Biology Unit 2

Study online at quizlet.com/_95hh3e

1. **Definitions**

Habitat - The place where an organism lives.
Population - All the organisms of one species in a habitat.
Community - All the different species in a habitat.
Ecosystem - All the organisms living in a particular area and all the non-living (abiotic) conditions.

2. **Biodiversity**

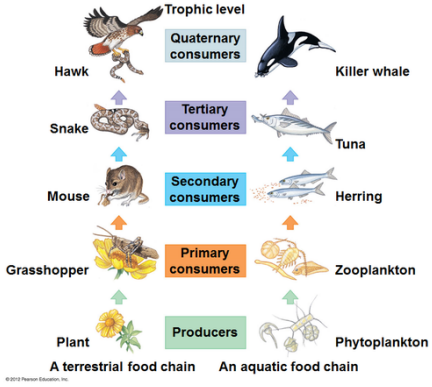
- The variety of different species of organisms on Earth, or within an ecosystem.
- High biodiversity ensures ecosystems are stable, as different species are dependent on each other for shelter and food (interdependent) to maintain the right physical environment.
- Biodiversity can reduce through deforestation, pollution, and global warming.

3. **Environmental can change the population size and distribution**

Abiotic Factors
- Sunlight (intensity) - needed for Photosynthesis
- Temperature - Optimum temperatures can differ
- pH
- Water
- Minerals
- Soil Type
- Salinity (salt levels)
- Toxic Chemicals - build food chains through bioaccumulation; per stage, pesticide concentration increases (top of chain receives toxic dose)
- Fertilizers - released into water bodies causing eutrophication and kills organisms.

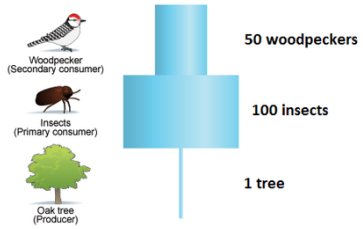
Biotic Factors
- Food availability - the more food, the more likely to survive and reproduce.
- Predators - the less predators, the higher population as they are eaten less often.
- Competition - organisms compete with each other for the same resources (both biotic and abiotic)
- Infections (pathogens) - infections can cause a decrease in population.

4. **Food Chains**



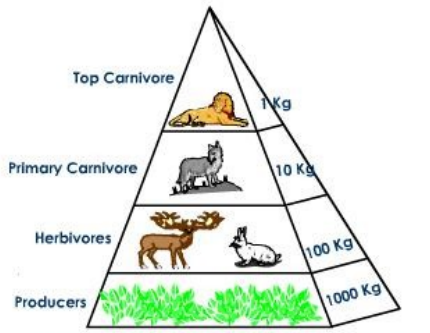
- start with a producer -> primary consumers -> secondary consumer -> tertiary consumers, quaternary, quinary, senary, septenary.
- Eventually die and eaten by decomposers (break down dead material and waste - bacteria, fungi)
- Each stage is a trophic level.

5. **Pyramids of Numbers**



- Each bar shows the number of organism at the stage of the food chain.
- Bottom bar is the organism at the bottom of the food chain.
- Each increase in trophic level, the number goes down (typically) as lots of food is needed from each stage to another.

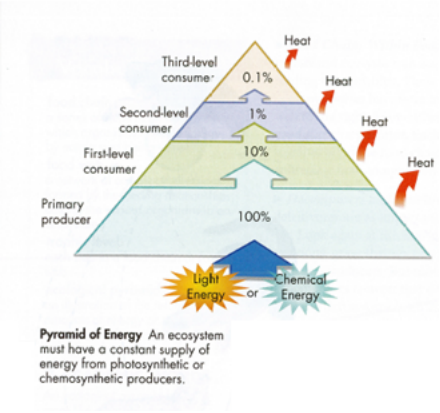
6. **Pyramids of Biomass**



Upright Pyramid of biomass in a Terrestrial Ecosystem

- Each bar shows the mass of living material at that stage of the food chain (how much they weight all together)
- Biomass pyramids are usually in a pyramid shape.

