# Science Progression of Knowledge — Year 2 — Topic: Living Things and their Habitats

| National Curriculum Objectives: | Essential Vocabulary: | Substantive Knowledge: (children MUST know this by the end of the unit) | Working Scientifically Objectives: |
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| • explore and compare the differences between things that are living, dead, and things that have never been alive<br><br>• 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<br><br>• identify and name a variety of plants and animals in their habitats, including microhabitats<br><br>• 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 | • Living or dead: **living, dead, never living,** not living, alive, never been alive, healthy.<br>• **Habitats** including **microhabitats**: **depend,** shelter, safety, **survive**, suited, space, minibeast, air.<br>• **Life processes:** movement, sensitivity, growth, reproduction, nutrition, excretion, respiration.<br>• **Food chains: food sources,** food, producer, consumer, predator, prey.<br>• Names of habitats and microhabitats: e.g. under leaves, woodland, rainforest, sea shore, ocean, urban, local habitat.<br><br>Previously introduced vocabulary: senses, **carnivore**, **herbivore**, **omnivore**, **seed**, **water**, names of materials. | • All animals get their nutrients by eating. Some animals hunt and eat other animals (predators) and some animals are hunted and eaten by other animals (prey).<br>• There is variation between all living things.<br>• Different animals and plants live in different places.<br>• All animals are adapted to eat and survive (they are adapted to survive as predators and prey).<br>• 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.<br>• Living things are adapted to survive in different habitats.<br>• 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. | • Classify things that are living, things that are dead and things that have never been alive.<br>• Explore and observe microhabitats in the local environment.<br>• Experiment with ways of separating a variety of materials from water, choosing suitable equipment for the task. |
| **Prior Knowledge:** | **Future Knowledge:** | **Working at Greater depth:** | **Science Enquiry/Key Questions:** |
| **In Early Years children should:**<br>• Comments and questions about the place they live or the natural world.<br>• Shows care and concern for living things and the environment.<br>• Can talk about things they have observed such as plants and animals.<br>• Notices features of objects in their environment.<br>• Comments and asks questions about their familiar world. | **In Year 4 children will:**<br>• recognise that living things can be grouped in a variety of ways<br><br>• explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment<br><br>• recognise that environments can change and that this can sometimes pose dangers to living things | • Can they name some characteristics of an animal that help it to live in a particular habitat?<br><br>• Can they describe what animals need to survive and link this to their habitats? | • How would you group these plants and animals based on what habitat you would find them in?<br>• Which habitat do worms prefer – where can we find the most worms?<br>• How does the habitat of the Arctic compare with the habitat of the rainforest?<br>• Do all animals eat the same thing?<br>• Which animals hunt, and which animals are hunted? Why?<br>• How are animals and plants 'adapted' to live in their habitats<br>• Why do animals and plants like to live in different places?<br>• How do seasons affect our animals and plants?<br>• Which animals hibernate and why?<br>• How to habitats change over our school year? |

