *eg habitat, condition, organism, predator, prey, producer, consumer, food chain, key*
- words which have a different meaning in other contexts *eg producer, consumer, key, condition*
- expressions making generalisations and comparisons.

RESOURCES

- hand lenses, collecting nets, containers for small animals
- posters, video, CD-ROMs, reference books, simple biological keys, pictures of a variety of habitats in or close to the locality of the school or similar to those in the locality of the school
- plastic containers suitable for investigating preferences of small animals *eg snails, woodlice*

EXPECTATIONS

at the end of this unit

most children will:

identify some local habitats; name some of the organisms that live there; use simple keys to identify organisms; state the food source of some animals; distinguish between those which eat plants and those which eat other animals and plan how to investigate some of the preferences of small animals found in the habitat

some children will not have made so much progress and will:

identify some local habitats; name a few of the organisms that live there and, with help, identify these using simple keys and make observations of animals and plants

some children will have

progressed further and will also:

represent feeding relationships within a habitat by food chains; explain that food chains begin with a green plant which 'produces' food for other organisms and explain why it is necessary to use a reasonably large sample when investigating the preferences of small invertebrates

LEARNING OBJECTIVES

POSSIBLE TEACHING ACTIVITIES

LEARNING OUTCOMES

POINTS TO NOTE

Elicit children's understanding of 'plant' and 'animal'. Introduce the term 'organism' as a general term for all living things. Use pictures of *eg vertebrates, invertebrates, humans, small flowering plants, trees* and challenge children to sort them according to their own criteria and then into plants and animals. Let children choose how to record their groupings.

Teachers will need to ensure that children who have difficulty recognising an organism as a plant or animal have particular support in subsequent activities. Most living things which children encounter in everyday life, apart from fungi (which are now placed in a separate category) can be classified as plants or animals. Children often think that invertebrates, *eg worms, spiders* are not animals. Similarly children may not classify trees as plants.

CHILDREN SHOULD LEARN

- to identify different types of habitat

◆ Introduce children to the word 'habitat' using pictures to illustrate meaning. Explain the meaning of 'habitat'. Explain to children that they will be studying local habitats, and go for a walk round the school and/or immediate locality to find and make a list of habitats. Review the final list with the children and group habitats of similar scale or diversity together *eg pond, field, wood; tree, hedge, flower bed, grassy patch, plant trough, under leaf, under stone*. Ask children to record the habitats identified.

CHILDREN

- identify local habitats and recognise those which are similar in scale or diversity
- recognise that animals and plants are found in many places *eg on window sills*

A 'class' habitat can be created using a plant trough or a grow bag. When comparisons between habitats are made it is helpful to choose habitats of similar scales or diversity *eg ponds, fields and woods, or tree, hedge, flower beds, grassy area (mini-habitats), or under leaf, under stone (micro habitat)*.

 **SAFETY** – All off-site visits must be carried out in accordance with LEA/school guidelines.

- that different animals are found in different habitats
- to make predictions of organisms that will be found in a habitat
- to observe the conditions in a local habitat and make a record of the animals found
- that animals are suited to the environment in which they are found

◆ Using pictures of places in the immediate locality or similar to those in the locality as stimuli, ask children to predict where a particular organism will be found *eg woodlice, snail, butterfly, bee*. Visit locality to check predictions. Explain that collecting animals must be done with care so that the animals are not damaged. Help children to collect invertebrates and record locations in which they were found. Ask children to observe and describe the conditions *eg light, water, soil, shade, temperature*. Ask children whether they found the organisms they expected. Help children return any animals collected to their habitat.

- make and justify a prediction *eg the woodlice will be under the stones because it's damp there*
- describe a habitat in terms of the conditions *eg leaf litter is cool, damp and dark*
- state that animals and plants are found in some places and not in others and explain why *eg worms are found in the soil not in tarmac because they cannot find food or burrow through tarmac*

Different groups could investigate different habitats and share results with others. This gives a valid reason for recording carefully and deciding on how to present information to others.

Information may be collated on an IT data-handling program (see IT Units 3C 'Introduction to databases' and 4D 'Collecting and presenting information: questionnaires and pie charts').

If animals are brought into the classroom, ensure that they are treated sensitively and their needs met and that they are returned to the habitat from which they came as soon as possible.

 **SAFETY** – Children should wash their hands after handling animals.

 **SAFETY** – All off-site visits must be carried out in accordance with LEA/school guidelines.

- to group organisms according to observable features

◆ Present children with pictures (or living organisms collected earlier) including similar pairs *eg bee/wasp, spider/beetle, daisy/dandelion* and discuss features *eg legs, wings, eyes, colours*. Ask children to group similar organisms together and explain their groupings.

