

## High Meadow Infant School Year 2 Science units

### 2.1 Local Habitats

#### *Overview of the unit:*

Pupils visit the same habitats and microhabitats at different times of year and explore the seasonal changes in a habitat and a micro-habitat. They continue to develop their observation skills.

Children working below age-related expectations will be able to:	<ul style="list-style-type: none"><li>▪ Know how to respect living things in their environment</li><li>▪ Ask basic questions about local habitats</li><li>▪ Describe some changes that take place in vegetation and animal life in a habitat and a micro-habitat across the year</li><li>▪ Use everyday terms to describe simple features living things or events</li><li>▪ Present evidence they have collected in simple term</li><li>▪ Communicate simple features or components of living things or events they have observed in everyday language</li></ul>
<b>Children working at age-related expectations will be able to:</b>	<ul style="list-style-type: none"><li>▪ Know how to respect living things in their environment</li><li>▪ Ask simple questions and recognise that they can be answered in different ways</li><li>▪ Describe the changes that take place in vegetation and animal life in a habitat and a micro-habitat across the four seasons</li><li>▪ Present their ideas and evidence in appropriate ways</li><li>▪ Use simple scientific vocabulary to describe their ideas and observations</li></ul>
Children working above age-related expectations will be able to:	<ul style="list-style-type: none"><li>▪ Know how to respect living things in their environment</li><li>▪ Ask relevant questions on different aspects</li><li>▪ Give simple reasons for the changes that take place in vegetation and animal life in a habitat and a micro-habitat across the four seasons</li><li>▪ Use scientific forms of language when communicating simple scientific ideas, processes or phenomena</li></ul>

#### **Resources required for this unit:**

Clipboards, cameras, magnifying glasses, specimen trays and containers

## 2.2 Living Things

### Overview of the unit:

Pupils classify things as living, once alive and never alive. They learn about the characteristics of living things and building and observing a wormery and going outside to hunt for examples of living and non-living things. They look for characteristic of life in plants and establish that plants are living things.

Children working below age-related expectations will:	<ul style="list-style-type: none"> <li>▪ know that there are living things, things that were alive and things that have never been alive.</li> <li>▪ describe differences between living and non-living things in terms of simple characteristics such as movement and growth</li> </ul>
<b>Children working at age-related expectations will:</b>	<ul style="list-style-type: none"> <li>▪ explore and compare the differences between things that are living, dead, and things that have never been alive</li> <li>▪ describe the characteristics of living things</li> <li>▪ know that plants are living things</li> </ul>
Children working above age-related expectations will:	<ul style="list-style-type: none"> <li>▪ describe differences between living and non-living things</li> <li>▪ explain why plants are living things</li> </ul>

Lesson	Learning objectives
1	<b>Living and non-living things</b> <ul style="list-style-type: none"> <li>▪ classify items as living things, things that were alive and things that have never been alive</li> <li>▪ understand that plants are living things</li> </ul>
2	<b>Characteristics of living things</b> <ul style="list-style-type: none"> <li>▪ know some of the characteristics of living things –movement, growth, excretion, reproduction, <i>sensitivity</i></li> <li>▪ know that all living things have certain needs</li> </ul>
3	<b>Plants as living things</b> <ul style="list-style-type: none"> <li>▪ understand that plants are living things</li> <li>▪ know that plants are alive</li> <li>▪ describe the differences between animals and plants</li> </ul>

### Resources required for this unit:

Basic craft supplies

Commercial wormery – optional plus 2litre bottles for pupils to make their own wormeries

Cameras

Pond weed, glass funnel, test tubes or jars, table lamp

## 2.3 Animals and their Needs

### Overview of the unit:

In this unit pupils begin by learning about the stages of human growth. They learn that animals grow until they are adult and that that different animals start life in different forms, some as eggs and some as live births and they look at the needs of the young of different species. Throughout the unit they observe some animals as they grow, both in the classroom, and through webcams on the Internet. This unit should be taught in late spring when it is possible to observe young birds and animals growing through online webcams.

Children working below age-related expectations will:	<ul style="list-style-type: none"> <li>▪ know that animals, including humans, grow from young animals</li> <li>▪ know that animals and humans need water and food</li> <li>▪ state some simple ways to stay healthy</li> </ul>
Children working at age-related expectations will:	<ul style="list-style-type: none"> <li>▪ <b>know that animals, including humans, have offspring which grow into adults</b></li> <li>▪ <b>describe the basic needs of animals, including humans, for survival</b></li> <li>▪ <b>describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</b></li> </ul>
Children working above age-related expectations will:	<ul style="list-style-type: none"> <li>▪ know that some groups of animals produce live young but that others grow from eggs</li> <li>▪ explain in simple terms what animals use food, water and oxygen for</li> </ul>

