SBSP PROGRESSION OF COMPONENT KNOWLEDGE THROUGH SCIENCE UNITS

BIOLOGY – LIVING THINGS AND THEIR HABITATS

Early Learning Goal:

- Explore the natural world around them, making observations and drawing pictures of animals and plants.
- Explore the natural world around them.
- Understand the key features of the life cycle of an animal.

Reception Component Knowledge

- I can name some different types of animals including colour (Brown Bear book).
- I can talk about different animals from stories and compare (pigs and wolves).
- I can talk about the lifecycle of some animals.
- I know some animals wake up at night and sleep in the day.
- I can talk about some animals and their habitats.
- I can make observations of plants and animals, drawing pictures and sharing comments.

Year 2 NC links:

- explore and compare the differences between things that are living, dead, and things that have never been alive
- 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
- identify and name a variety of plants and animals in their habitats, including microhabitats
- 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

Year 2 Component Knowledge

Living Things and Their Habitats

- Understand that there are things that are living, dead or have never been alive
- Identify and classify objects into living, dead or never been alive
- Understand the 7 characteristics of living things
- Know the difference between a habitat and a microhabitat
- Identify and name a range of microhabitats
- Understand that living things depend on each other for survival
- Understand that living things need certain conditions to survive
- Design a microhabitat where living things could survive
- Explain why an animal may or may not be suited to certain conditions
- Understand that all animals need to eat to survive
- Find out what specific animals eat through research
- Ask diverse questions to find out what animals eat and where they find their food
- Explain what could affect a food chain
- Show how all animals and humans relate to each other in a food chain
- Describe what a food chain is
- Understand that food we eat comes from a natural source
- Identify different foods that come from the same natural source
- Explain how foods have changed from their natural source

Habitats from Around the World

- Explore what a habitat is
- Understand that living organisms are suited to live in one or more habitats
- Identify which animals might live in a range of habitats
- Appreciate that environments are constantly changing
- Identify what you can do to help reduce the impact humans have on a habitat
- Know what you can do to care for a habitat
- Understand why rainforests are important
- Identify how rainforests are endangered
- Plan a campaign to help protect a rainforest
- Learn about different ocean life
- Understand an ocean habitat
- Learn about the blue whale
- Identify the differences between the Arctic and Antarctic
- Identify the animals which live in both polar habitats
- Describe the Arctic and Antarctic climates
- Understand what animals are best suited to live in desert, underground and ocean habitats
- Investigate, measure and record soil habitats
- Learn how to compare results and identify species more suited to living in damp soils

Working Scientifically Component Knowledge

Living Things and Their Habitats

- Identifying and classifying
- Observing closely, using simple equipment

- Using their observations and ideas to suggest answers to questions
- Asking simple questions and recognising that they can be answered in different ways
- Gathering and recording data to help in answering questions
- Sorting and grouping

Habitats from Around the World

- Identifying and classifying
- Using their observations and ideas to suggest answers to questions
- Gathering and recording data to help in answering questions
- Using their observations and ideas to suggest answers to questions
- Asking simple questions and recognising that they can be answered in different ways

Key Vocabulary

Living Things and Their Habitats

- excrete, nutrition, reproduce, respire, senses
- fungi, microhabitat, habitat, survive, shelter
- colony, condition, insect, antennae, suitable
- omnivore, herbivore, producer, consumer, carnivore
- nutrient, caterpillar, life cycle, food chain, rot
- refrigerated lorry, forklift truck, automated, frozen food, canned

Habitats from Around the World

- environment, microhabitat, mate, organism, habitat
- rainforest, moisture, extinct, climate, endangered
- pollution, poaching, biodiversity, rainforest, deforestation
- plankton, ocean, ecosystem, coral reef, trench
- narwhal, tundra, Arctic, caribou, Antarctic
- earthworm, desert, lizard, cactus, pond

Year 4 NC links:

- 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 dangers to living things

Year 4 Component Knowledge

Living Things and Their Habitats

- Understand that living things are suited to different environments
- Group living things according to the environment they are suited to
- Identify the similarities between animals that live in the same habitat
- Describe habitats that are found in the UK
- Research key facts about a habitat and report on the climate, temperature and type of soil and water they would typically find there
- Research and describe habitats that are found in the UK and the threats that living things face
- Identify different ways to classify animals into groups
- Organise animals into different classification groups
- Begin to organise animals into different classification groups and sub-groups
- Understand how to interpret a classification key
- Create a classification key using a series of questions
- Create a complex classification key using a series of questions that group animals into sub-groups before identifying the species
- Understand that animals adapt to suit their environment
- Describe how animals adapt to their environment
- Apply knowledge of adaptations to create a classification key for a 'new' species
- Name some plants that live in a pond habitat
- Describe plants that live in a pond habitat
- Classify and sort plants that live in pond habitat

