Learning Tracker: Topic 5 – On the Wild Side

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| **SPECIFICATION POINTS** | **R** | **Y** | **G** |
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| 5.1 Understand the terms ecosystem, community, population and habitat. |  |  |  |
| 5.2 Understand that the numbers and distribution of organisms in a habitat are controlled by biotic and abiotic factors. |  |  |  |
| 5.3 Understand how the concept of niche accounts for distribution and abundance of organisms in a habitat. |  |  |  |
| CORE PRACTICAL 10: Carry out a study on the ecology of a habitat, such as using quadrats and transects to determine distribution and abundance of organisms, and measuring abiotic factors appropriate to the habitat. |  |  |  |
| 5.4 Understand the stages of succession from colonisation to a climax community. |  |  |  |
| 5.5 Understand the overall reaction of photosynthesis as requiring energy from light to split apart the strong bonds in water molecules, storing the hydrogen in a fuel (glucose) by combining it with carbon dioxide and releasing oxygen into the atmosphere |  |  |  |
| 5.6 Understand how phosphorylation of ADP requires energy and that hydrolysis of ATP provides an immediate supply of energy for biological processes. |  |  |  |
| 5.7 Understand the light-dependent reactions of photosynthesis including how light energy is trapped by exciting electrons in chlorophyll and the role of these electrons in generating ATP, reducing NADP in photophosphorylation and producing oxygen through photolysis of water. |  |  |  |
| 5.8 i) Understand the light-independent reactions as reduction of carbon dioxide using the products of the light-dependent reactions (carbon fixation in the Calvin cycle, the role of GP, GALP, RuBP and RUBISCO). ii) Know that the products are simple sugars that are used by plants, animals and other organisms in respiration and the synthesis of new biological molecules (polysaccharides, amino acids, lipids and nucleic acids). |  |  |  |
| CORE PRACTICAL 11: Investigate photosynthesis using isolated chloroplasts (the Hill reaction) |  |  |  |
| 5.9 Understand the structure of chloroplasts in relation to their role in photosynthesis |  |  |  |
| 5.10 i) Be able to calculate net primary productivity. ii) Understand the relationship between gross primary productivity, net primary productivity and plant respiration. |  |  |  |
| 5.11 Know how to calculate the efficiency of biomass and energy transfers between trophic levels. |  |  |  |
| 5.12 Understand the different types of evidence for climate change and its causes (including records of carbon dioxide levels, temperature records, pollen in peat bogs and dendrochronology), recognising correlations and causal relationships. |  |  |  |
| 5.13 Understand the causes of anthropogenic climate change, including the role of greenhouse gases (carbon dioxide and methane) in the greenhouse effect. |  |  |  |
| 5.14 i) Understand that data can be extrapolated to make predictions and that these are used in models of future climate change. ii) Understand that models for climate change have limitations. |  |  |  |
| 5.15 Understand the effects of climate change (changing rainfall patterns and changes in seasonal cycles) on plants and animals (distribution of species, development and life cycles). |  |  |  |
| 5.16 Understand the effect of temperature on the rate of enzyme activity and its impact on plants, animals and microorganisms. |  |  |  |
| 5.17 Understand how evolution (a change in the allele frequency) can come about through gene mutation and natural selection. |  |  |  |
| 5.18 Understand the role of the scientific community (scientific journals, the peer review process, scientific conferences) in validating new evidence, including proteomics and genomics, that supports the accepted scientific theory of evolution. |  |  |  |
| 5.19 Understand how isolation reduces gene flow between populations, leading to allopatric or sympatric speciation. |  |  |  |
| CORE PRACTICAL 12: Investigate the effect of temperature on the initial rate of an enzyme-catalysed reaction, to include Q10. |  |  |  |
| CORE PRACTICAL 13: Investigate the effects of temperature on the development of organisms (such as seedling growth rate, brine shrimp hatch rates). |  |  |  |
| 5.20 Understand the way in which scientific conclusions about controversial issues,  such as what actions should be taken to reduce climate change or the degree  to which humans are affecting climate change, can sometimes depend on who  is reaching the conclusions |  |  |  |
| 5.21 Understand how knowledge of the carbon cycle can be applied to methods to  reduce atmospheric levels of carbon dioxide |  |  |  |
| 5.22 Understand how reforestation and the use of sustainable resources, including  biofuels, are examples of the effective management of the conflict between  human needs and conservation. |  |  |  |

**How can I improve?**

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**Revision Actions taken**

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