- identify similarities and differences between similar organisms
- group animals and explain criteria *eg number of legs, wings/no wings* on which the groups are based

Encourage children to use hand lenses/microscopes carefully to identify detail of organisms.

- to use keys to identify local plants or animals

◆ Present children with an organism (or picture of an organism) from the local environment which is likely to be unfamiliar to most of them. Ask them to write down two or three things about it. Show some reference books and ask children how easy it would be to identify the organism from these. Show children a simple key and how to use it. Practise with other keys and other organisms.

- use simple keys to identify local plants and animals

Children may devise their own keys using a simple IT program (see IT Unit 4C 'Branching databases').

LEARNING OBJECTIVES

CHILDREN SHOULD LEARN

- to pose questions about organisms and the habitat in which they live and make predictions
- to decide what evidence to collect and to design a fair test
- to make reliable observations of organisms
- to indicate whether their prediction was valid and to explain findings in scientific terms

POSSIBLE TEACHING ACTIVITIES

- ◆ Ask children to generate a question to investigate or offer alternatives eg
 - *How do we know that woodlice prefer damp conditions?*
 - *How do we know mealworms prefer dark?*
 - *How can we find out what snails prefer to eat?*
 - *Do earth worms live above or below ground?*
 Discuss the questions with the children and help them to decide how to collect evidence for their investigation and what equipment to use eg
 - *How many woodlice should we use?*
 - *How long should we leave them to find out?*
 - *What sort of food should we give the snails?*
 - *How can we see worms if they're underground?*
 Help children to carry out the investigation and to make careful observations. Discuss their results and ask children to explain these in terms of what they already know about the animals and their usual habitats.

- to identify the food sources of different animals in different habitats

- ◆ Using secondary sources eg *reference books, CD-ROMs, videos* investigate the food needs of a chosen animal from a local habitat, and where it finds its foods. Use one that is found locally eg *bird, small mammal, mollusc*. Record findings as a class poster or book.

- to identify the structure of a food chain in a specific habitat
- that animals are suited to the habitat in which they are found
- that most food chains start with a green plant

- ◆ Review habitats with children and ask them to say which organisms are found in a specific habitat. Challenge children to identify the food of specific animals, some of which eat plants and some of which eat animals – refer back to previous activity. Extend children's ideas about the food of animals using secondary sources eg *CD-ROM, reference books*. Introduce terms 'predator' and 'prey' and start by considering pairs eg *plant and one animal or two animals*. Challenge children with the question 'where did the prey get its food?'. Ask children to find out about this using secondary sources eg *CD-ROM, reference books*. Show how a food chain is represented. Give children pictures of organisms in a habitat with information about what each eats and ask them to practise writing or sequencing food chains. Where possible relate this to the local habitat to consolidate earlier work.

- to recognise ways in which living things and the environment need protection

- ◆ Ask children to think about the effect on plants and animals of changing conditions in a particular habitat in various ways eg *draining the pond, removing the pond weed, removing the shade, ground cover*. Ask children to prepare a presentation to an audience to explain why the organisms could no longer live in a changed habitat or write a letter opposing a change which would alter a habitat.

LEARNING OUTCOMES

CHILDREN

- suggest a question which relates to an organism in its natural habitat and say what they think will happen
- recognise what evidence is needed eg *woodlice should be able to choose between a damp and a dry place and that a reasonable number of woodlice should be used*
- make observations which are relevant to the question under investigation
- draw conclusions which match the observations made and relate these to their prediction and to their knowledge about the habitat

- describe what a particular animal eats and explain that it can only live where its food source is available and where conditions eg *warmth, moisture* are suitable

- identify food of a specific animal eg *the privet hawk moth prefers privet*
- state that predators eat other animals
- identify animals which are predators and their prey eg *birds feed on insects, foxes feed on rabbits, herons feed on fish*
- state that many animals which are prey live on green plants
- sequence valid food chains relating to the local habitats using the arrow convention correctly

- identify the effect of changes to the habitat on some organisms

POINTS TO NOTE

Teachers will need to decide which of the children's questions may be investigated safely and profitably with respect to living things.

This activity offers children the opportunity to carry out a whole investigation. It may be helpful to concentrate on the aspects of investigation highlighted in the learning objectives.

Children may be familiar with the everyday use of the word 'consumer'. It may be helpful to use this as an analogy for the consumers in a food chain.

It may be helpful to explain the term 'producer' to some children as 'producing' food for other organisms and 'consumer' as something that 'consumes' or eats other organisms.

Children are usually unable to observe food chains in action; video clips and TV programmes are helpful.

Many children think the arrow in the food chain means 'eats'. It may be helpful to suggest to children that the arrow implies 'gives food to' as a way of explaining the direction in which it points.

IT simulation programs could be used to support work in this unit (see IT Unit 3D 'Exploring simulations').



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