Edexcel (A) Biology A-level

4.1 to 4.6 - Variety of Life

Flashcards

How has variety of life changed over time?

How has variety of life changed over time?

Variety generally increases as new species form. However human activity is threatening much of the life on the planet.

What is meant by biodiversity?

What is meant by biodiversity?

The variety of living organisms. It can be measured in terms of number of species within a habitat, or by genetic variation within a species.

What is meant by endemism?

What is meant by endemism?

When a species found only in one geographical location, and is unable to be found anywhere else.

How can we measure genetic diversity?

How can we measure genetic diversity?

Calculate the heterozygosity index.

$$H = \frac{\text{number of heterozygotes}}{\text{number of individuals in the population}}$$

How can we compare biodiversity of different habitats?

How can we compare biodiversity of different habitats?

Calculate the index of biodiversity.

$$d = \frac{N(N-1)}{\Sigma n(n-1)}$$

- N= total number of organisms of all species.
- n= total number of organisms of each species.

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 are the three types of adaptation? Give examples of each.

What are the three types of adaptation? Give examples of each.

- Anatomical (changes to body structure) e.g. oily fur.
- Physiological (changes to bodily processes) e.g. venom production.
- Behavioural (changes to actions) e.g. hibernation.

Why does natural selection occur?

Why does natural selection occur?

1. Predation
2. Disease
3. Competition

All resulting in differential survival and reproduction.

Explain how natural selection results in adaptation and evolution.

Explain how natural selection results in adaptation and evolution.

- Random mutations result in new alleles.
- Some alleles provide an advantage, making an individual more likely to survive and reproduce.
- Their offspring receive the new allele, and therefore possess new adaptations that allow them to survive in their environment; they have evolved.

What is the Hardy-Weinberg principle?

What is the Hardy-Weinberg principle?

Allows us to estimate the frequency of alleles in a population, as well as if the allele frequency is changing over time.

What are the consequences of reproductive isolation?

What are the consequences of reproductive isolation?

The isolated populations will face different selection pressures, meaning different alleles with be favoured in each population. Therefore their genetic information will change over time, and may eventually result in speciation.

Define speciation.

Define speciation.

Where a population is split and isolated, there are different selective pressures on the two groups. If the genetic makeup changes to the extent the two groups can not longer interbreed, they have become new, separate species.

Define classification.

Define classification.

A means of sorting organisms into categories based on their relationships, using both genotypes and phenotypes.

How has research by the scientific community contributed to classification of organisms?

How has research by the scientific community contributed to classification of organisms?

New data has led to new taxonomic groupings, the three domains; Bacteria, Archaea, and Eukaryota.