Lesson	Learning objectives
1	<b>Animals and how they grow</b> <ul style="list-style-type: none"> <li>- know that animals grow in different ways</li> <li>- know that mammals have live young but other animals do not</li> <li>- take a first look at animals to be observed (tadpoles, chicks, butterfly etc.)</li> </ul>
2	<b>How humans grow</b> <ul style="list-style-type: none"> <li>- describe how humans grow</li> <li>- describe the basic needs of animals – food, air, warmth</li> <li>- observe the difference in growth of the animals since the previous week</li> </ul>
3	<b>Eating to stay healthy</b> <ul style="list-style-type: none"> <li>- state some ways in which humans stay healthy</li> <li>- know that eating a good diet is helps us stay healthy</li> <li>- know that foods can be sorted into groups</li> <li>- observe the difference in growth of the animals since the previous week</li> </ul>
4	<b>A healthy diet</b> <ul style="list-style-type: none"> <li>- state the basic foods that are needed for a healthy diet and those foods that should be eaten in moderation</li> <li>- design a healthy diet</li> <li>- observe the difference in growth of the animals since the previous week</li> </ul>
5	<b>Keeping clean and staying fit</b> <ul style="list-style-type: none"> <li>- How humans stay healthy – hygiene, exercise and rest</li> <li>- observe the difference in growth of the animals since the previous week</li> </ul>
6	<b>How our animals grew</b> <ul style="list-style-type: none"> <li>- Collate observations of animals into a single document to describe the growth of the animals in the study</li> </ul>

### Resources required for this unit:

Animals at an early stage of growth, e.g. butterfly, silkworm and fruit fly, suitable home for animals. Cameras. Modelling clay. Blindfolds. Optional: UV light and UV reactive powder.

## 2.4 Plants

### Overview of the unit:

Pupils think about the difference between seeds and other objects and work out what a seed is. They plant beans and monitor them weekly, observing, measuring, sketching and photographing them to provide a record of growth. They investigate the basic needs of plants for healthy growth and explore the way that plants change through the seasons.

Children working below age-related expectations will:	<ul style="list-style-type: none"> <li>▪ make some simple observations about the growth of seeds and bulbs</li> <li>▪ recognise that plants need light, warmth and water to grow</li> <li>▪ with help, make some measurements of the height of plants</li> </ul>
<b>Children working at age-related expectations will:</b>	<ul style="list-style-type: none"> <li>▪ observe and describe how seeds and bulbs grow into mature plants</li> <li>▪ find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</li> </ul>
Children working above age-related expectations will:	<ul style="list-style-type: none"> <li>▪ Describe in detail the growth of seeds and bulbs into plants from their own observations and from measurement, including the use of charts and graphs</li> <li>▪ explain in simple terms why a number of plants should be used to provide reliable evidence about plant growth</li> <li>▪ Know that plants make their own food but that humans and many animals use plants as food</li> </ul>

Lesson	Learning objectives
1	<b>What is a seed?</b> <ul style="list-style-type: none"> <li>▪ distinguish between seeds and other similar materials</li> <li>▪ give a basic explanation of what a seed is</li> <li>▪ know that plants have stem, leaves, roots (recap of Year 1)</li> </ul>
2	<b>What do plants need to stay healthy?</b> <ul style="list-style-type: none"> <li>▪ predict whether plants need water, warmth and/or light to grow</li> <li>▪ know that plants lose water from their leaves</li> <li>▪ know that bulbs and seeds differ in structure and formation</li> <li>▪ make appropriate measurements and observations of plant growth</li> </ul>
3	<b>Plants we eat</b> <ul style="list-style-type: none"> <li>▪ know that plants provide humans and other animals with food</li> <li>▪ identify the parts of the plant that are consumed for a range of vegetables</li> <li>▪ make measurements and record observations of the growth of seeds and bulbs</li> </ul>
4	<b>How plants change through the seasons</b> <ul style="list-style-type: none"> <li>▪ describe how plants change through the seasons</li> <li>▪ know that some plants are perennial and some are annual or biennial</li> <li>▪ describe the difference between perennial plants and annual plants</li> </ul>
5	<b>What do seeds and bulbs need for growth?</b> <ul style="list-style-type: none"> <li>▪ know, through investigation, that seeds and bulbs need water and warmth but not light to grow</li> <li>▪ know that growing plants need light to stay healthy</li> <li>▪ to draw conclusions from a range of experiments about what plants need for growth</li> </ul>

### Resources required for this unit:

Seeds, bulbs and jars/pots for planting them. Optional – class set of bulb-growing glass vases. Electrically heated greenhouse propagator. Glass flower vase or large jar. Cameras.

