



# GCSE Biology (Separate Science)

## Success Criteria: Human Impact on the environment

<i>I can...</i>	
<b>Define</b> 'biodiversity' as the variety of all the different species of organisms on earth, or within an ecosystem. (variety of life)	
<b>Explain</b> the importance of greater biodiversity = ensures the stability of ecosystems by reducing the dependence of one species on another for food, shelter and the maintenance of the physical environment. The future of the human species on Earth relies on us maintaining a good level of biodiversity.	
<b>Recognise</b> that rapid growth in the human population and an increase in the standard of living mean that increasingly more resources/land are used and more waste is produced.	
<b>Explain</b> how pollution is caused when waste and chemical materials are not properly handled, such as in water, from sewage, fertiliser or toxic chemicals; in air, from smoke and acidic gases; on land, from landfill and from toxic chemicals. Pollution kills plants and animals which can reduce biodiversity.	
<b>Suggest</b> ways that humans reduce the amount of land available for other animals and plants, such as building, quarrying, farming and dumping waste. Often these activities require large-scale deforestation in tropical areas (e.g. to provide land for cattle and rice fields and to grow crops for biofuels).	
<b>Discuss</b> the environmental impacts of destructing peat bogs to produce garden compost and as a fuel source. =reduces the area of this habitat and thus the variety of different plant, animal and microorganism species that live there (biodiversity), also the decay or burning of the peat releases carbon dioxide into the atmosphere.	
<b>Understand</b> the conflict between the need for cheap available compost to increase food production and the need to conserve peat bogs and peatlands as habitats for biodiversity and to reduce carbon dioxide emissions.	
<b>Describe</b> some of the biological consequences increasing levels of carbon dioxide and methane in the atmosphere contributing to 'global warming'.	
<b>Understand</b> that the scientific consensus about global warming and climate change is based on systematic reviews of thousands of peer reviewed publications.	
<b>Appreciate</b> that scientists and concerned citizens have put in place programmes to reduce the negative effects of humans on ecosystems and biodiversity, such as breeding programmes for endangered species; protection and regeneration of rare habitats; reintroduction hedgerows in agricultural areas; reduction of deforestation and carbon dioxide emissions by some governments; and recycling resources rather than dumping waste in landfill.	

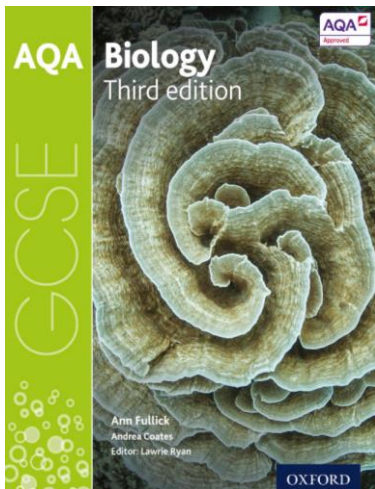
<b>I can...</b>	
<b>Define</b> 'food security' as having enough food to feed a population.	
<b>Describe</b> some of the biological factors affecting levels of food security, including; <ul style="list-style-type: none"> <li>• the increasing birth rate has threatened food security in some countries</li> <li>• changing diets in developed countries means scarce food resources are transported around the world</li> <li>• new pests and pathogens that affect farming environmental changes that affect food production, such as</li> <li>• widespread famine occurring in some countries if rains fail the cost of agricultural inputs</li> <li>• conflicts that have arisen in some parts of the world which affect the availability of water or food.</li> </ul>	
<b>Describe</b> how food production can be improved by intensive farming techniques to restrict energy transfer from food animals to the environment. This can be done by limiting their movement and by controlling the temperature of their surroundings. Some animals are fed high protein foods to increase growth.	
<b>Understand</b> that some people have ethical objections to some modern intensive farming methods.	
<b>State</b> that fish stocks in the oceans are declining due to overfishing. It is important to maintain fish stocks at a level where breeding continues or certain species may disappear altogether in some areas.	
<b>Understand</b> how the application of different fishing techniques promotes recovery of fish stocks, such as control of net size and the introduction of fishing quotas.	
<b>Describe and explain</b> some possible biotechnical solutions to meet the food demands of the growing human population, such as <ul style="list-style-type: none"> <li>• Using the fungus <i>Fusarium</i> to producing mycoprotein, a protein-rich food suitable for vegetarians (Quorn). The fungus is grown on glucose syrup, in aerobic conditions, and the biomass is harvested and purified.</li> <li>• Genetic engineering to produce GM crops which could increase yield (provide more food) or produce food with an improved nutritional value such as golden rice.</li> </ul>	

- 4.7.3 Biodiversity and the effect of human interaction on ecosystems
- 4.7.5 Food production

## Additional support:



Access the appropriate textbook on kerboodle.com, create your own revision notes of the key points of the topic and attempt the summary questions.



Separate Biology GCSE textbook

**Biodiversity and ecosystems**

pages 286-299

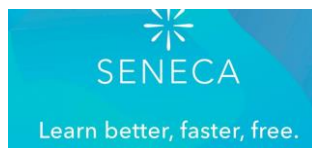
**Food production**

pages 304-309

**Write your own summary notes** (bullet points of the key ideas /keywords list with definitions/ annotated diagrams/ mind-maps or flash cards) to go over the main content of the topic.

Attempt the textbook summary questions.

Utilise online revision resources to support your class notes, such as...



Attempt past paper questions using [www.physicsandmathstutor.com](http://www.physicsandmathstutor.com) and self-mark your answers using the official exam mark schemes.



## Extension work/extra challenge:

Ask your teacher for the following extension tasks:

- Bioremediation
- Conservation: getting it right