WJEC England Biology GCSE

6.1 - Levels of organisation within an ecosystem

Flashcards

Define population

Define population

A species that occupy the same habitat

Define habitat

Define habitat

The place in which an organism lives

Define community

Define community

Populations of different species interacting

Define ecosystem

Define ecosystem

The interactions between the biotic and abiotic factors in an area

Give 4 abiotic factors that affect communities

Give 4 abiotic factors that affect communities

- Light intensity
- Temperature
- Soil pH
- Moisture levels

How can different light intensities be bad for certain communities?

How can different light intensities be bad for certain communities?

- Different plants need different amount of lights for optimum growth
- Not enough light will slow the rate of photosynthesis and the rate of growth
- Smaller plants provide less food for primary consumers

How can different temperatures be bad for certain communities?

How can different temperatures be bad for certain communities?

- If the temperature is too low, growth will be slower as organisms will use more energy to stay warm
- If the temperature is too high, organisms can die and water will become limited as evaporation increases

How do varying moisture levels affect living organisms?

How do varying moisture levels affect living organisms?

- Water is needed for life as it is a reaction medium in cells, a main reactant of photosynthesis and regulates temperature
- A lack of water makes the habitat mostly unsuitable for life

How do varying soil pH levels affect living organisms?

How do varying soil pH levels affect living organisms?

- A high pH is needed for decomposition
- Decomposition releases mineral ions into the soil
- Plants need mineral ions for growth
- A low pH slows plant growth which can have a knock on impact on primary consumers

Give 4 biotic factors that affect communities

Give 4 biotic factors that affect communities

- Number of predators
- Food availability
- Disease
- Human activity

What is interdependence?

What is interdependence?

Where different organisms in an ecosystem depend on each other (e.g. for food or protection)

What are the 3 types of interdependence?

What are the 3 types of interdependence?

Mutualism, parasitism and predation

What is parasitism?

What is parasitism?

- Where one organism lives on another and takes nutrients from the other organism
- This is beneficial to the parasite and detrimental to the host

What is mutualism?

What is mutualism?

- Two organisms depend on each other
- Both of the organisms benefit from the relationship

What are the 2 different types of competition in an ecosystem?

What are the 2 different types of competition in an ecosystem?

Interspecific competition and intraspecific competition

What is interspecific competition?

What is interspecific competition?

In this type of competition, organisms from **different species** compete for resources (e.g. food, water, shelter)

What is intraspecific competition?

What is intraspecific competition?

Where organisms of the **same species** compete for resources (e.g. food, water, shelter)

Why is competition necessary in an ecosystem?

Why is competition necessary in an ecosystem?

Competition is necessary when resources are limited and it leads to evolution by natural selection

What is a producer?

What is a producer?

An organism that makes its own food

What types of organisms are primary producers?

What types of organisms are primary producers?

Photosynthetic organisms like green plants and algae that trap energy from the sun

What is a primary consumer?

What is a primary consumer?

An organism that feeds on producers

What is a secondary consumer?

What is a secondary consumer?

An organism that feeds on primary consumers

What is a tertiary consumer?

What is a tertiary consumer?

An organism that feeds on secondary consumers

What are herbivores?

What are herbivores?

Herbivores are animals that only eat plants

What are carnivores?

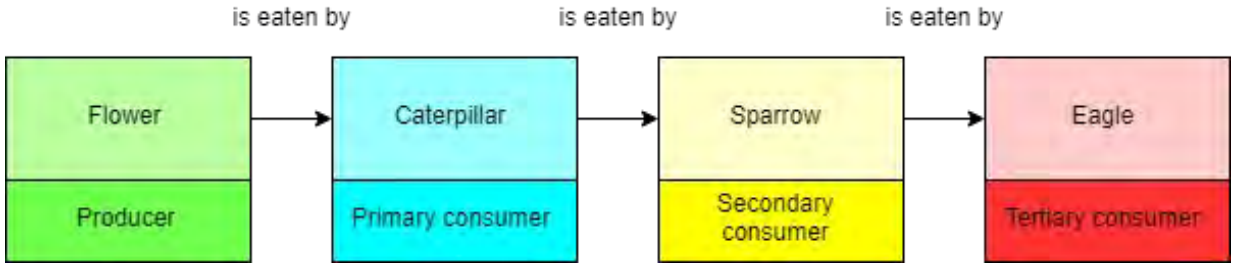
What are carnivores?

Organisms that mainly eat animals

What do food chains show?

What do food chains show?

Food chains show the feeding relationships of different organisms and the flow of energy between the organisms



What is the difference between a food web and a food chain?

What is the difference between a food web and a food chain?

Food webs show the interactions of multiple different food chains. Food chains show one path of food dependencies.

What is biomass?

What is biomass?

The dry mass of all of the living organisms in an area

Why is dry mass used for biomass?

