

9.1 Year 9 Module 1

The Living World

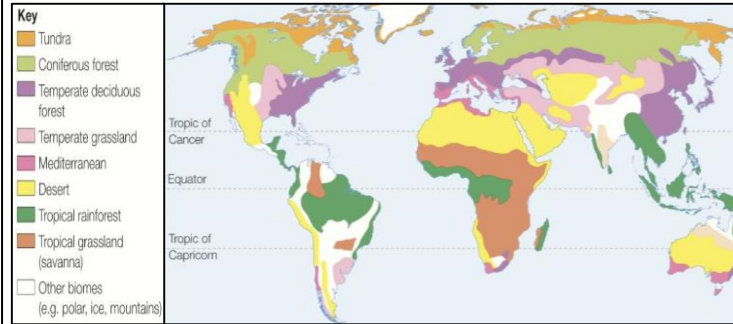


Geography Knowledge Organiser

9.1.1 - Ecosystems

Ecosystem - An ecosystem is a **community of plants and animals**, which **interact** with each other and with their **non-living** environment.

Global Ecosystems - Large scale ecosystems (biomes). Depend on the dominant vegetation type there, such as tropical rainforest.



Equatorial low (ITCZ) - Where warm humid air rises. It cools and produces a lot of rain (0 degrees latitude).

Subtropical high - Dry air sinks to the surface. The dry air produces little rain. Deserts occur near this latitude (30 degrees latitude).

Polar high - Very cold dry air sinks to the surface. Little precipitation falls. No plants can grow (90 degrees latitude - poles).

9.1.2 - Changes in ecosystems

Food chain - Shows the direct links between producers and consumers in the form of a simple line.

Food web - Shows all the connections between producers and consumers in a more complex way.

Producer - Convert energy from the environment (mainly sunlight) into sugars (glucose). The most obvious ones are plants that convert energy from the Sun by photosynthesis.

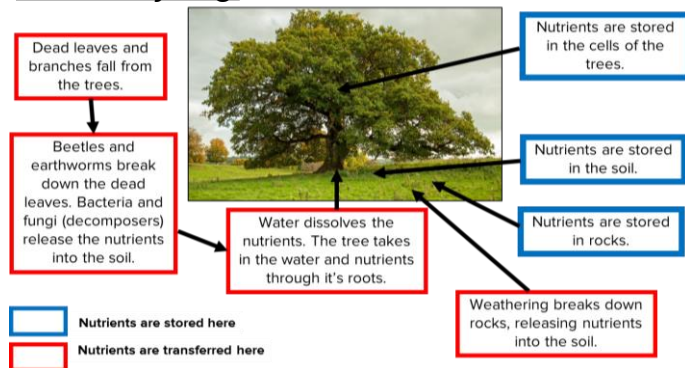
Consumer - Get energy from the sugars produced by the producers. A pond snail is a good example of one because it eats plants.

Decomposer - Break down plant and animal material and return the nutrients to the soil. Bacteria and fungi are good examples of these.

Nutrient Cycling - There are two main sources of nutrients (used by plants and animals for growth): rainwater washes chemicals out of the atmosphere; weathered rock releases nutrients into the soil. When plants or animals die, the decomposers help to recycle the nutrients making them available once again for the growth of plants or animals.

9.1.3 - Temperate deciduous forests

Nutrient Cycling:



Environmental Characteristics: Trees drop their leaves in the autumn and re-grow more in spring. This reduces water loss from leaves in the months where they can't get water from the soil (frozen). Wildflowers grow on forest floor in spring before the trees begin to block out light.

Using deciduous forests: Timber - trees are cut down and sold to make money; Manufacturing - wood can be processed to make products such as fencing and furniture; Recreation - walking, cycling.

Managing deciduous forests: Controlled felling - instead of clearing all the trees in an area, only some trees are cut down; Replanting - where trees are felled, they're replaced by planting new trees.

9.1.4 - Tropical rainforests

Distribution: Tropical rainforests are located in a broad belt along and close to the equator, between the tropics of Cancer and Capricorn, with the largest being the Amazon Rainforest in South America. This broad belt is an area of low pressure with an average temperature of 28oC.

Flora (vegetation) adaptations:

Drip tips - allow the water to be channelled to the end and fall so the leaf does not break.

Lianas - climb up trees to reach sunlight for photosynthesis, while others live on branches in the canopy for the same reason, such as epiphytes.

Buttress roots - support the trees as they grow incredibly tall (over 50 m in some cases) as there is great competition for sunlight.

Fauna (animal) adaptations:

Spider Monkey - A prehensile tail composed of twenty-three vertebra.

Toucan - A long bill for reaching fruit on branches too small to hold them.

Tree frog - Large, flattened toe pads that have sticky scales on their undersides.

Causes of deforestation: mineral extraction, energy development, subsistence farming, logging, population pressure, commercial farming (palm oil in Malaysia, cattle ranching in Brazil).

Effects of deforestation: Development has brought wealth to countries that were very poor, such as Malaysia; Habitats of orangutans are destroyed. In Malaysia, 150,000 orangutans have been lost in 16 years (**local**). The Amazon stores 100 billion tonnes of carbon - deforestation will release this as carbon dioxide, leading to global warming (**global**).

9.1.5 - Sustainable management

Sustainable Management - Sustainable use of the rainforest that allows current generations to make a living from the forest without damaging the forest for future generations to use.

Sustainable management strategies:

Ecotourism - tourism that minimises damage to the environment and benefits the local people. Only a small number of visitors are allowed into an area at a time. Environmental impacts are minimised by making sure that litter and waste are disposed of properly to prevent land and water contamination. Ecotourism has been a huge success in Costa Rica; it is the largest source of income for the country and has led to 21% of the country being protected.

Education - educating the international community about the impacts of deforestation can encourage people to buy products that are certified from sustainably managed sources. Educating the local people about the impacts of deforestation can reduce the rate of environmental damage.

Conservation - countries have set up national parks or nature reserves within rainforests. In these areas, damaging activities such as logging are restricted. However, a lack of funds can make it difficult to police the restrictions. Some countries have set up funds with overseas governments and businesses can choose to invest in them. The countries get the money in exchange for rainforest conservation.

International Hardwood Agreements - mahogany and teak are used to make things like furniture. High demand for hardwood from consumers in richer countries means that some tropical hardwood trees are becoming rarer as people are chopping them down and selling them. International agreements reduce illegal logging.