

Biodiversity

4.7.3.1 · Ecology · revision notes

Biodiversity is the variety of all the different species on Earth or in an ecosystem. You need to explain why high biodiversity makes ecosystems stable and why it matters to humans. Expect definitions and 2 to 3 mark 'explain' questions, often at the start of a longer question on human impacts.

Key facts

- Biodiversity = the variety of all the different species on Earth or in an ecosystem
- Why: species depend less on any one species for food, shelter and maintaining the physical environment
- Many human activities reduce biodiversity
- High biodiversity → more stable ecosystem
- The future of humans relies on maintaining biodiversity

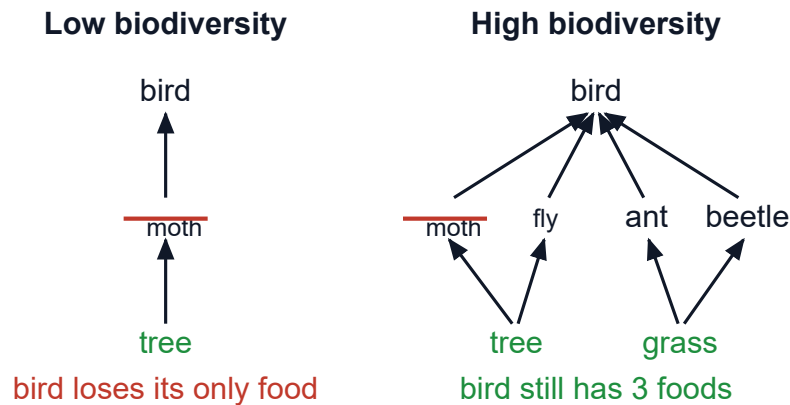
Notes

What biodiversity is

- **Biodiversity** is the variety of all the different species of organisms on Earth, or within an ecosystem.
- An ecosystem with many different species, such as a tropical rainforest or a coral reef, has high biodiversity. A field of a single crop has low biodiversity.

Why it makes ecosystems stable

- High biodiversity keeps an ecosystem stable, because each species is less dependent on any one other species for food, shelter and keeping the physical environment suitable.
- In a food web with many species, if one food source declines, animals can eat something else, so their populations are less affected.
- Example: a bird that eats ten kinds of insect is less affected if one insect species dies out than a bird that eats only one kind.



The more species in a food web, the less any one species depends on another.

- Many plant species together help keep the physical environment suitable, e.g. roots hold the soil together and leaves shade the ground, so losing one species matters less.
- In an ecosystem with low biodiversity, the loss of one species can cause large changes to many others.

Humans and biodiversity

- Our own future as a species depends on keeping a good level of biodiversity.
- We depend on other species for food, materials such as wood, and many medicines, and on insects to pollinate many crops.
- Many human activities are reducing biodiversity, e.g. pollution, building, quarrying, growing single crops, deforestation and global warming.
- Serious efforts to slow this loss have only started quite recently.

How to answer each type of question

Define biodiversity

1 mark

Grade 3

1. Use the words 'variety' and 'different species'.
2. Add 'on Earth or in an ecosystem'.

Example. What is meant by **biodiversity**?

Model answer. The variety of all the different species (of organisms) on Earth or in an ecosystem (1).

Don't lose marks

- ✗ Defining biodiversity as 'the number of organisms'. It is the variety of different species.
- ✗ Saying high biodiversity means 'more food'. The key idea is less dependence on any one species.
- ✗ Forgetting that humans depend on biodiversity too.

More tips

Memory tricks

- Biodiversity = 'bio' (life) + 'diversity' (variety): the variety of life.
- More species means more back-ups: if one food source disappears, there is another.

Exam technique

- Use the phrase 'less dependent on one species' in stability answers.
- When comparing biodiversity from data, quote the numbers of species.
- Biodiversity questions often lead into longer questions on human impacts. Link back to biodiversity in your conclusion.

What each grade needs

What you need to be able to do, from the first marks up to the top grade.

Grade 3

Define biodiversity

The variety of all the different species of organisms on Earth, or within an ecosystem.

Grade 4

Name human activities that reduce biodiversity

For example pollution, building, farming, deforestation and destroying peat bogs.

Grade 5

Explain why biodiversity matters to humans

The future of humans relies on it, e.g. for food, materials, medicines and stable ecosystems.

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