## 2.5 Materials

Children working below age-related expectations will:	<ul style="list-style-type: none"> <li>▪ Name some common materials and describe their basic properties</li> <li>▪ Compare and contrast different materials</li> <li>▪ Group materials according to basic properties (e.g. smoothness, stiffness)</li> </ul>
<b>Children working at age-related expectations will:</b>	<ul style="list-style-type: none"> <li>▪ identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</li> <li>▪ find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</li> </ul>
Children working above age-related expectations will:	<ul style="list-style-type: none"> <li>▪ Use their knowledge and understanding of materials to sort materials according to their properties</li> <li>▪ Explain why some materials are particularly suited to specific purposes, e.g. glass for windows</li> </ul>

Lesson	Learning objectives
1	<b>Changing the shape of material</b> <ul style="list-style-type: none"> <li>▪ revise work on materials from Year 1</li> <li>▪ find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</li> </ul>
2	<b>Materials used for more than one thing, more than one material used for the same thing – spoons</b> <ul style="list-style-type: none"> <li>▪ compare and contrast the advantages of using different materials for the same object</li> <li>▪ list the uses of a particular material in and around school</li> </ul>
3	<b>Natural and man-made, old and new materials</b> <ul style="list-style-type: none"> <li>▪ recognise that some materials are naturally occurring and some are not</li> <li>▪ name some naturally occurring materials</li> <li>▪ compare the range and use of materials in a different time period with their use nowadays</li> <li>▪ describe in simple terms how and why the use of materials has changed</li> </ul>
4	<b>Comparing the strength of crepe paper ropes</b> <ul style="list-style-type: none"> <li>▪ ask simple questions and recognise that they can be answered in different ways</li> <li>▪ performing simple tests</li> <li>▪ gather and record data to help in answering questions.</li> </ul>
5	<b>Life of John Boyd Dunlop</b> <ul style="list-style-type: none"> <li>▪ know the contribution made to materials science by John Boyd Dunlop</li> <li>▪ Plan an investigation into material properties</li> </ul>
6	<b>Materials investigation</b> <ul style="list-style-type: none"> <li>▪ investigate the best paper for a food bag</li> </ul>

### Resources required for this unit:

Samples of a range of materials including examples of raw materials and finished objects from the same raw materials plus samples of new materials such as lycra, carbon and glass fibre. Marbles. Range of spoons made from different materials. Weights. Droppers. Measuring jugs or cylinders

## Unit 2.6 Habitats

*Overview of the unit:* Pupils spend time learning about familiar and unfamiliar habitats such as woodland and the seashore. They work in the classroom and outdoors to look at animals and plants and further their knowledge of the variety of life in different places and they go pond dipping. They extend their knowledge of the diets of different animals to understand about food chains.

Children working below age-related expectations will:	<ul style="list-style-type: none"> <li>▪ know that different animals and plants live in different sorts of places</li> <li>▪ identify a few common animals and plants in woodland and seashore habitats</li> <li>▪ know that animals eat plants or other animals</li> </ul>
<b>Children working at age-related expectations will:</b>	<ul style="list-style-type: none"> <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 different sources of food.</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> </ul>
Children working above age-related expectations will:	<ul style="list-style-type: none"> <li>▪ know what a habitat is and give examples of different habitats and micro-habitats</li> <li>▪ identify some common animals and plants that live in woodland and seashore</li> <li>▪ describe some simple ways that animals and plants in a habitat depend upon each other</li> <li>▪ explain why plants do not eat food but animals do</li> <li>▪ describe and construct food chains</li> </ul>

Lesson	Learning objectives
1	<b>Habitats</b> <ul style="list-style-type: none"> <li>▪ learn the term habitat and micro-habitat</li> <li>▪ give examples of different habitats</li> </ul>
2	<b>Types of Habitat– woodland*</b> <ul style="list-style-type: none"> <li>▪ describe a woodland habitat</li> <li>▪ describe the kind of microhabitats found in woodland</li> <li>▪ know some of the common woodland animals and plants</li> </ul>
3	<b>Types of Habitat – the seashore*</b> <ul style="list-style-type: none"> <li>▪ describe a seashore habitat</li> <li>▪ describe the kind of microhabitats found in the seashore</li> <li>▪ know some of the common seashore animals and plants</li> </ul>
4	<b>Pond dipping</b> <ul style="list-style-type: none"> <li>▪ know that living things should be treated with respect</li> <li>▪ explore a pond habitat</li> <li>▪ identify some animals and plants living in and around ponds</li> </ul>
5	<b>Food chains</b> <ul style="list-style-type: none"> <li>▪ know that plants do not need to eat because they make their own food</li> <li>▪ know that some animals are carnivores, some are herbivores and some are omnivores</li> <li>▪ understand the term food chain and cite some simple examples of food chains</li> </ul>

### Resources required for this unit:

Woodland and pond identification guides or apps, cameras, clipboards, magnifying glasses, assorted seashells, nets, deep trays for holding specimens, plastic spoons, identification keys or apps, cameras