

# Living Things and Their Habitats

## Year 2 – Living Things and Their Habitats

<div><div><b>National Curriculum Objectives:</b><ul style="list-style-type: none"><li>Explore and compare the difference between things that are living, dead and things that have never been alive.</li><li>Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.</li><li>Identify and name a variety of plants and animals in their habitats, including micro habitats.</li><li>Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name the different sources of food.</li></ul></div><div>Pupils should be introduced to the idea that all living things have certain characteristics that are essential for keeping them alive and healthy. They should raise and answer questions that help them to become familiar with the life processes that are common to all living things. Pupils should be introduced to the terms ‘habitat’ (a natural environment or home of a variety of plants and animals) and ‘micro-habitat’ (a very small habitat, for example for woodlice under stones, logs or leaf litter). They should raise and answer questions about the local environment that help them to identify and study a variety of plants and animals within their habitat and observe how living things depend on each other, for example, plants serving as a source of food and shelter for animals. Pupils should compare animals in familiar habitats with animals found in less familiar habitats, for example, on the seashore, in woodland, in the ocean, in the rainforest.</div><div>Pupils might work scientifically by: sorting and classifying things according to whether they are living, dead or were never alive, and recording their findings using charts. They should describe how they decided where to place things, exploring questions for example: ‘Is a flame alive? Is a deciduous tree dead in winter?’ and talk about ways of answering their questions. They could construct a simple food chain that includes humans (e.g. grass, cow, human). They could describe the conditions in different habitats and micro-habitats (under log, on stony path, under bushes) and find out how the conditions affect the number and type(s) of plants and animals that live there.</div></div>					<b>Key Ideas:</b> <ul style="list-style-type: none"><li>a) Some things are living, some were once living but now dead and some things never lived.</li><li>b) There is variation between living things.</li><li>c) Different animals and plants live in different places.</li><li>d) Living things are adapted to survive in different habitats.</li><li>e) Environmental change can affect plants and animals that live there.</li></ul>
Prior Learning	Habitats and How Seasons Effect Them.				Vocabulary
<div><b>In Early Years:</b><ul style="list-style-type: none"><li>Comments and questions about the place they live or the natural world.</li><li>Shows care and concern for living things and the environment.</li><li>Can talk about things they have observed such as plants and animals.</li><li>Notices features of objects in their environment.</li><li>Comments and asks questions about their familiar world.</li></ul></div>	<div><b>Chapter 1: Carnivores and herbivores.</b> All animals get their nutrients by eating. Some animals hunt and eat other animals (<b>predators</b>) and some animals are hunted and eaten by other animals (<b>prey</b>). Animals that eat only other animals are called <b>carnivores</b>. Animals that only eat plants are called <b>herbivores</b>, and animals that eat both animals and plants are called <b>omnivores</b></div>	<div><b>Chapter 2: Adapted to survive.</b> All animals are adapted to eat and survive (they are adapted to survive as predators <b>and</b> prey). Animals have adapted many different ways to survive as predators or prey. Plants are also adapted to survive; they have adapted to get the water and light they need and avoid being eaten or dying when chewed.</div>	<div><b>Chapter 3: Surviving seasonal changes.</b> The changing seasons have a dramatic effect on plants, which has an impact on the animals that feed on them. Animals have adapted ways of surviving when the seasons change and food become scarce including hibernating, storing food (fattening up), migrating.</div>	<div><b>Longitudinal studies</b> Children should raise and explore questions that <b>demand</b> the identification of creatures and plants in their local environment and how their populations change through the seasons. Linking the properties of the seasons to the changing populations and beginning to question how populations of different organisms are related.</div>	<div>Living, dead, never alive, habitats, micro-habitats, food, food chain, leaf litter, shelter, sea shore, woodland, ocean, rainforest, conditions, desert, damp, shade,</div>
	<div>□ Each group chooses a small area of the school grounds and collects and identifies the plants and minibeasts that live there. Construct a food chain that might exist between these organisms. Test the food chain by completely removing the plants from the small area and monitor what happens to the minibeasts over a few weeks</div>	<div><ul style="list-style-type: none"><li>Place sizeable pieces of material e.g. wood or brick, over a patch of grass and carefully monitor what happens every few days. Many questions flow from this e.g. will all the plants grow back or will different ones grow back when we lift the materials? Does the type of material we put on the grass make a difference?</li><li>Find a piece of wild ground with lots of weeds. Remove the tall weeds and keep them cut, what happens to the other plants?</li></ul></div>	<div>□ Children choose or are allocated a small habitat area. They identify all the minibeasts they can over a few days. Which ones do they think will hibernate and why? Check again a few times over the year to see what happens. Be aware that some animals don't hibernate but are only active above certain temperatures e.g. slugs are only active above 5°C whereas snails hibernate.</div>	<div>□ Steve the stick insect wants to visit from Australia. Where in the school grounds will he find most friends and will they be there all year?</div> <div>* (If you do a longitudinal study this is what needs to be assessed for this topic)</div>	
<div><b>In Year 4:</b><ul style="list-style-type: none"><li>Recognise that living things can be grouped in a variety of ways.</li><li>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.</li><li>Know and label the features of a river</li><li>Recognise that environments can change and that this can sometimes pose danger to living things.</li></ul></div>					

