AQA Biology A-level

7.4 - Populations in ecosystems

Flashcards

Define community.

Define community.

All the different species that live in one area and interact with each other.

Define ecosystem.

Define ecosystem.

All the living organisms found in one area, combined with non-living aspects of their environment. Can vary from very large to very small.

Describe biotic and abiotic factors, giving examples.

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

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

Define habitat.

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The place where an organism lives within an ecosystem.

Define a niche.

Define a niche.

The role of a species within its habitat, consisting of both its biotic interactions e.g. what it eats, and abiotic interactions e.g. time of day it is active.

What is meant by carrying capacity?

What is meant by carrying capacity?

The maximum size of population an ecosystem can support.

Name four abiotic factors that affect population growth.

Name four abiotic factors that affect population growth.

1. Temperature
2. Light
3. pH
4. Water/humidity

What is meant by intraspecific and interspecific competition?

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Intraspecific = competition between organisms of the same species.

Interspecific = competition between organisms of different species.

What resources might organisms compete for?

What resources might organisms compete for?

Food, water, shelter, minerals, light, mates (intraspecific only).

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.

How are quadrats used for estimating population size?

How are quadrats used for estimating population size?

Can be placed on grid coordinates, or at intervals along a belt transect. Results reported as either percentage cover or frequency. For slow-moving or non-motile organisms.

How is mark-release-recapture used for estimating population size?

How is mark-release-recapture used for estimating population size?

- A sample of a species is captured, marked, then released back into the same area they were caught.
- After a certain period of time another sample of the is captured, and the number of marked organisms are counted.

For motile organisms.

What is the equation for mark-release-recapture?

What is the equation for mark-release-recapture?

$$\text{Estimated population size} = \frac{\text{total number of individuals in the first sample X total number of individuals in the second sample}}{\text{number of marked individuals recaptured}}$$

What assumptions does the mark-release-recapture method make?

What assumptions does the mark-release-recapture method make?

- Marked individuals distribute evenly.
- No migration in or out of the population.
- Few births or deaths.
- Method of marking does not affect survival.
- Mark does not come off.

Why are ecosystems described as being dynamic?

Why are ecosystems described as being dynamic?

- Populations constantly rise and fall.
- Any small change can have a large effect.
- Biotic and abiotic factors may alter the conditions of the ecosystem.

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 can survive harsh conditions & colonise the area.
- They change abiotic factors of their environment e.g. decomposition adds nutrients to 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.

How might a species alter the environment that develops during succession?

How might a species alter the environment that develops during succession?

A species may improve the environment to make it more suitable for other species. Alternatively, a species may worsen the environment by making it less suitable for other species.

Define conservation.

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The protection and management of species and habitats, in order to maintain biodiversity. Methods need to be adapted to the ecosystem in question.

How might succession be managed in order to aid conservation?

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Sometimes succession needs to be prevented in order to preserve an ecosystem at a certain point, e.g. stopping moorland from progressing into spruce forest. This is called a plagioclimax.