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B14 Organisms and their environment

B14.01 Ecology

ecology: the study of the interaction between living organisms and their environment

habitat: where an organism lives

population: a group of organisms of the same species, living in the same area at the same time

community: all organisms, all different species living in the same habitat

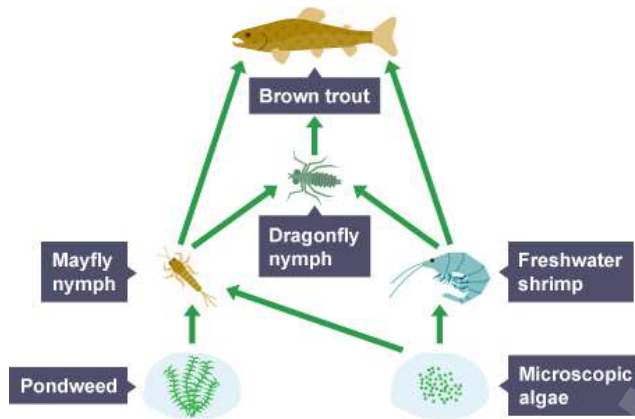
ecosystem: a unit containing all of the organisms and their environment, interacting together, in a given area

B14.02 Energy flow

1. some of energy in sunlight is captured by plants - make glucose, starch, fats, proteins
2. plant gets get energy by breaking down some food by respiration
3. animals get energy from plants

food chain: a diagram showing the flow of energy from one organism to the next, beginning with a producer

- plant - iguana - bawk



food web: network of interconnected food chains

1. Producers and consumers

producer: an organism that makes its organic nutrients, using energy from sunlight by photosynthesis

consumer: organism that gets its energy by eating other organisms

- primary - secondary - tertiary ~

herbivore

carnivore

omnivore

2. Energy losses

- when respire, some energy is released as heat energy
- organism eats another - not all of food is consumed
- faeces - contain energy

=> further you go along a food chain, less energy is available

=> predators are rarer than herbivores, and plants are more than animals

3. Trophic levels

trophic level: the position of an organism in a food chain or web

- less energy available as going up trophic levels = > fewer organisms
- loss of energy limits the length of food chains
- fifth is usual maximum