# Year 4 - Living Things and Their Habitats

## National Curriculum Objectives:

- Recognise that living things can be grouped in a variety of ways.
- Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. □ Recognise that environments can change and that this can sometimes pose danger to living things.

Pupils should use the local environment throughout the year to raise and answer questions that help them to identify and study plants and animals in their habitat. They should identify how the habitat changes throughout the year. Pupils should explore possible ways of grouping a wide selection of living things that include animals and flowering plants and non-flowering plants. Pupils could begin to put vertebrate animals into groups such as fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects.

Note: Plants can be grouped into categories such as flowering plants (including grasses) and non-flowering plants, such as ferns and mosses.

Pupils should explore examples of human impact (both positive and negative) on environments, for example, the positive effects of nature reserves, ecologically planned parks, or garden ponds, and the negative effects of population and development, litter or deforestation.

Pupils might work scientifically by: using and making simple guides or keys to explore and identify local plants and animals; making a guide to local living things; raising and answering questions based on their observations of animals and what they have found out about other animals that they have researched.

## Key Ideas:

- a) Living things can be divided into groups based upon their characteristics.
- b) Environmental change affects different habitats differently.
- c) Different organisms are affected differently by environmental change.
- d) Different food chains occur in different habitats.
- e) Human activity significantly affects the environment.

Prior Learning	Longitudinal Studies		Vocabulary
<b>In Year 2:</b> <ul style="list-style-type: none"><li>• Explore and compare the difference between things that are living, dead and things that have never been alive.</li><li>• Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.</li><li>• Identify and name a variety of plants and animals in their habitats, including micro habitats.</li><li>• Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name the different sources of food.</li></ul>	<b>Idea 1</b> In any habitat there are food chains and webs where nutrients are passed from one organism to another when it is eaten. If the population of one organism in the chain or web is affected it has a knock on effect to all the others. <b>Idea 2</b> Environmental change (the seasons, human activity, climate change) affects different organisms differently and therefore different habitats differently because all organisms in a habitat are interdependent.	<b>Longitudinal studies</b> Children should raise and explore questions that <b>demand</b> the identification and classification of creatures and plants in their local environment (insects, spiders, birds, mammals, reptiles and amphibians). Questions should require children to consider how environmental change (the seasons, human activity, climate change) affects different organisms within their environment differently and therefore different habitats differently because all organisms in a habitat are interdependent.	Environment, flowering, non- flowering, plants, animals, vertebrates, fish, amphibians, reptiles, mammals, invertebrate, human impact, nature reserves, deforestation.
	<p>Ideas for longitudinal studies:</p> <ul style="list-style-type: none"><li>• Research a food chain for a minibeast in the local environment that is easy to find (e.g. woodlice and snails). Each group of children is allocated a small habitat, they monitor the plants and animals that live there over the course of the year and relate any population changes to the seasons and the change in populations of other organisms in the food chain.</li><li>• Identify as many plants and mini beasts in the pond. Research how these might be related in a food chain. Investigate how the populations change over the course of a year and use the food chains to help them explain these changes.</li><li>• Cover a patch of grass with two planks of wood, and a mark a similar area and leave uncovered (before doing this identify the mini beasts and plants that are in the covered patch). Monitor the changes in populations over time and after a period of time remove one of the planks and monitor how it responds and compare it with the covered and uncovered area.</li><li>• Set up a series of water butts, put different things in each (all the kinds of things you might see in a pond). Monitor what happens in each butt over a year (even better if you carry it on for a few). What are the most important things to add to a pond to help it develop?</li></ul> <p>Notes about monitoring the seasons: Children need to learn how the temperature, light and water affect food chains in the local environment. They need to learn how these weather factors change through the seasons. One powerful way of helping children do this is to monitor the weekly temperature, rainfall and daily hours of sunlight and construct a large wall chart of this data. This will help them see the patterns and relate them to changes in populations.</p> <p>The Longitudinal study will be what is assessed.</p>		
<b>In Year 5:</b> <ul style="list-style-type: none"><li>• Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</li><li>• Describe the life process of reproduction in some plants and animals.</li></ul>			

