



<b>What have I done previously in my learning journey?</b>		
<b>Previously....</b>	You have learnt previously about relationships in an ecosystem. This has involved learning about: <ul style="list-style-type: none"> <li>• the interdependence of organisms in an ecosystem, including food webs and insect pollinated crops</li> <li>• the importance of plant reproduction through insect pollination in human food security</li> <li>• how organisms affect, and are affected by, their environment, including the accumulation of toxic materials.</li> </ul>	
<b>In this topic...</b>	You will learn that the Sun is a source of energy that passes through ecosystems. Materials including carbon and water are continually recycled by the living world, being released through respiration of animals, plants and decomposing microorganisms and taken up by plants in photosynthesis. All species live in ecosystems composed of complex communities of animals and plants dependent on each other and that are adapted to particular conditions, both abiotic and biotic. These ecosystems provide essential services that support human life and continued development. In order to continue to benefit from these services humans need to engage with the environment in a sustainable way. In this section we will explore how humans are threatening biodiversity as well as the natural systems that support it. We will also consider some actions we need to take to ensure our future health, prosperity and well-being.	
<b>We will develop our learning by studying the following each lesson:</b>		<b>RAG</b>
		<b>Skills in Science checklist</b>
<b>B7.01 Competition</b>	<ul style="list-style-type: none"> <li>• Describe factors that affect the survival of organisms in their habitat</li> <li>• Explain how one species depends on others for survival</li> <li>• Describe what is meant by a stable community</li> <li>• Describe what is meant by abiotic and biotic factors</li> <li>• Give examples of abiotic and biotic factors</li> </ul>	<input type="checkbox"/> Scientific Methods <input type="checkbox"/> Practical <input type="checkbox"/> Number Skills <input type="checkbox"/> Application <input type="checkbox"/> Communication
<b>B7.02 Adaptations</b>	<ul style="list-style-type: none"> <li>• Describe and explain how structural, behavioural and functional adaptations, in a range of organisms help them to survive in their habitat</li> <li>• Define the term extremophile and give general examples</li> </ul>	<input type="checkbox"/> Scientific Methods <input type="checkbox"/> Practical <input type="checkbox"/> Number Skills <input type="checkbox"/> Application <input type="checkbox"/> Communication
<b>B7.03 Food Chains</b>	<ul style="list-style-type: none"> <li>• Explain what a food chain shows</li> <li>• Explain that photosynthetic organisms are the producers of biomass for life on Earth</li> <li>• Identify producers, primary, secondary and tertiary consumers in a food chain</li> <li>• Interpret and explain population curves</li> </ul>	<input type="checkbox"/> Scientific Methods <input type="checkbox"/> Practical <input type="checkbox"/> Number Skills <input type="checkbox"/> Application <input type="checkbox"/> Communication
<b>B7.04 Investigating Populations RP</b>	<ul style="list-style-type: none"> <li>• Describe how to carry out random sampling of organisms using a quadrat</li> <li>• Describe when and how a transect should be used</li> <li>• Evaluate data gathered by using a quadrat and transect</li> <li>• Calculate area, mean, median, mode and range</li> <li>• Explain why sample size is important to obtain valid results</li> </ul>	<input type="checkbox"/> Scientific Methods <input type="checkbox"/> Practical <input type="checkbox"/> Number Skills <input type="checkbox"/> Application <input type="checkbox"/> Communication
<b>B7.05 The Carbon and Water Cycle</b>	<ul style="list-style-type: none"> <li>• Explain the importance of cycles to living things in relation to limited resources.</li> <li>• Describe the stages of the carbon cycle.</li> <li>• Explain the role of microorganisms in cycling materials through an ecosystem.</li> </ul>	<input type="checkbox"/> Scientific Methods <input type="checkbox"/> Practical <input type="checkbox"/> Number Skills <input type="checkbox"/> Application <input type="checkbox"/> Communication
<b>B7.06 Biodiversity and Waste Management</b>	<ul style="list-style-type: none"> <li>• Define the term biodiversity.</li> <li>• Explain how biodiversity can affect climate, food supplies and physical environment.</li> <li>• Describe the problems associated with an increasing human population.</li> <li>• Describe how water, air and land can be polluted by waste.</li> </ul>	<input type="checkbox"/> Scientific Methods <input type="checkbox"/> Practical <input type="checkbox"/> Number Skills <input type="checkbox"/> Application <input type="checkbox"/> Communication
<b>B7.07 Global Warming</b>	<ul style="list-style-type: none"> <li>• Explain the terms greenhouse effect and global warming.</li> <li>• Explain with the aid of a diagram how levels of carbon dioxide and methane contribute to global warming</li> </ul>	<input type="checkbox"/> Scientific Methods <input type="checkbox"/> Practical <input type="checkbox"/> Number Skills <input type="checkbox"/> Application <input type="checkbox"/> Communication