**Science Progression of Knowledge** **Year 4** **Topic**: Living Things and their Habitats

| **National Curriculum Objectives:** | **Essential Vocabulary:** | **Substantive Knowledge:**<br>- children MUST know this by the end of the unit | **Working Scientifically Objectives:** |
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| • recognise that living things can be grouped in a variety of ways<br><br>• explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment<br><br>• recognise that environments can change and that this can sometimes pose dangers to living things | • Living things: **organisms, specimen,** species.<br>• Grouping living things: **classification,** classification keys, classify, **characteristics**.<br>• Names of invertebrate animals: snails and slugs, worms, spiders, insects.<br>• Invertebrate body parts: e.g. wing case, abdomen, thorax, antenna, segments, mandible, proboscis, prolegs.<br>• Environmental changes: **environment,** environmental dangers, adapt, natural changes, climate change, deforestation, pollution, urbanisation, invasive species, **endangered species, extinct.**<br><br>Previously introduced vocabulary: carbon dioxide, **fish, bird, mammal, amphibian, reptile**, skeleton, bone, **vertebrate, invertebrate,** backbone, names for animal body parts, names of common plants, photosynthesis. | • Living things can bedivided into groups based upon their characteristics.<br><br>• Different food chains occur in different habitats.<br><br>• Environmental change affects different habitatsdifferently.<br><br>• Human activity significantly affects the environment.<br><br>• Different organisms are affected differently by environmental change | • Explore my local area to see how many different habitats there are.<br><br>• Use a variety of clues in riddles to help me identify different animals.<br><br>• Classify a variety of organisms using my own and given criteria, sorting the results into tables and Carroll diagrams.<br><br>• Use a classification key to identify which group an animal belongs to.<br><br>• Use a classification key to identify unfamiliar organisms. |
| **Prior Knowledge:** | **Future Knowledge:** | **Working at Greater depth:** | **Science Enquiry/Key Questions:** |
| **In Year 2 children should:**<br>• explore and compare the differences between things that are living, dead, and things that have never been alive<br>• 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<br>• identify and name a variety of plants and animals in their habitats, including microhabitats<br>• 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 | **In Year 5 children will learn:**<br>• describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird<br><br>• describe the life process of reproduction in some plants and animals | • Can they give reasons for how they have classified animals and plants, using their characteristics and how they are suited to their environment?<br>• Can they explore the work of pioneers in classification?<br>(e.g. Carl Linnaeus)<br>• Can they name and group a variety of living things based on feeding patterns?<br>(producer, consumer, predator, prey, herbivore, carnivore, omnivore). | • What food chains and webs are there in our local habitat?<br>• How does energy move through the food chain?<br>• How does removal of one species from an environment, affect others?<br>• How does environmental change affect different organisms?<br>• What are the most important things we could do to improve our outside area?<br>• How does human activity affect our environment? |

| **Science Progression of Knowledge** | **Year 5** | **Topic**: Living Things and their Habitats | |
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| **National Curriculum Objectives:** | **Essential Vocabulary:** | **Substantive Knowledge:**<br>- children MUST know this by the end of the unit | **Working Scientifically Objectives:** |
| • describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird<br><br>• describe the life process of reproduction in some plants and animals | • **Reproduction**: **asexual reproduction, sexual reproduction**, **gestation, metamorphosis,** gametes, tuber, runners/side branches, plantlet, cuttings, embryo, adolescent, penis, vagina, egg, pregnancy, gestation.<br><br>Previously introduced vocabulary: **life cycle, pollination,** offspring, **fertilise,** fertilisation, sepal, filament, anther, stamen, pollen, petal, stigma, style, ovary, carpel, ovule, stem, bulb, roots, mammal, adult, baby, sperm, cells, live young. | • Different animal groups have life cycles.<br><br>• Changes are observed in an animal over a period of time.<br><br>• Different animal groups reproduce and grow in different ways.<br><br>• Plants and animals reproduce: sexual reproduction in animals, sexual and asexual reproduction in plants.<br><br>• Explore the work of well-known naturalist (David Attenborough and Jane Goodall). | • Label the parts of a flowering plant correctly using their scientific names.<br>• Dissect a flower to explore the male and female parts of the plant.<br>• Write scientifically accurate descriptions of asexual reproductions in plants.<br>• Follow instructions to grow a new plant from cuttings.<br>• Classify a variety of animals according to how they reproduce.<br>• Create a scatter graph to show animal gestation and incubation periods, using the information to generate statements and answer questions.<br>• Research and present data and information about the organisms living in a variety of environments around the world.<br>• Compare the life cycles of a variety of animals.<br>• Carry out independent research to find out about the life and achievements of a famous naturalist. |
| **Prior Knowledge:** | **Future Knowledge:** | **Working at Greater depth:** | **Science Enquiry/Key Questions:** |
| **In Year 4 children should:**<br><br>• recognise that living things can be grouped in a variety of ways<br><br>• explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment<br><br>• recognise that environments can change and that this can sometimes pose dangers to living things | **In Year 6 children will learn:**<br><br>• describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals<br><br>• give reasons for classifying plants and animals based on specific characteristics | • Can they observe their local environment and draw conclusions about life-cycles, e.g. plants in the vegetable garden or flower border?<br>• Can they compare the life cycles of plants and animals in their local environment with the life cycles of those around the world, e.g. rainforests? | • What is a life cycle?<br>• Are life cycles the same?<br>• Do plants reproduce in the same ways as us?<br>• How do plants spread their seeds?<br>• Compare this collection of animals based on similarities and differences in their lifecycle.<br>• How does a bean change as it germinates?<br>• Is there are relationship between number of petals and number of stamens?<br>• What are the differences between the life cycle of an insect and a mammal?<br>• Do all plants and animals reproduce in the same way? |

