

RAILWAY LAND WILDLIFE TRUST – EDUCATION SESSIONS 2020

TITLE and KEY STAGE	CURRICULUM LINKS Below are just some of the direct links to the national curriculum. Most sessions also significantly link with key elements of the KS1 and KS2 curriculum for English, principally regarding spoken language.	ACTIVITIES Activities can be individually tailored to your group's preference or learning goals
KS 1 Living Things and their Habitats	<p>Year 1</p> <p>Sc1/1 & Sc2/1. Ask simple questions recognising they can be answered different ways. Observe closely using simple equipment, ID and classify, gather and record data to help answer questions</p> <p>Sc1/2. ID and name common plants and their basic structure. ID and name common animals, name ones that are carnivores, herbivores and omnivores, and describe and compare structure of common animals.</p> <p>Sc1/4. Observe and describe seasons and day length.</p> <p>Ge1/1. Use basic geographical vocabulary to refer to key physical features including hill, cliff, river, soil, valley, vegetation.</p> <p>Ge1/1. Use aerial photographs to recognise landmarks and basic human and physical features.</p> <p>Year 2</p> <p>Sc2/1. Ask simple questions recognising they can be answered different ways. Observe closely using simple equipment, ID and classify, gather and record data to help answer questions</p> <p>Sc2/2. Compare differences between things that are living, dead, or never been alive. Describe how most living things are suited to their habitats; that habitats provide basic needs of plants and animals, and that they depend on each other</p> <p>Observe that seeds grow into mature plants. Describe how plants need water, light, and suitable temperature to grow and stay healthy.</p> <p>Ge1/1. Use basic geographical vocabulary to refer to key physical features including hill, cliff, river, soil, valley, vegetation.</p> <p>Ge1/1. Use aerial photographs to recognise landmarks and basic human and physical features.</p>	<ul style="list-style-type: none"> ● Explore and identify variety of habitats including woodland, reed bed, pond and meadow. ● Consider seasonal changes ● Observe aquatic or land invertebrates, identify and classify. ● Play the herbivore / carnivore game. ● Study aerial photographs and pick out landmarks of the nature reserve and surrounds. <ul style="list-style-type: none"> ● Explore and identify variety of habitats including woodland, reed bed, pond and meadow. ● Play the survival needs game. ● Observe aquatic and/or land invertebrates. ● Identify, classify, and record simple data, and consider how best to present this. ● Play the adaptation game.
Lower KS2	Year 3	<ul style="list-style-type: none"> ● Explore and identify a variety of habitats.

<p>Living Things and their Habitats</p>	<p>Sc3/2. Explore requirements of plants and how they vary between plants. Explore life cycle of flowering plants.</p> <p>Sc4/1. Make careful observations, measure using range of equipment. Gather, record, classify and present data to answer questions, use scientific language, draw simple conclusions.</p> <p>Ge2/1. Describe and understand key aspects of physical geography including biomes and vegetation belts.</p> <p>Ge2/1. Describe and understand key aspects of human geography including types of settlement, land use, economic activity including trade links, and distribution of natural resources including energy, food, minerals and water.</p> <p>Ge2/1. Use fieldwork to observe and present human and physical features in the local area using a range of methods.</p> <p>Year 4</p> <p>Sc4/1. Make careful observations, measure using range of equipment. Gather, record, classify and present data to answer questions, use scientific language, draw simple conclusions.</p> <p>Sc4/2. Recognise living things can be grouped in variety of ways, use classification keys to ID living things, and recognise that environments change, and this can pose dangers to living things. Construct variety of food chains.</p> <p>Ge2/1. Describe and understand key aspects of physical geography including biomes and vegetation belts.</p> <p>Ge2/1. Describe and understand key aspects of human geography including types of settlement, land use, economic activity including trade links, and distribution of natural resources including energy, food, minerals and water.</p> <p>Ge2/1. Use fieldwork to observe and present human and physical features in the local area using a range of methods.</p>	<ul style="list-style-type: none"> • Observe different structures of plants, and play the survival needs game to understand their requirements for growth. • Collect data on plants in a habitat, consider how best to present this data. • Compare plants and measure abiotic variables in two different habitats. • Observe reproductive parts of flowering plants and creatively enact their different life cycles. • Study aerial photographs and maps of the reserve and surrounding area, drawing out key aspects of local geography. <ul style="list-style-type: none"> • Explore and identify a variety of habitats. • Play the classification game, then classify and record data on plants and animals found in a habitat. Consider different ways this data could be presented. • Construct food webs, identifying producer, predator and prey. • Study aerial photographs and maps of the reserve and surrounding area drawing out key aspects of local geography.
<p>Upper KS2</p>	<p>Year 5</p>	<ul style="list-style-type: none"> • Predict what living things we may find in different habitats on the reserve, giving reasons.