Why is dry mass used for biomass?

Because the wet mass varies as the volume of water in the organism varies

How do you calculate the efficiency of biomass transfer?

How do you calculate the efficiency of biomass transfer?

efficiency = (energy transferred / total energy available) × 100

Why are biomass transfers not 100% efficient?

Why are biomass transfers not 100% efficient?

Energy is lost through

- Egestion (removal of faeces)
- Excretion (removal of waste products e.g. urine)
- Respiration
- The production of inedible bones and shells

How does the efficiency of biomass transfers affect the number of trophic levels in a biomass pyramid?

How does the efficiency of biomass transfers affect the number of trophic levels in a biomass pyramid?

The less efficient the transfers, the fewer trophic levels and the fewer organisms in higher trophic levels

What is a biomass pyramid?

What is a biomass pyramid?

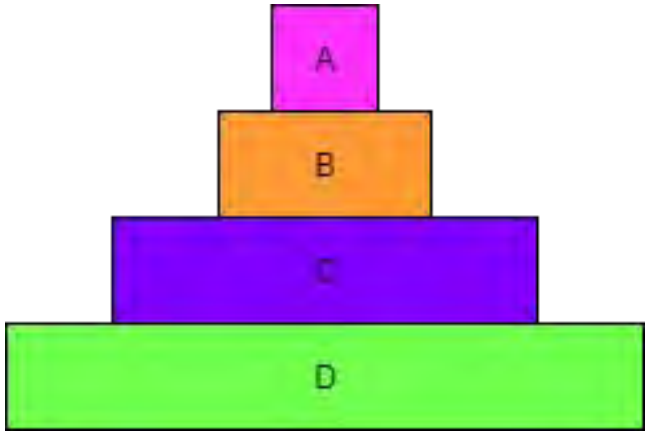
A pyramid that shows the total dry mass of organisms at each trophic level

What is a pyramid of numbers?

What is a pyramid of numbers?

A pyramid of numbers shows the number of organisms at each trophic level

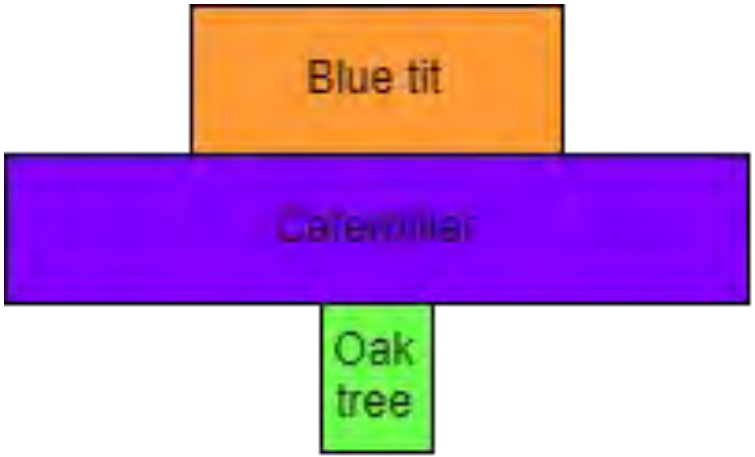
Identify the producer in this pyramid of biomass



Identify the producer in this pyramid of biomass

D is the producer

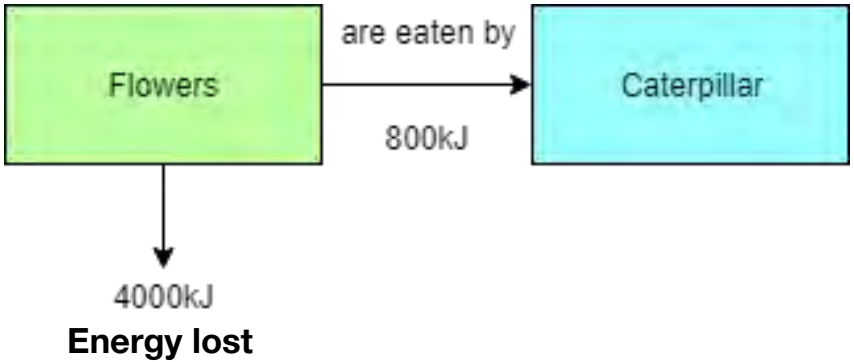
Why is this pyramid of numbers not pyramid shaped?



Why is this pyramid of numbers not pyramid shaped?

Pyramids of numbers don't take size and mass of organisms into account

Calculate the efficiency of this biomass transfer from the flowers to the caterpillar



Calculate the efficiency of the biomass transfer from the flowers to the caterpillar

efficiency = (energy transferred / total energy available) × 100

Total energy available = 800 kJ + 4000 kJ = 4800 kJ

Energy transferred = 800 kJ

800/4800 x 100 = 16.67%