# Science Progression of Knowledge — Year 6 — Topic: Living Things and their Habitats

| National Curriculum Objectives: | Essential Vocabulary: | Substantive Knowledge: (children MUST know this by the end of the unit) | Working Scientifically Objectives: |
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| • describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals<br><br>• give reasons for classifying plants and animals based on specific characteristics | • Classifying: Carl Linnaeus, Linnaean system, flowering and non-flowering plants, variation.<br>• **Microorganisms**: **bacteria,** single-celled, microbes, microscopic, virus, fungi, fungus, mould, antibiotic, yeast, ferment, **microscope**, decompose. | •Living things are broadly grouped (microorganisms, plants and animals).<br><br>•Broad groups can be sub divided into vertebrates (reptiles, fish, amphibians, birds and mammals) and invertebrates (insects, molluscs, annelids, arachnids).<br><br>• Carl Linnaeus created a classification system.<br><br>•Living things placed in classification system according to physical characteristics. | • Classify a variety of organisms into groups according to their features.<br>• Use a classification key to help me identify which group unfamiliar animals belong to.<br>• Create a presentation with labelled diagrams to show the features of each group of animal.<br>• Use a variety of criteria to classify animals that belong to the same group, e.g.mammals.<br>• Create a classification key to help identify a variety of flowering and non- flowering plants.<br>• Gather plant samples (or photographs of plants) from the local area, then create a classification key to identify them.<br>• Find a variety of different ways to classify different plants.<br>• Use the Linnaeus classification system to identify the kingdom, phylum, class, order, family, genus and species of a variety of organisms.<br>• Use the Linnaeus classification system to answer questions about different organisms.<br>• Ask questions about micro-organisms and use my own research to answer them. • Carry out a fair test to explore which foods yeast most likes to eat, recording the results and drawing conclusions.<br>• Gather samples of organisms in the local area (or take photos) to identify and classify organisms found in the local area |
| **Prior Knowledge:** | **Future Knowledge:** | **Working at Greater depth:** | **Science Enquiry/Key Questions:** |
| **In Year 5 children should:**<br><br>• describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird<br><br>• describe the life process of reproduction in some plants and animals | **In Key Stage 3 children will learn about:**<br>• the dependence of almost all life on Earth on the ability of photosynthetic organisms, such as plants and algae, to use sunlight in photosynthesis to build organic molecules that are an essential energy store and to maintain levels of oxygen and carbon dioxide in the atmosphere<br>• the adaptations of leaves for photosynthesis.<br>• the interdependence of organisms in an ecosystem, including food webs and insect pollinated crops<br>• the importance of plant reproduction through insect pollination in human food security<br>• how organisms affect, and are affected by, their environment, including the accumulation of toxic materials. | • Can they explain why classification is important?<br>• Can they readily group animals into reptiles, fish, amphibians, birds and mammals?<br>• Can they sub divide their original groupings and explain their divisions, such as vertebrates and invertebrates?<br>• Can they find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification? | • Why do we need to classify living things?<br>• How do we classify?<br>• What are the difficulties with classification? (penguins, whales, platypus)<br>• How do animals change over time?<br>• Why does variation exist?<br>• What happens if animals of different species breed? (hybrids)<br>• What happens to house plants outside?<br>• What are microorganisms?<br>• How can we prevent the spread of disease?<br>• Why do animals and plants compete – and what for?<br>• How would you make a classification key for vertebrates/invertebrates or microorganisms?<br>• In what ways can we sort living things? |