Conservation

- Understand that ecosystems are affected by changes in the seasons
- Understand that habitats around the world experience different seasons which changes their ecosystem
- Understand that it is not just the seasons which cause ecosystems to change
- Understand human impact on the environment through deforestation
- Use scientific evidence to present your findings about deforestation
- Explore the measures humans can take to protect the rainforests
- Understand what air pollution is
- Explore what contributes to air pollution
- Identify the impact air pollution has on the environment and human health
- Understand how water pollution is caused
- Explain the impact of different kinds of water pollution
- Identify how to prevent water pollution
- Understand that it is important to conserve water
- Suggest ways to conserve water
- Explain how to conserve water and the consequences of water shortages

Working Scientifically Component Knowledge

Living Things and Their Habitats

- Identifying differences, similarities or changes related to simple scientific ideas and processes
- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables

Conservation

- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- Using straightforward scientific evidence to answer questions or to support their findings
- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables
- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units
- Using a range of equipment, including thermometers and data loggers

Key Vocabulary

Living Things and Their Habitats

- habitat, adapted, conditions, camouflage, microhabitat
- coastal, grassland, climate, exposure, environment
- species, invertebrate, classify, vertebrate, characteristics
- classification key, organism, identify, criteria, sub-group
- region, blubber, adapted, colouring, features
- non-flowering plant, flowering plant, pond dipping, oxygenised, ecosystem

Conservation

- ecosystem, migrate, Southern Hemisphere, monsoon, Northern Hemisphere
- recycling, biodiversity, drought, deforestation, rainforest
- greenhouse gases, fossil fuels, emissions, pollution, climate change
- sewage, chemicals, pesticides, water treatment plant, contaminate
- freshwater, pure, drought, conserve, water butt

Year 5 NC links:

- 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

Year 5 Component Knowledge

- Understand what plants need to grow strong and healthy
- Understand that plants can reproduce sexually and asexually
- Understand that plants are living thing
- Understand that not all mammals have the same life cycle
- Know the 3 types of mammal
- Understand what a life cycle is
- Understand the life cycle of an amphibian
- Understand the life cycle of an insect
- Compare the process of metamorphosis in amphibians and insects
- Recall key facts about the structure of an egg
- Describe the differences between a mammal and a bird or reptile life cycle
- Understand the life cycle of birds and reptiles
- Understand the importance of documenting living things and highlighting their decline in the world
- Identify important facts about 2 key members of the scientific community
- Understand the importance of studying living organisms
- Suggest ideas for conservation of living or imaginary life
- Represent key information about a chosen living organism
- Represent knowledge learnt about life cycles

Working Scientifically Component Knowledge

- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- Reporting and presenting findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results - in oral and written forms such as displays and other presentations
- Identifying scientific evidence that has been used to support or refute ideas or arguments
- Taking measurements, using a range of scientific equipment, with increasing accuracy and precision and taking repeat readings when appropriate

Key Vocabulary

- genes, tuber, reproduction, asexual reproduction, fertilisation
- placental mammal, monotreme mammal, mammary glands, pouch, marsupial
- amphibian, metamorphosis, larva, caterpillar, pupa
- egg, fledgling, egg tooth, embryo, hatch
- primatologist, endangered, natural sciences, documentary, naturalist
- life cycle, vertebrate, reproduction, warm-blooded, living organism

Year 6 NC links:

- 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
- give reasons for classifying plants and animals based on specific characteristics

Year 6 Component Knowledge

- Explain how living things are classified by designing their own chart and comparing their size
- Describe how to classify a range of living animals and plants
- Identify ways to differentiate living things
- Explain a key feature or member of each animal kingdom
- Understand MRS GREN and how a living organism follows these rules
- Know that living organisms can be arranged into kingdoms
- Explain how different organisms can be classified using the Linnaean system
- Understand how an animal can be classified depending on its characteristics
- Use research to help classify a living organism
- Represent research and data in a creative way to summarise knowledge
- Know and explain that microorganisms are both helpful and harmful
- Understand that microorganisms are microscopic and cannot be seen with the naked eye
- Explain the differences between fungi and other organisms
- Outline the similarities between plants and fungi
- Identify that fungi are a separate kingdom to plants
- Describe, represent and present data about a living organism
- Describe and represent data about a member of the animal kingdom
- Represent data about a member of the animal kingdom

Working Scientifically Component Knowledge

- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs and bar and line graphs
- Identifying scientific evidence that has been used to support or refute ideas or arguments
- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- Taking measurements, using a range of scientific equipment, with increasing accuracy and precision and taking repeat readings when appropriate
- Reporting and presenting findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results – in oral and written forms such as displays and other presentations

Key Vocabulary

- conifer, classify, microorganism, fern, living organism
- cell, MRS GREN, unicellular, multicellular, kingdom
- species, Carl Linnaeus, domain, Latin, classification
- microorganism, virus, bacteria, fungi, protozoa
- plant, microscopic, mycelium, ecosystem
- classify, reproduction, habitat

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KS3 NC links:

Reproduction in humans (as an example of a mammal), including the structure and function of the male and female reproductive systems, menstrual cycle (without details of hormones), gametes, fertilisation, gestation and birth, to include the effect of maternal lifestyle on the foetus through the placenta. Reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal, including quantitative investigation of some dispersal mechanisms. Differences between species