<p>Living Things and their Habitats</p>	<p>Sc5/1. Take measurements using scientific equipment with increasing accuracy, record data and results of increasing complexity using classification keys. Make predictions, present findings, and identify scientific evidence used to support or refute ideas.</p> <p>Sc5/2. Describe differences in life cycles of a mammal, amphibian, insect and bird. Describe life process of reproduction in some plants and animals.</p> <p>Ge2/1. Describe and understand key aspects of physical geography including biomes and vegetation belts.</p> <p>Ge2/1. Describe and understand key aspects of human geography including types of settlement, land use, economic activity including trade links, and distribution of natural resources including energy, food, minerals and water.</p> <p>Ge2/1. Use fieldwork to observe and present human and physical features in the local area using a range of methods.</p> <p>Year 6</p> <p>Sc6/1. Take measurements using scientific equipment with increasing accuracy. Record data and results of increasing complexity using classification keys. Make predictions. Present findings, including causal relationships and explanations of results. Identify scientific evidence used to support or refute ideas.</p> <p>Sc6/2. Describe how, and give reasons why, living things are classified into broad groups according to common observable characteristics, including plants and animals. Recognise that living things have changed over time. Identify how animals and plants are adapted to suit their environment and that adaptation may lead to evolution.</p> <p>Ge2/1. Describe and understand key aspects of physical geography including biomes and vegetation belts.</p> <p>Ge2/1. Describe and understand key aspects of human geography including types of settlement, land use, economic activity including trade links, and distribution of natural resources including energy, food, minerals and water.</p> <p>Ge2/1. Use fieldwork to observe and present human and physical features in the local area using a range of methods.</p>	<ul style="list-style-type: none"> • Explore at least one habitat (aquatic or terrestrial) in detail, classifying and recording data for what is found. • Discuss if the creatures found will look the same throughout their lives. Discuss life cycle stages of an animal and present the information creatively to others. • Play a game to explore food webs. • Study aerial photographs and maps of the reserve and surrounding area, drawing out key aspects of local geography. • Predict what living things we may find in different habitats on the reserve, giving reasons. • Explore at least one habitat (aquatic or terrestrial) in detail, measuring non-living aspects of the habitat. • Classify and record data on living things found in this habitat. • Consider the range of adaptations they show, and how over time evolution allows them to survive / thrive. • Play a game to explore evolution of some of our creatures on the reserve. • Study aerial photographs and maps of the area drawing out key aspects of local geography. • Recap food webs by playing a game.
<p>KS2 Rocks and Soils</p>	<p>Sc3/3. Compare and group together different rocks on basis of appearance and simple physical properties. Describe how fossils are formed when things that have</p>	<ul style="list-style-type: none"> • Investigate different rock types and their properties.