B14.03 The carbon cycle

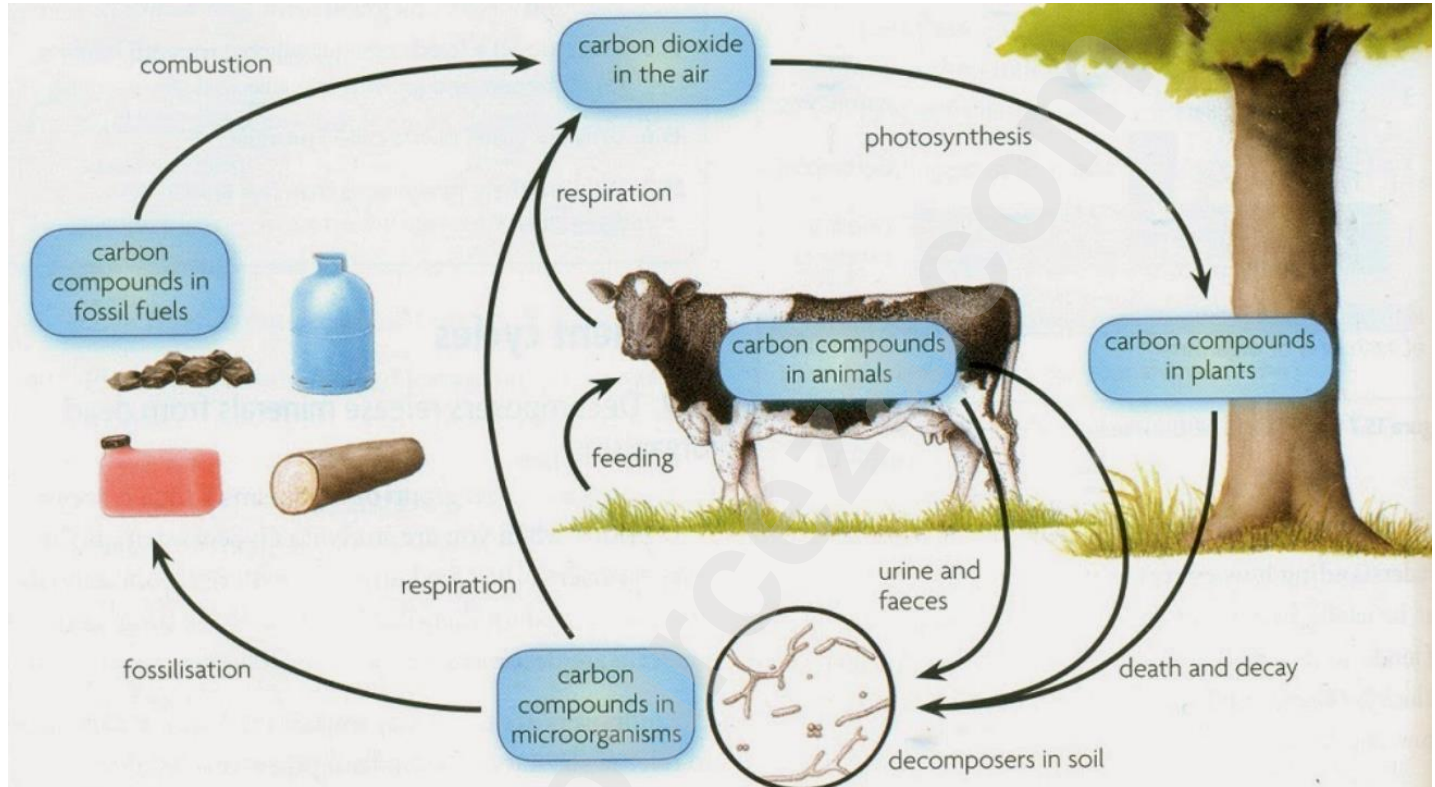
1. Decomposers

decomposer: an organism that gets its energy from dead or waste organic matter

- fungi and bacteria
- important since they help to release substances(**carbon**) from dead organisms - so that it can be used again by living ones

2. The carbon cycle

carbon: very important because it's an essential part of carbohydrates, fats and proteins



B14.04 Human influences on ecosystems

1. Deforestation

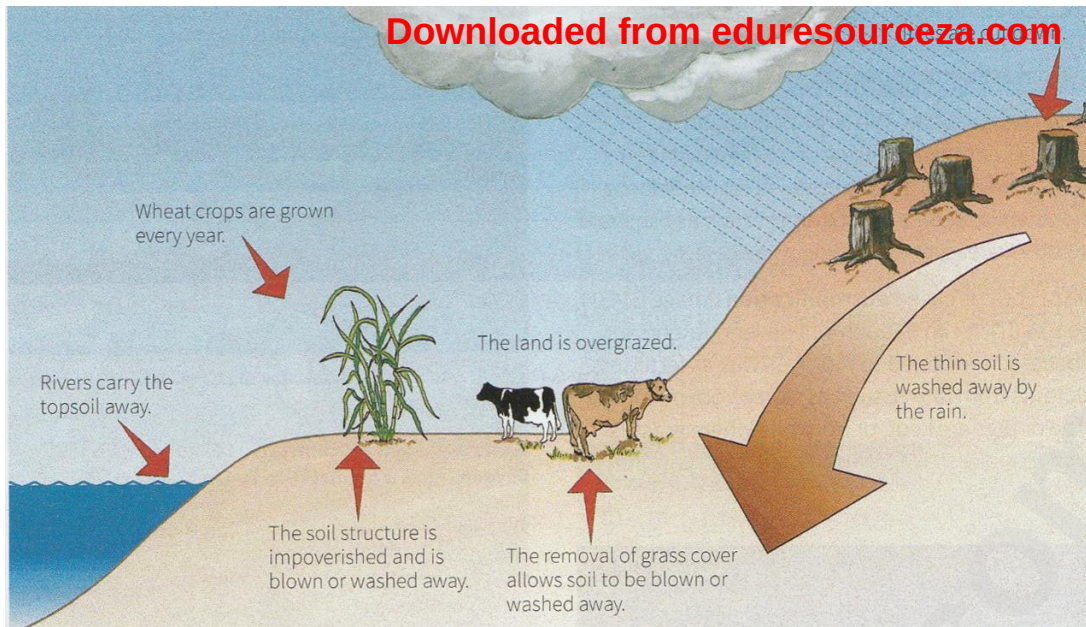
deforestation: cutting down of large numbers of trees

