

Paper 2: Optional Theme: Ecosystems and Human Activity



'I tried to recreate their natural habitat.'

Annotate onto this copy of the IB Geography Syllabus:

Case Studies / Key Terms / Extended Response Questions / Models / Key Diagrams / Sketch Maps

<p>3.5.1 The concept of the ecosystem</p> <ul style="list-style-type: none">• Terms and definitions	<p>Define the term ecosystem and be aware of variations in ecosystem scale ranging from micro-scales (niches) to macroscales (biomes). Be able to define ecosystems in terms of inputs, flows, stores and outputs.</p>
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<p>3.5.2 The components of an ecosystem</p> <ul style="list-style-type: none"> • Biotic components • Abiotic components <ul style="list-style-type: none"> • Links between the various components <ul style="list-style-type: none"> • Fragility, vulnerability and resilience of the system 	<p>Demonstrate an awareness of how the biotic (plants, animals, soil, bacteria, fungi) and abiotic (water, air, minerals, nutrients, light) components interrelate to form a natural functioning system, taking into account other contributory factors of acidity, temperature, humidity and wind.</p> <p>Understand the relevant concepts of dynamic equilibrium, food webs and food chains.</p> <p>Demonstrate an awareness of the complexity of links between biotic and abiotic components and how changes to one or more of the components can disturb the equilibrium of the system, especially as a result of human activity. Understand how positive and negative feedback contribute to the stability of the system.</p> <p>Understand that changes to ecosystems may be temporary (where recovery may occur leading to the re-establishment of the system) or permanent, leading to modification of the system.</p>
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<p>3.5.3 Processes operative within an ecosystem</p> <ul style="list-style-type: none"> • Energy flows • Nutrient cycling • Plant succession 	<p>Understand how energy enters the system through photosynthesis, how it is transferred from producers (autotrophs) to consumers (herbivores, carnivores and detritovores), and the changes in energy and biomass from one level to the next.</p> <p>Be aware of the major nutrient stores (biomass, litter and soil), the inputs and outputs of nutrients and how nutrients are cycled from one store to another. An understanding of the impact of human activity on nutrient cycling and plant succession is essential.</p> <p>Understand relevant terminology: seres, climatic climax community, sub-climax, primary and secondary succession, and sub-climax vegetation in the removal and replacement of nutrients.</p> <p>Study the concepts of invasion, competition and dominance. Develop an understanding of how plants modify the environment, making it possible for more demanding species to survive and more complex communities to develop. A study of one type of plant succession should be included such as a lithosere, hydrosere, psammosere or halosere.</p>
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<p>3.5.4 Human activity</p> <ul style="list-style-type: none"> • Impact of human activity on ecosystems • Human impacts: forestry, farming, pollution • Management and conservation 	<p>Study the impact of human activity on ecosystems in terms of how this activity modifies the structure of the system. Study the processes that operate within the ecosystem in terms of changes in species diversity and number, input flow, output, energy transfer, nutrient cycle, productivity level and sustainability.</p> <p>Study human impacts through detailed case studies of three ecosystems, including at least one forest and one grassland biome. Be familiar with the factors affecting development of the selected biomes such as climatic factors (precipitation, temperature, wind, humidity, light, seasonality, growing season), soil factors (acidity, depth, texture, structure, organic, mineral, water and air content), landscape factors (aspect, slope, altitude) and biotic factors (competition between plants and animals).</p> <p>Study the location, vegetation, fauna and soil type(s) associated with the relevant biome, as well as the climatic background. Understand the nature and intensity of the human impact upon the system, including management and conservation strategies.</p>
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