7. **Pyramids of Energy Transfer**



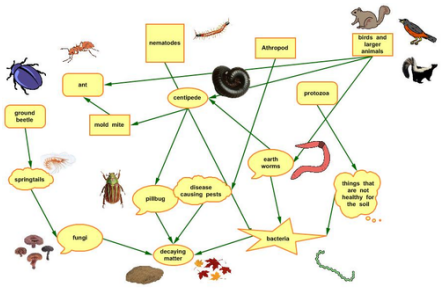
- Shows the energy transferred to each trophic level.
- Always a pyramid shape.

8. **Energy Transfer**

- Source of energy for almost everything comes from the Sun.
- Plants use energy from sun to make food (photosynthesis). The energy moves through the chain.
- Only about 10% of energy (found in biomass/growth) is transfered through each trophic level.

The energy is lost through:
- Some parts are indigestible and pass through the organisms as waste.
- A lot of energy is used in staying alive (MRS. H GREN excluding Growth)
- Most of the energy is transfered to surrounding by heat

9. **Food Webs**

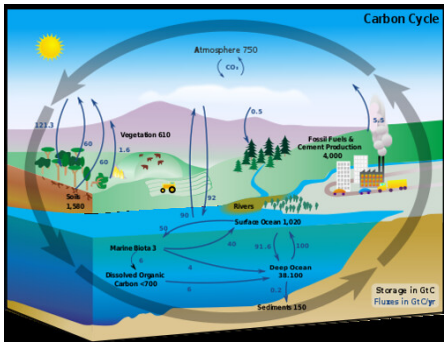


- All species are interdependent (if one species changes, it affects all the others)

10. **Material recycle**

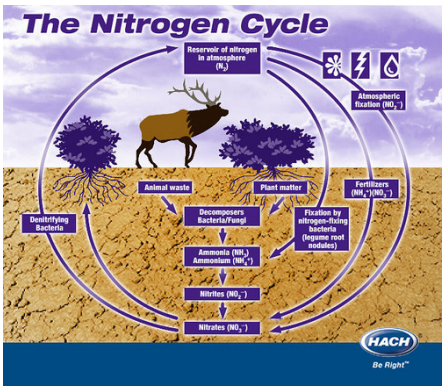
- Materials that organisms need to survive (carbon, nitrogen) are recycles through biotic and abiotic components.
- They pass through both living organisms as well as things like air, rocks, soil, etc.

11. **Carbon Cycle**



- There is a fixed amount of carbon in the world and are constantly recycled.
- Only one arrow going down from CO2 in the air; whole thing is powered by photosynthesis (to make carbohydrates, lipids, and proteins)
- Eating passes down carbon compounds through food chains.
- Respiration release CO2 into the air.
- Decomposers (bacteria, fungi) break down dead material into smaller molecules through enzyme catalysis.
- Decomposers release CO2 by respiration.
- Organisms can burn (combust) as fossil fuels and wood, releasing CO2 into the air.
- Decomposition means habitats can be maintained as waste material are returned into soil, etc.

12. **Nitrogen Cycle**



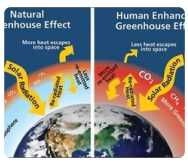
- Atmosphere is 78% nitrogen gas and is very unreactive so not directly used by plants or animals.
- Needed for making proteins for growth.
- Plants get nitrogen from soil such as nitrates.
- Animals get proteins by eating plants or other animals.
- Nitrogen fixation - process of turning Nitrogen gas into nitrogen compounds (that plants can use);
- Lightning has so much energy, it makes nitrogen react with oxygen in the air producing nitrates.
- Nitrogen-Fixing Bacteria is soil and roots convert Nitrogen gas into nitrates.

