**Key Questions**

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| **What does interdependence in ecosystems mean?**Certain features of an ecosystem can’t function or survive properly without another thing, meaning everything within the ecosystem is interdependent. Plants cannot grow properly without good soil, consumers cannot be healthy without good plants, predator consumers cannot survive without other healthy consumers to eat. In a pond ecosystem, for example, the top predators will not get their required nutrients from food if the producers at the bottom of the food web aren’t growing properly. |
| **Why is it important that decreasing insect populations are protected?**Humans depend on the effective function of ecosystems. One example of this, is the role of insects. Studies from 2019 show that 40% of all insects are declining. They are essential because they provide a source of protein to consumers, they act as decomposers and return nutrients to the soil when they poo and when they die. They also pollinate producers. We can help save insect species by re-wilding natural areas, and reducing chemicals in farming. |
| **How is interdependence important in tropical rainforests?**Through photosynthesis, the trees of the rainforest absorb and store carbon dioxide to grow. This is why rainforests are known as ‘carbon sinks.’ Warming temperatures means less rainfall, causing drought in the Amazon. This means an increase in dry rainforest, causing vegetation to die and more forest fires. This means more CO2 leading to further global warming. This is known as a ‘positive feedback loop.’ |
| **How is interdependence important in coral reef ecosystems?**Coral reefs provide habitats to a wide range of diverse organisms that connect both ocean ecosystems and ecosystems on the land. Oyster reefs that develop in these ecosystems act as natural flood defences, saving coastal communities $85,000 a year. Coral reefs reduce 97% of wave energy, stopping erosion and flooding. |
| **How are humpback whales important to ocean ecosystems?**Phytoplankton photosynthesise, creating their food which is consumed by vast and diverse numbers of consumers. Humpback whale poo fertilises the phytoplankton with nutrients, which then feeds krill and plankton that whales and many other consumers eat! When humpback whales dive up and down they bring sinking phytoplankton back to the ocean surface to photosynthesise, to store huge amounts of carbon dioxide.  |
| **What are the characteristics of cold environments?**The Arctic is made up of polar and tundra regions. They have very low temperatures and long winters. Polar ecosystems have winters that reach below -50C, less variety of animal and plant species and little precipitation. Tundra ecosystems are closer to the equator, so have warmer summers and more animal and plant species. These environments are rich in biodiversity and natural resources, meaning industries in fishing, tourism and mining have developed there. |
| **How is global warming affecting cold environments? Example: Siberia**Greenhouse gases have caused global warming and led to dramatic reductions in Arctic sea ice. This damages and removes important habitats. After a heatwave in June of 2020, Siberian permafrost (frozen solid soil) has begun to melt causing apartment buildings to collapse on the unsteady ground, causing about $2 billion of damage per year to the Russian economy. Forest fires during the past three summers have torched millions of hectares across Siberia. |
| **How can cold environments be sustainably managed? Example: Siberia**Cold environments provide one of the last wilderness areas on Earth and have fragile ecosystems. Economic development puts these ecosystems at serious risk of damage and therefore these areas need to be protected. Strategies include technology, government action, conservation and re-wilding. |

**Geography Year 9** – Unit 1
**Interdependent World** - Knowledge Organiser

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| **1. ecosystem** | An area of the world that has both living and non-living features, connected together in a network of dependence | **21. phytoplankton/ plankton\*these live in the ocean** | Phytoplankton is a plant microorganism (a very small creature made of very few cells) that photosynthesises. Plankton is a microorganism of very few cells |
| **2. interdependent** | When organisms rely on each other to thrive |
| **3. biotic** | A living feature of a ecosystem | **22. carbon sink** | An ecosystem which absorbs a high amount of carbon dioxide |
| **4. abiotic** | A non-living feature of an ecosystem | **23. algae** | Mostly found in water, algae is a simple-celled plant |
| **5. producer** | Plants are called this because they create their own food (sugars) | **24. fertilise** | Provide nutrients |
| **6. consumer** | Animals are called this because they eat other organisms | **25. social** | To do with people’s lives |
| **7. photosynthesis** | The process plants go through to create food | **26. economic** | To do with money |
| **8. food web** | A network of food chains | **27. environmental** | To do with the natural surroundings |
| **9. biodiverse** | Many different species | **28. Arctic** | The area around the north pole |
| **10. nutrient** | Substance that helps organisms to live and grow | **29. tundra** | Cold ecosystems around the pole of the planet |
| **11. extinct** | No more organisms of a species | **30. methane** | A strong greenhouse gas |
| **12. pesticide** | A chemical used to kill insects in farming | **31. greenhouse gas** | Gas that causes global warming when in the atmosphere |
| **13. agriculture** | Farming | **32.tropical** | With a warm and wet climate |
| **14. deforestation** | Cutting down trees | **33. sustainable** | Using resources in a way that protects the future & environment |
| **15. decomposer** | An organism that breaks down dead material | **34. conservation** | Saving ecosystems from damage and collapse |
| **16. decompose** | Rot, decay, break down | **35. re-wilding** | Returning ecosystems to their natural state (to being wilderness) |
| **17. pollinator** | An organism that transfers pollen between flowers (insects) |
| **18. pollution** | Human-made substances that are released in an ecosystem | Balancing Eco System Through Food Webs Like Pond Food Chain | Tutorpace | Food  chain, Food web, Biology worksheetCO2 ScienceDry forest graph and food web Anatomy of a tree |
| **19. drought** | A period of no rain |
| **20. positive feedback loop** | Changes to an ecosystem which cause it to collapse, in a cycle that makes itself worse |

***"Eventually we'll realise that if we destroy the ecosystem, we destroy ourselves."***- Jonas Salk