<ul style="list-style-type: none"> <li>Describe the possible effects of global warming.</li> </ul>		
<b>B7.08 Deforestation and Land Use</b> <ul style="list-style-type: none"> <li>Define the term deforestation.</li> <li>Explain why vast tropical areas have been cleared of trees.</li> <li>Explain the effects of deforestation on carbon dioxide levels and biodiversity.</li> <li>Explain what peat is and why it is important to preserve areas of peat.</li> </ul>		<input type="checkbox"/> Scientific Methods <input type="checkbox"/> Practical <input type="checkbox"/> Number Skills <input type="checkbox"/> Application <input type="checkbox"/> Communication
<b>B7.09 Maintaining Biodiversity</b> <ul style="list-style-type: none"> <li>Describe programmes introduced to maintain biodiversity.</li> <li>Explain and evaluate conflicting pressures on maintaining biodiversity</li> </ul>		<input type="checkbox"/> Scientific Methods <input type="checkbox"/> Practical <input type="checkbox"/> Number Skills <input type="checkbox"/> Application <input type="checkbox"/> Communication

**Key Vocabulary**

Competition	Habitat	Ecosystem	Community	Population	Abiotic	Biotic	Behavioural adaptation	Structural adaptation
Functional adaptation	Extremophile	Survival	Food chain	Producers	Primary consumers	Secondary consumers	Prey	Predator
Population	Quadrat	Random sampling	Distribution	Transect	Mean values	Sample size	Carbon cycle	Microorganisms
Decay	Decomposers	Carbon dioxide	Photosynthesis	Combustion	Biodiversity	Pollution	Waste	Global warming
Greenhouse gas	Warmer	Deforestation	Peat bog	Carbon dioxide	Water-logged	Protection	Recycling	Hedgerows

<b>Future Learning</b>	<p>Further study at A Level of Biology looks further at ecosystems and involves learning that:</p> <ul style="list-style-type: none"> <li>ecosystems range in size from the very large to the very small</li> <li>biomass transfers through ecosystems and the efficiency of transfer through different trophic levels can be measured</li> <li>microorganisms play a key role in recycling chemical elements</li> <li>ecosystems are dynamic systems, usually moving from colonisation to climax communities in a process known as succession</li> <li>the dynamic equilibrium of populations is affected by a range of factors</li> <li>humans are part of the ecological balance, and their activities affect it both directly and indirectly</li> <li>effective management of the conflict between human needs and conservation help to maintain sustainability of resource</li> </ul>
<b>In careers</b>	<p>Ecologists study the relationship between plants, animals and the environment. Day-to-day tasks will depend on the sector in which you work. For example, as an ecological scientist you could:</p> <ul style="list-style-type: none"> <li>carry out fieldwork</li> <li>survey and record information on plants, animals, environmental conditions and biodiversity</li> <li>deliver lessons or lectures</li> </ul> <p>You could work in the countryside, at a university or in a laboratory. Your working environment may be outdoors in all weathers.</p>