Decomposers - break down proteins (in rotting plants and animals) and urea (in waste) into ammonia (nitrogen compound) forming ammonium ions in soil.
Nitrifying Bacteria - turn ammonium ions in to nitrates (nitrification).
Nitrogen-Fixing Bacteria - turn Nitrogen Gas into nitrogen compounds that plants can use.
Denitrifying Bacteria - turn nitrates back into Nitrogen Gas.
Some bacteria live in soil or in nodules on plant roots.

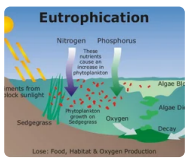
Quizlet

Biology Unit 2 - part 2

Terms in this set (14)

Carbon Monoxide (CO)	- Produced when fossil fuels are burnt without enough air supply. - Released in car emissions, however modern cars are fitted with catalytic converters turning CO into CO2 - It combines with haemoglobin in Red Blood Cells and prevents them from carrying oxygen (poisonous)
Acid Rain (Sulfur Dioxide - SO2)	- Produced when burning fossil fuels (sulfur impurities in fossil fuels) - Internal Combustion engines (cars) and power stations are the main causes - Gas mixes with rain clouds forming dilute sulfuric acid - This falls as acid rain - Cause lake to become acidic; organisms sensitive to changes in pH cannot survive in acidic conditions, and many plants and animals die (effect on ecosystem) - Acid rain damages leaves and release toxic substances from soil, making it difficult for trees to take in nutrients (killing trees).
Greenhouse Effect	- Short wave radiation from the sun enters atmosphere. - Earth surface absorbs some energy, and some is reflected as long wave radiation. - Gases in atmosphere absorb heat (infrared energy) and re-radiate into all directions including earth. 
Global Warming (type of Climate Change)	- Human activity is increasing the amount of Greenhouse Gases in the atmosphere. - As a result, more heat is being trapped in the atmosphere than needed. - This can lead to things like extreme weather, rising sea levels, and flooding (melting polar ice caps). - Furthermore can cause habitat loss, affecting food chains and crop growth.
Methane (CH4)	- Produced naturally: rotting plants, etc - Produced by rice growing and cattle rearing.

Biology Unit 2 - part 2

Carbon Dioxide (CO_2)	- Produced by humans: car exhausts, industrial processes, burning fossil fuels, etc - Deforestation for timber (logging), and clearing land for farming and housing; affect Carbon Dioxide level in atmosphere.
Nitrous Oxide (N_2O)	- Released naturally by bacteria in soil and ocean - Released more from soil after fertilizer use - Released from vehicle engines and industry
CFC's (powerful greenhouse gasses)	- released by aerosol sprays and fridges. (old leaking fridges) - Most countries do not produce them as they damage the ozone layer which prevents UV rays from reaching earth.
Water Vapour (non-human)	- Another Greenhouse gas - Happens naturally through cycle of evaporation and condensation
Eutrophication	- Nitrates and Phosphates used on fields as mineral fertilizers - After raining, they are easily leached (washed) into rivers and lakes. - This causes algae to grow fast (algal bloom) and blocks light from entering water. - Plant cannot photosynthesize (due to lack of light) and die. - Microorganisms feeding on dead plants increase in number and use all the oxygen in the water. - Organisms needing oxygen (fish, etc) die. 
Leaching	- When trees are removed, the nutrients in the soil gets leached (washed) away but do not get replaced (leaves take up nutrients and return them after they die). - This causes the soil to become infertile.
Disturbing balance of CO_2 and Oxygen	- Trees take CO_2 through photosynthesis and store carbon in the wood, releasing it after it dies and decomposes. - When they are cut down and burned, lots of carbon is released into the atmosphere, disturbing the carbon cycle (contributes to global warming) - Less trees means less photosynthesis and less oxygen, causing oxygen levels in the atmosphere to fall.
Soil Erosion	- Removing trees (holding the soil together) makes it easier for soil to be washed away by rain (erosion) leaving infertile ground.
Evapotranspiration	- Process of water evaporation & plant transpiration (trees) - When trees are cut down, evapotranspiration is reduced making local climate drier.