

OCR (A) Biology A-level

6.3.1 - Ecosystems

6.3.2 - Populations and sustainability

Flashcards

This work by [PMT Education](https://www.pmt.education) is licensed under [CC BY-NC-ND 4.0](https://creativecommons.org/licenses/by-nc-nd/4.0/)



Define ecosystem.



Define ecosystem.

All the living organisms found in one area, and the non-living aspects of their environment.

Can range in size e.g. rock pool, tree, field.

Known as 'dynamic' as they depend on interactions between biotic and abiotic factors.



Describe biotic and abiotic factors, giving examples.



Describe biotic and abiotic factors, giving examples.

Biotic= living features of an ecosystem
e.g. predators, disease.

Abiotic= non-living features of an
ecosystem e.g. light, temperature.



What is biomass and how is it transferred? How can we measure this?



What is biomass and how is it transferred? How can we measure this?

The total weight of living matter in a certain area, transferred up trophic levels through consumption. Can be measured in terms of mass of carbon, or dry mass of tissue.



Give the formula for efficiency of biomass transfer.



Give the formula for efficiency of biomass transfer.

$$\text{Efficiency} = \frac{\text{biomass transferred}}{\text{biomass intake}} \times 100$$



How can human activities affect biomass transfer?



How can human activities affect biomass transfer?

- Light, water, temperature maximised.
- Increased nutrients in soil.
- Pests and weeds removed.
- Growth rates boosted through steroids, selective breeding, etc.



Outline the roles of microorganisms in the nitrogen cycle.



Outline the roles of microorganisms in the nitrogen cycle.

- Nitrogen-fixing bacteria e.g. *Rhizobium* in roots and *Azotobacter* in soil, convert gaseous nitrogen into ammonia.
- Nitrifying bacteria e.g. *Nitrosomonas* convert ammonium compounds into nitrites.
Nitrobacter then convert nitrites to nitrates.



Outline the role of organisms in the carbon cycle.



Outline the role of organisms in the carbon cycle.

- Respiration of plants and animals add carbon dioxide into the atmosphere.
- Photosynthesis of plants removes carbon dioxide from the atmosphere.
- Decomposers (microorganisms) decay plant and animal material into carbon dioxide.



What is meant by primary succession?



What is meant by primary succession?

Where an area previously devoid of life is colonised by a community of organisms.



Summarise the process of primary succession.



Summarise the process of primary succession.

- Pioneer species, able to survive harsh conditions, colonise the area.
- They die, decompose, and add nutrients to the ground.
- Over time, this allows more complex organisms to survive.



What is the climax community and how is it reached?



What is the climax community and how is it reached?

The final stage of succession, where the ecosystem is balanced and stable. It is reached when the soil is rich enough to support large trees or shrubs, and the environment is no longer changing.



What is deflected succession?



What is deflected succession?

Where succession is interrupted, usually by human interference.



What is sampling?



What is sampling?

Selecting a group of individuals that will represent the whole target population.

Allows us to measure the distribution and abundance of organisms.



Give methods of sampling and explain how they are used.



Give methods of sampling and explain how they are used.

- Quadrats= used in small areas. Randomly or regularly placed across habitat. Frequency or % cover calculated.
- Transects= used in larger areas. Sample taken along a line that crosses the habitat. Can be combined with quadrats in the form of a belt transect.



Define carrying capacity.



Define carrying capacity.

The maximum population size that a habitat can support, defined by the presence of limiting factors.



Give factors that limit the maximum size of a population.



Give factors that limit the maximum size of a population.

- Food
- Water
- Light
- Oxygen
- Nesting sites
- Shelter
- Parasites
- Predators



Describe the pattern of a typical predator-prey relationship in terms of population change.



Describe the pattern of a typical predator-prey relationship in terms of population change.

- Prey is eaten by predator, resulting in predator population increasing and prey population decreasing.
- Fewer prey means increased competition for food, so predator population decreases.
- Fewer predators means more prey survives, and the cycle begins again.



What is meant by intraspecific and interspecific competition?



What is meant by intraspecific and interspecific competition?

Intraspecific= competition between organisms of the same species.

Interspecific= competition between organisms of different species.



Differentiate between conservation and preservation.



Differentiate between conservation and preservation.

- Conservation= maintains biodiversity of a habitat by allowing sustainable use of the resources there.
- Preservation= maintains biodiversity of a habitat by minimising human impact.



Give reasons why we conserve and preserve habitats.



Give reasons why we conserve and preserve habitats.

- Economic= food source, natural pest control, boosts tourism.
- Social= many organisms can be used in medicine, aesthetics.
- Ethical= we have a responsibility to maintain habitats for future generations.



Define sustainability.



Define sustainability.

Using resources in a way that also maintains them for future generations.



What methods allow sustainable use of an ecosystem's resources?



What methods allow sustainable use of an ecosystem's resources?

- Timber production= coppicing to encourage growth, replacing felled trees, selective cutting.
- Fishing= stocks not depleted, no overfishing, can continue indefinitely.



Give an example of how the conflict between conservation and human needs can be balanced.



Give an example of how the conflict between conservation and human needs can be balanced.

Terai region (Nepal). Over-exploited for use in fuel. Locals now have a responsibility to look after the forest. 'Corridors' placed to enable migration.



Give an example of how human effects are controlled in sensitive ecosystems.



Give an example of how human effects are controlled in sensitive ecosystems.

Galapagos islands. Many species endangered due to hunting and tourism. New species introduced, but caused damage to native species. Trying to find a balance.

