Your notes

GCSE Biology: revision notes

Biodiversity and human impact

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Biodiversity

- **Biodiversity** is the variety of all the different species of organisms on Earth, or within an ecosystem.
- High **biodiversity** keeps ecosystems stable, by reducing the dependence of one species on another for food, shelter and maintaining the physical environment.
- The future of the human species depends on maintaining good **biodiversity**, but many human activities reduce it.

Waste and pollution

- The rapid growth of the human population and rising standards of living mean more resources are used and more waste is produced.
- Water can be polluted by sewage, fertilisers and toxic chemicals. Air can be polluted by smoke and acidic gases.
- Land can be polluted by **landfill** and toxic chemicals; pesticides and herbicides may be washed from land into water.
- **Pollution** kills plants and animals, reducing **biodiversity**.

Land use

- Humans reduce the land available for other organisms by building, quarrying, farming and dumping waste.
- Destroying **peat bogs** to make garden compost reduces the area of this habitat and its **biodiversity**. As peat decays or burns, carbon dioxide is released.
- Large-scale **deforestation** in tropical areas provides land for cattle and rice fields and for crops to make biofuels. It reduces **biodiversity** and releases carbon dioxide.

Global warming

- Rising levels of carbon dioxide and methane in the atmosphere are contributing to **global warming**.
- Biological consequences include loss of habitat as low-lying areas flood when sea levels rise, changes in the distribution of species as temperature and rainfall change, and changes to migration patterns.

Protecting biodiversity

- **Breeding programmes** for endangered species.
- Protecting and regenerating rare habitats.
- Reintroducing field margins and **hedgerows** where farmers grow only one crop.
- Reducing **deforestation** and carbon dioxide emissions, and recycling resources rather than dumping waste in **landfill**.
- (Separate sciences) **Food security** means having enough food; sustainable fishing (net sizes and quotas) and biotechnology, such as mycoprotein from the fungus Fusarium, help.

More human impacts (Edexcel and OCR)

- **Eutrophication**: fertiliser or sewage washes into lakes and rivers, so algae grow quickly and cover the surface. Plants below get too little light and die, decomposers feeding on them use up the oxygen, and fish and other animals die.
- Non-indigenous (introduced) species, such as grey squirrels in the UK, can outcompete native species for food and space, and bring new diseases.
- **Indicator species** show how polluted a place is. Lichens only grow where the air is clean. Bloodworms and sludgeworms survive in polluted water; stonefly nymphs and freshwater shrimps need clean water.
- Reforestation and conservation schemes help to restore habitats and **biodiversity**.
- (Separate sciences) Fish farming and factory farming raise food production by limiting animals' movement and keeping them warm, so less energy is lost, but they raise concerns about animal welfare and the spread of disease.

Key terms

Biodiversity	The variety of all the different species of organisms on Earth or within an ecosystem.
Pollution	Harmful substances added to the environment.
Deforestation	Cutting down large areas of forest.
Peat bog	A wetland habitat made of partly decayed plant material, which stores carbon.
Global warming	The rise in the average temperature of the Earth, linked to greenhouse gases.

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Landfill	Disposing of waste by burying it in the ground.
Hedgerow	A line of shrubs and trees that provides a habitat on farmland.
Breeding programme	Breeding endangered species in captivity to increase their numbers.
Food security	Having enough food to feed a population.
Eutrophication	When extra nutrients in water make algae grow quickly, so plants die, oxygen is used up and animals die. (Edexcel and OCR)
Indicator species	A species whose presence or absence shows how polluted a place is. (Edexcel and OCR)

Your notes

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. What is biodiversity?
2. Why is high biodiversity good for an ecosystem?
3. Which of these can pollute water?
4. Why is tropical forest cut down?
5. Why is destroying peat bogs harmful?
6. Which gases contribute most to global warming?
7. What is a biological consequence of global warming?
8. How do hedgerows help biodiversity?

Answers

1. The variety of different species in an ecosystem or on Earth
2. It reduces dependence of one species on another
3. Fertilisers
4. For cattle, rice fields and biofuel crops
5. It reduces biodiversity and releases carbon dioxide
6. Carbon dioxide and methane
7. Changes in the distribution of species
8. They provide habitats on farmland

What to do next

Practise 14 questions on this topic

Try 8 exam questions, with mark schemes

Read the lesson, one step at a time

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