- destroy the habitats of many organisms
- can lead to extinction of species
- destroy **tropical rainforests**
 - ↳ temperature, rainfall ↑ => perfect conditions for plants

Process

1. rainforest is cut down
2. soil is exposed to rain(soil in rainforest is very thin)
3. soil is washed away as soon as it loses plants
4. soil is washed into rivers - hard to be recovered
5. less habitat for many different animals
6. no longer photosynthesis & cut-down trees decay and burnt - more carbon dioxide & less oxygen in air
7. affect water cycle
 - a. water is taken up by trees - transported into their leaves
 - b. evaporates, go back to atmosphere by transpiration
 - c. trees are gone => less water in the air
 - d. more drier, less rain falls => crops, livestock 어려움에 처함





2. Water pollution

- aquatic organism => respire aerobically using oxygen
- obtain oxygen from oxygen gas which has dissolved in the water
- **fertiliser & untreated sewage** => reduce oxygen in water => aquatic organisms die

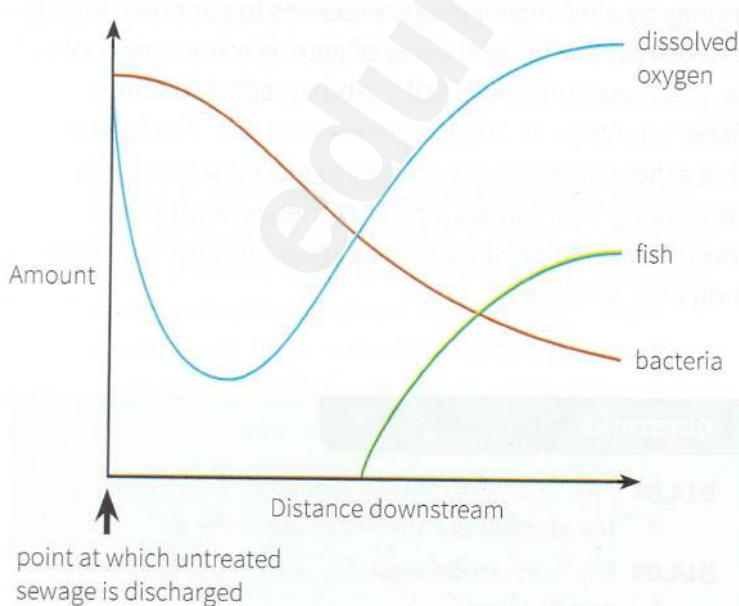
Fertiliser

- fertilisers contain nitrates => nitrate is soluble in water
- **leaching:** nitrate fertiliser is washed out in solution when rains
- leached nitrate run into streams and rivers
- cause a reaction in oxygen in water - kills aquatic species
- algae and green plants in water grow faster with nitrates
- cover the water completely
- block light for plants under them => die
- plants on the top eventually die
- remains are cleaned by bacteria(decomposers)
- bacteria breed rapidly, respire aerobically using oxygen from water
- fish die due to the lack of oxygen

eutrophication

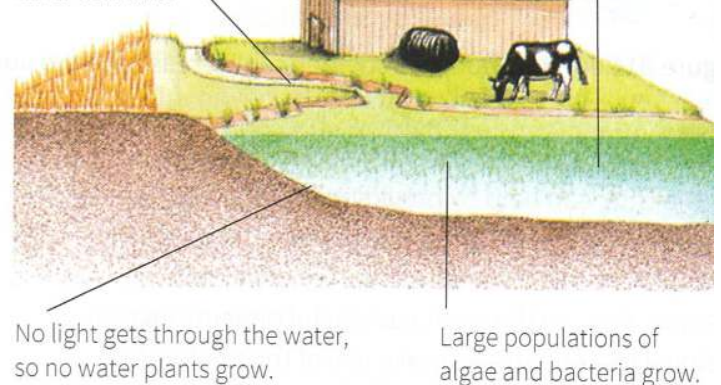
sewage

- provide a good source for bacterias => oxygen level down



Water with high concentrations of nutrients is low in oxygen, so few animals can live in it.

run-off from fertilisers, animal waste and silage containing nitrates and other nutrients



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