Year 5 - Living Things and Their Habitats

<p><b>National Curriculum Objectives:</b></p> <p>□ Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. □ Describe the life process of reproduction in some plants and animals.</p> <p>Pupils should study and raise questions about their local environment throughout the year. They should observe life-cycle changes in a variety of living things, for example, plants in the vegetable garden or flower border, and animals in the local environment. They should find out about the work of naturalists and animal behaviourists, for example, <a href="#">David Attenborough</a> and <a href="#">Jane Goodall</a>.</p> <p>Pupils should find out about different types of reproduction, including sexual and asexual reproduction in plants, and sexual reproduction in animals. Pupils might work scientifically by: observing and comparing the life cycles of plants and animals in their local environment with other plants and animals around the world (in the rainforest, in the oceans, in desert areas and in prehistoric times), asking pertinent questions and suggesting reasons for similarities and differences. They might try to grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs. They might observe changes in an animal over a period of time (for example, by hatching and rearing chicks), comparing how different animals reproduce and grow.</p>	<p><b>Key Ideas:</b></p> <p>a) Some organisms reproduce sexually where offspring inherit information from both parents.</p> <p>b) Some organisms reproduce asexually by making a copy of a single parent.</p> <p>c) Environmental change can affect how well an organism is suited to its environment.</p> <p>d) Different types of organisms have different lifecycles.</p>
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Prior Learning	Lifecycles			Vocabulary
<p><b>In Year 4:</b></p> <ul style="list-style-type: none"><li>Recognise that living things can be grouped in a variety of ways.</li><li>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.</li><li>Know and label the features of a river</li><li>Recognise that environments can change and that this can sometimes pose danger to living things.</li></ul>	<p><b>Chapter 1:</b></p> <p>All living things have a lifecycle. These lifecycles are different. Pupils should draw a timeline to indicate stages in the growth and development of humans. They should learn about the changes experienced in puberty. Pupils could work scientifically by researching the gestation periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows. Lifecycles have similarities and differences.</p>	<p><b>Chapter 2:</b></p> <p>Plant lifecycles.</p> <ul style="list-style-type: none"><li>Plants reproduce in different ways.</li><li>A plant life cycle is dependent on pollinators.</li><li>Bulbs reproduce asexually.</li></ul> <p>Children should have opportunities to examine the flowers of a variety of plants closely, perhaps using a digital microscope, to see how they are adapted to maximise the chance of pollination - this can be for both insect pollinated and wind pollinated plants.</p>	<p><b>Chapter 3:</b> Environmental impact.</p> <p>Pupils need to learn how the environment changes through the seasons (this is the best way to teach about the seasons, through longitudinal studies lasting a year). They need to consider how changes to habitats affect the organisms within them. For example, how the amount and variation of organisms change in a pond through the year and how different parts of the pond might be affected differently. Pupils need to consider how humans can affect the local environment through pollution, building, new planting (planting a bush next to a pond), introducing or removing certain organisms (eg fencing rabbits out from the school field).</p>	<p>Environment, flowering, non-flowering, plants, animals, vertebrates, fish, amphibians, reptiles, mammals, invertebrate, human impact, nature reserves, deforestation.</p>
	<ul style="list-style-type: none"><li>Explore lifecycle of a human (a recap and revision of Animals including humans)</li><li>Compare the lifecycles of different mammals, amphibians and birds.</li><li>Study an animal in the classroom and track how it changes over time..</li><li>Amphibians have a process of metamorphosis. Mammals have similar lifecycles</li></ul> <p>□</p>	<ul style="list-style-type: none"><li>Compare different plant life cycles.</li><li>Explore the different processes of reproduction in these.</li><li>How do bulbs reproduce?</li><li>Can you complete a full life cycle? (Plant a quick growing plant [beans] and observe how it changes. Harvest the fruit and dry out the seeds. What happens if you plant it?</li></ul>	<ul style="list-style-type: none"><li>Observe a pair of old shoes and how minibeasts begin habituating spaces. (leave outside for topic) (<i>Would our results have been different if we had located them somewhere else? How could we prove this? What does this information tell us?</i>)</li><li>Invite the children to select an animal of interest. How has it adapted? What are the issues surrounding its survival? How does global warming affect animals like polar bears?</li><li>How does deforestation impact foodc hains and populations?</li></ul> <p>Explore how animals are suited to live in their habitat.</p>	<p>Sexual, asexual, reproduction, cell, fertilisation, pollination, male, female, pregnancy, gestation, young, mammal, metamorphosis, amphibian, insect, egg, embryo, bird, plant.</p>

**In Year 6:** Classify living things into broad groups according to observable characteristics and based on similarities and differences.