	<p>lived are trapped in rock. Recognise that soils are made from rocks and organic matter.</p> <p>Sc6/2. Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</p>	<ul style="list-style-type: none"> • Explore the reserve, including the chalk cliff, and demonstrate geological timescale. • Study our collection of fossils, discuss how they were formed and what conclusions we can draw from them. • Play the soil game to explore how soil is made, what it consists of, and consider why it is so vital to life.
<p>KS1, KS2 Sustainability Solutions</p>	<p>Sc3/1. Sc/1. Ask relevant questions using different types of scientific enquiries to answer them. Use straightforward scientific evidence to answer questions or to support findings.</p> <p>Sc4/2. Recognise environments can change and that this can pose dangers to living things.</p> <p>Sc5/1. Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</p> <p>Sc5. Give reasons for particular uses of everyday materials. Explain that some changes result in formation of new materials.</p> <p>KS1 Citizenship. Take and share responsibility, meet and talk with people, consider moral dilemmas</p> <p>KS2 Citizenship. Talk about opinions and explain views, on issues that affect them and society. Face new challenges positively, research, discuss and debate topical issues. Understand that resources can be allocated in different ways and that these economic choices affect individuals, communities and the sustainability of the environment. Meet and talk with people (e.g. environmental groups)</p>	<ul style="list-style-type: none"> • Solution focused interactive group games and activities give a light hearted look at some of the serious issues around sustainability including <ul style="list-style-type: none"> - plastic waste and resource use, - climate change • Age / stage appropriate activities <p>This session pairs well with a practical exploration of the nature reserve from a sustainability point of view, including hands on observation of invertebrates to consider their vital role in recycling nutrients in nature.</p>
<p>KS1 KS2 Hunting Stories – Literacy in Nature</p>	<p>KS1 & KS2 English. Through a range of creative literacy activities, most parts of the spoken language Primary curriculum can be focused on including:</p> <ul style="list-style-type: none"> • listen and respond appropriately, ask relevant questions to extend understanding • use relevant strategies to build vocabulary • articulate and justify answers, arguments and opinions • give well-structured descriptions, explanations and narratives 	<ul style="list-style-type: none"> • Stories lurk in the woods, ponds, and meadows just waiting to be found! ... A series of creative literacy activities that use the nature reserve as inspiration to create original nature-based narratives.

	<ul style="list-style-type: none"> • maintain attention and participate actively in collaborative conversations • develop understanding through imagining and exploring ideas • speak audibly and fluently with an increasing command of Standard English • participate in discussions, presentations, performances, role play, improvisations • evaluate different viewpoints, and build on the contributions of others 	<ul style="list-style-type: none"> • Hear a nature-based story from a traditional culture and be inspired by how others interpret the natural world.
KS1, KS2 Maths Adventure	<p>Much of the KS1 & KS2 Maths curriculum can be brought to life outside in sessions linked to the year by year national curriculum aims including:</p> <ul style="list-style-type: none"> • number and place value • addition and subtraction • multiplication and division • fractions, measurement • properties of shapes, symmetry • position and direction • statistics 	<ul style="list-style-type: none"> • Yes, we can make maths active, purposeful and fun! Explore our beautiful nature reserve, whilst completing a series of engaging practical activities that investigate, explain or embed a wide range of mathematical concepts, closely matched to curriculum aims of each year group. They may not even realise they are doing maths!
KS1, KS2 Weather, Habitats and Microclimates	<p>Ge1/1. Identify seasonal and daily weather patterns. Use basic geographical vocabulary to refer to key physical features including season and weather.</p> <p>Ge2/1. Describe key aspects of physical geography including climate zones, biomes, vegetation, and the water cycle.</p> <p>Sc2/2. Compare differences between things that are living, dead, or never been alive.</p> <p>Sc4/1. Ask relevant questions, make systematic and careful observations, take accurate measurements using a range of equipment including thermometers and data loggers. Report on findings from enquiries.</p> <p>Sc51. Plan different types of enquiry, recognising and controlling variables where necessary. Make predictions and collect data</p>	<ul style="list-style-type: none"> • Explore the nature reserve, noticing the different habitats and considering if weather conditions are different in these habitats. • Measure and record weather data in one habitat, or in two to compare. • Discuss how habitats are influenced by weather conditions. Investigate the water cycle, and its effects on weather in a fun group activity. Clarify the difference between weather and climate.
Any Key Stage Citizen Science Survey	<p>Link with many parts of the science, geography, citizenship, PSHE, maths, and English curriculum listed under our other sessions</p>	<ul style="list-style-type: none"> • Take part in a Citizen Science Survey with your findings being sent to experts and contributing to wider scientific knowledge. Depending on the time of year and current surveys, investigations can include: <p>* Deciduous trees</p>

		<ul style="list-style-type: none"> * Specific invertebrates e.g. aquatic species, butterflies etc * Birds * Soil organisms including worms
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KS3 Sessions

KS3. Wonderful World of Plants	KS3 Biology. <ul style="list-style-type: none"> • Plants making carbohydrates in their leaves by photosynthesis and gaining mineral nutrients and water from the soil via their roots • Reproduction in plants, flower structure, pollination, fertilisation, seed formation and dispersal, including quantitative investigation of some dispersal mechanisms. • Dependence of almost all life on earth on photosynthetic organisms • Adaptations of leaves for photosynthesis 	<ul style="list-style-type: none"> • Investigate a variety of plants around the reserve, comparing structure and function across different classifications of flora, especially in terms of nutrition, reproduction, and photosynthesis. • Practical activities explore how photosynthesis works and how fundamental the process is for life on earth.
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KS3 / KS4. Food Webs and Interdependence in Ecosystems	KS3 Biology. <ul style="list-style-type: none"> • Interdependence of Organisms in an ecosystem, including food webs and insect pollinated crops • Importance of insect pollination in human food security • how organisms affect, and are affected by, their environment. • Earth as a source of limited resources KS4 Extension: <ul style="list-style-type: none"> • Levels of organisation within and ecosystem • Biotic and abiotic factors, interactions and cycle of materials in ecosystems • ID species, measuring distribution, frequency and abundance • Positive and negative human interactions with ecosystems 	<ul style="list-style-type: none"> • Group activity to observe and physically construct food webs of the nature reserve. • Interactive activity to explore the role of pollination, its importance to food webs including those involving humans, and its vulnerability in relation to biodiversity loss, pollution and land management. • Demonstrate how organisms affect and are affected by their environment in a game. • Collect data for abiotic factors of the ecosystem. • Survey an area of the nature reserve using quadrat and/or line transect, identify and note distribution, frequency and abundance of species found. • Analyse species in terms of trophic level.
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KS3 / KS4 Carbon Cycle, Climate Change, and its Solutions	<p>KS3 Science.</p> <ul style="list-style-type: none"> • The carbon cycle, composition of the atmosphere, production of carbon dioxide by human activity, and the impact on climate <p>KS3 Geography:</p> <ul style="list-style-type: none"> • Physical geography relating to climate, including changes in climate from Ice Age to present • Human geography relating to use of natural resources • Understand how human and physical processes interact to influence and change climate, and how human activity relies on effective functioning of natural systems. <p>KS4 science:</p> <ul style="list-style-type: none"> • Evidence for composition of Earth's atmosphere, anthropogenic causes of climate change, potential effects of, and mitigation of increased GHG <p>KS4 Geography</p> <ul style="list-style-type: none"> • Changing weather and climate – the causes, consequences and responses to extreme weather, recognising their changing distribution in time and space. The special and temporal characteristics of climate change and evidence for different causes, including human activity. 	<ul style="list-style-type: none"> • Interpret and analyse scientific evidence of climate change, noting the validity of information sources, and discuss the range of solutions • Consider carbon capture as a mitigation mechanism then, out on the nature reserve, calculate the carbon capture potential of a tree through a series of mathematical sums. Explore the potential positive effects of tree planting if scaled up. • Briefly look at the value of other potential natural carbon sinks including soils, peat, and ocean systems including kelp. • Discuss the key role renewable energy must play in any solution to climate change, and experiment with practical examples of wind and solar power.
Any Key Stage Citizen Science Survey	<p>Link with many parts of the science, geography, citizenship, PSHE, maths, and English curriculum listed under our other sessions</p>	<ul style="list-style-type: none"> • Take part in a Citizen Science Survey on our nature reserve, with your findings being sent to experts and contributing to wider scientific knowledge. Depending on the time of year and current surveys, investigations can include: <ul style="list-style-type: none"> * Deciduous trees * Specific invertebrates e.g. aquatic species, butterflies etc * Birds * Soil organisms including worms