- Give reasons for classifying plants and animals based on specific characteristics.
- Know how animals and plants are adapted to suit their environment.
- Know about reproduction and offspring (recognising offspring normally vary and are not identical to their parents).
- Know the ways in which nutrients and water are transported in animals, including humans



Year 6 - Living Things and Their Habitats				
<p><b>National Curriculum Objectives:</b></p> <p>□ Classify living things into broad groups according to observable characteristics and based on similarities and differences. □ Give reasons for classifying plants and animals based on specific characteristics. Pupils should build on their learning about grouping living things in year 4 by looking at the classification system in more detail. They should be introduced to the idea that broad groupings, such as micro-organisms, plants and animals can be subdivided. Through direct observations where possible, they should classify animals into commonly found invertebrates (such as insects, spiders, snails, worms) and vertebrates (fish, amphibians, reptiles, birds and mammals). They should discuss reasons why living things are placed in one group and not another.</p> <p>Pupils might find out about the significance of the work of scientists such as <i>Carl Linnaeus</i>, a pioneer of classification.</p> <p>Pupils might work scientifically by: using classification systems and keys to identify some animals and plants in the immediate environment. They could research unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system.</p>			<p><b>Key Ideas:</b></p> <ul style="list-style-type: none"><li>• Variation exists within a population (and between offspring of some plants) – NB: this Key Idea is duplicated in Year 6 Evolution and Inheritance.</li><li>• Organisms best suited to their environment are more likely to survive long enough to reproduce.</li><li>• Organisms are best adapted to reproduce are more likely to do so.</li><li>• Organisms reproduce and offspring have similar characteristic patterns.</li><li>• Competition exists for resources and mates.</li></ul>	
Prior Learning				Vocabulary
<p><b>In Year 5:</b></p> <ul style="list-style-type: none"><li>• Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</li><li>• Describe the life process of reproduction in some plants and animals.</li></ul>	<p><b>Chapter 1:</b></p> <p>Animals can be classified in different ways, The classification of living things is complex and based upon genetic similarities. It is therefore a useful tool to work out evolutionary patterns. This is beyond primary level science and so we need not worry too much about detailed classification. Important classifications are plants and animals (and vertebrates, invertebrates and mammals, birds, reptiles, amphibians and insects)</p>	<p><b>Chapter 2:</b></p> <p>Variation exists within these classifications. Children need to develop a rich understanding of variation through studying their environment and then asking questions about environments and organisms that they may have never seen before. It is essential that pupils are encouraged to notice and explore variation in depth (organisms of the same and different species, between offspring from the same parents (plants and animals), between offspring and their parents and between different habitats).</p>	<p><b>Chpter 3:</b></p> <p>Animals adapt to fit their habitat Those that adapted best survived.</p> <p>Pupils could be shown artistic impressions of how horses, giraffes, elephants, humans or other animals have thought to have changed over time, and be encouraged to describe changes and think about how these changes occurred and over what time scales. Pupils could be shown fossils of extinct animals and asked to consider if there is an animal alive today that is similar. The point being that pupils deduce that not everything that once lived is still living and that what is alive today was not always here.</p>	<p>Variation Organisms Populations. Classification Characteristics Environment, flowering, non-flowering, plants, animals, vertebrates, fish, amphibians, reptiles, mammals, invertebrate, human impact, nature reserves, deforestation. Classify, compare, bacteria, microorganism, organism, invertebrates, vertebrates, Linnaean.</p>
	<ul style="list-style-type: none"><li>• Explore the work of Linneaus and how his work is used today.</li><li>• Classify a range of animals and plants in different areas of the school. Consider creating a longitudinal study whereby these areas are monitored over time for change.</li></ul>	<ul style="list-style-type: none"><li>• Know how animals and plants are adapted to suit their environment.</li><li>• Know about reproduction and offspring (recognising offspring normally vary and are not identical to their parents).</li></ul> <p>Pupils might find out about the work of paleontologists, such as Mary Anning, and about how Alfred Wallace and Charles Darwin developed their ideas on evolution.</p>	<ul style="list-style-type: none"><li>• Study how Darwin compared different animals in different locations. How did giraffes adapt to feed?</li><li>• What happens when you put a house plant outside? Observe and study the impact on the plant. Make predictions for how it could have adapted and what could have been done to protect it.</li></ul>	
<p><b>In KS3:</b></p> <p><a href="https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/335174/SECONDARY_national_curriculum_-_Science_220714.pdf">https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/335174/SECONDARY_national_curriculum - Science 220714.pdf</a></p>				