

# **20. Human influences on ecosystems**

**20.4 Conservation**

**Paper 3 and 4**

Question Paper

## Paper 3

Questions are applicable for both core and extended candidates

1 (b) Many sewage treatment plants use bacteria in the process of cleaning sewage.

Some of these bacteria release methane as a waste product.

This methane can be burned as a source of energy for the sewage treatment plant.

Explain why the production and use of methane in this way is described as sustainable.

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[2]

2 (c) Pollution can cause organisms to become extinct.

State **three** other factors that can cause extinction.

1 .....  
2 .....  
3 .....

[3]

3 (d) Plastic is a non-sustainable resource that is made from fossil fuels.

Complete the sentence to define a sustainable resource.

A sustainable resource is one which is ..... as rapidly as it is removed  
from the environment so that it does not .....

[2]

4 (d) Many species of crustaceans live in seas and oceans.

Some of these species have become endangered.

Describe reasons why some marine crustacean species have become endangered.

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[3]

5 Recycling rates in one country were monitored every ten years.

The percentages of different types of recycled materials were recorded.

Fig. 5.1 shows the results.

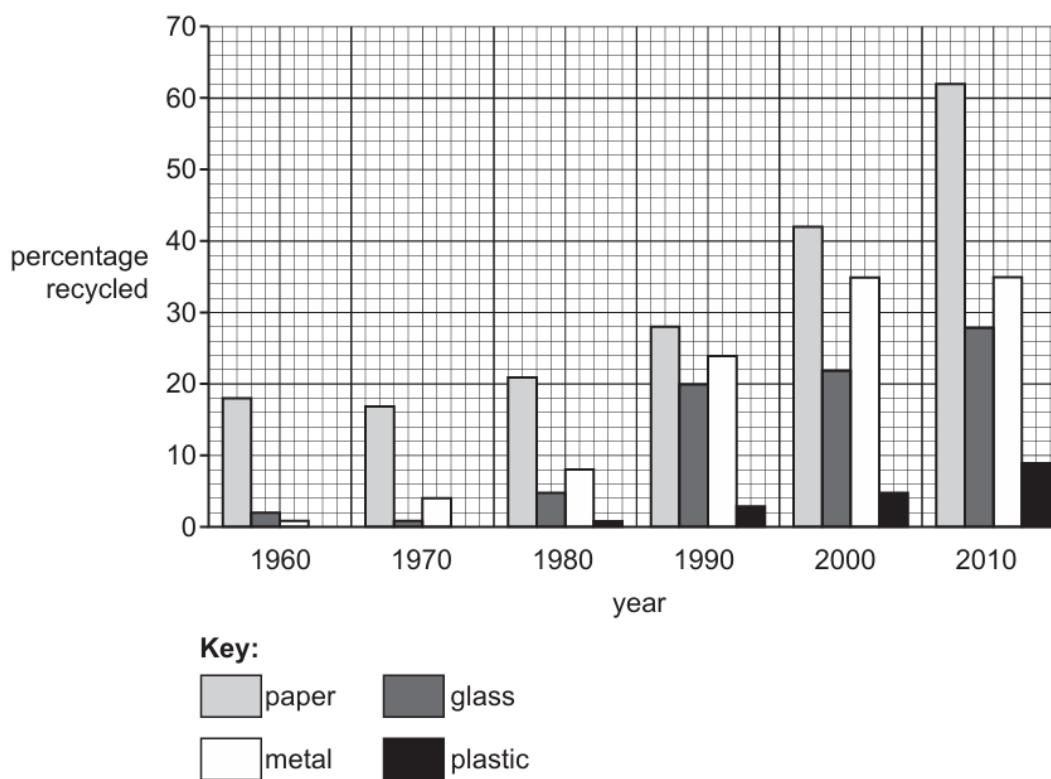


Fig. 5.1

(a) Complete the sentences using the data shown in Fig. 5.1.

The general trend shows that between 1970 and 2000 the percentage of materials recycled has ..... . The most commonly recycled material is

..... .

In 1970 ..... was **not** recycled.

The percentage of ..... recycled did not change between 2000 and 2010.

[4]

(b) Calculate the increase in the percentage of glass recycled between 1960 and 1990.

..... % [1]

[Total: 5]

6 (a) The government of a country introduced a law called the Endangered Species Act. It was hoped that the Act would help to conserve species that were at risk from extinction.

Table 8.1 shows the numbers of birds from different species before and after the Act was introduced.

**Table 8.1**

species	number of birds	
	before the Act	after the Act
bald eagle	416	9789
Kirtland's warbler	210	1415
nene goose	400	1275
peregrine falcon	324	1700
whooping crane	54	513

(i) State which species was the most at risk from extinction in Table 8.1.

..... [1]

(ii) Calculate the percentage increase in the number of Kirtland's warblers.

Give your answer to the nearest whole number.

..... %  
[3]

(b) (i) List **three** reasons why species become endangered or extinct.

1 .....

2 .....

3 .....

[3]

(ii) Describe **one** method of conserving endangered plant species.

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..... [1]

7 The energy we use comes from a variety of sources.

Fig. 5.1 shows the percentage of each source of energy used in one country in 2011.

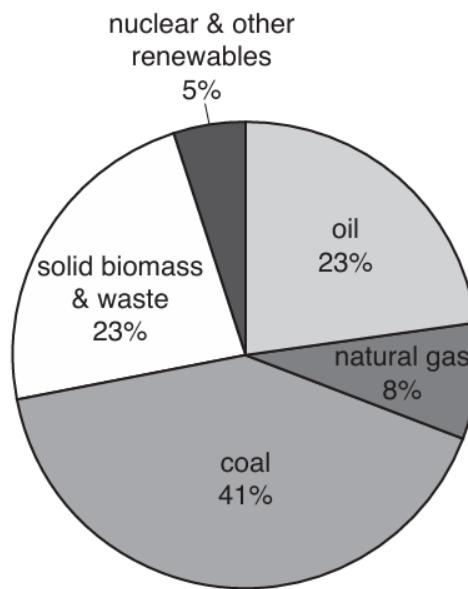


Fig. 5.1

(a) Coal, natural gas and oil are types of fossil fuel.

Calculate the total percentage of energy in Fig. 5.1 that came from fossil fuels.

.....% [1]

(b) Explain why fossil fuels are **not** sustainable resources.

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..... [1]

8 (b) (i) A species becomes endangered when it is at risk of extinction.

Explain **two** ways in which a species could become endangered.

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[4]

(ii) State **one** way in which endangered species can be conserved.

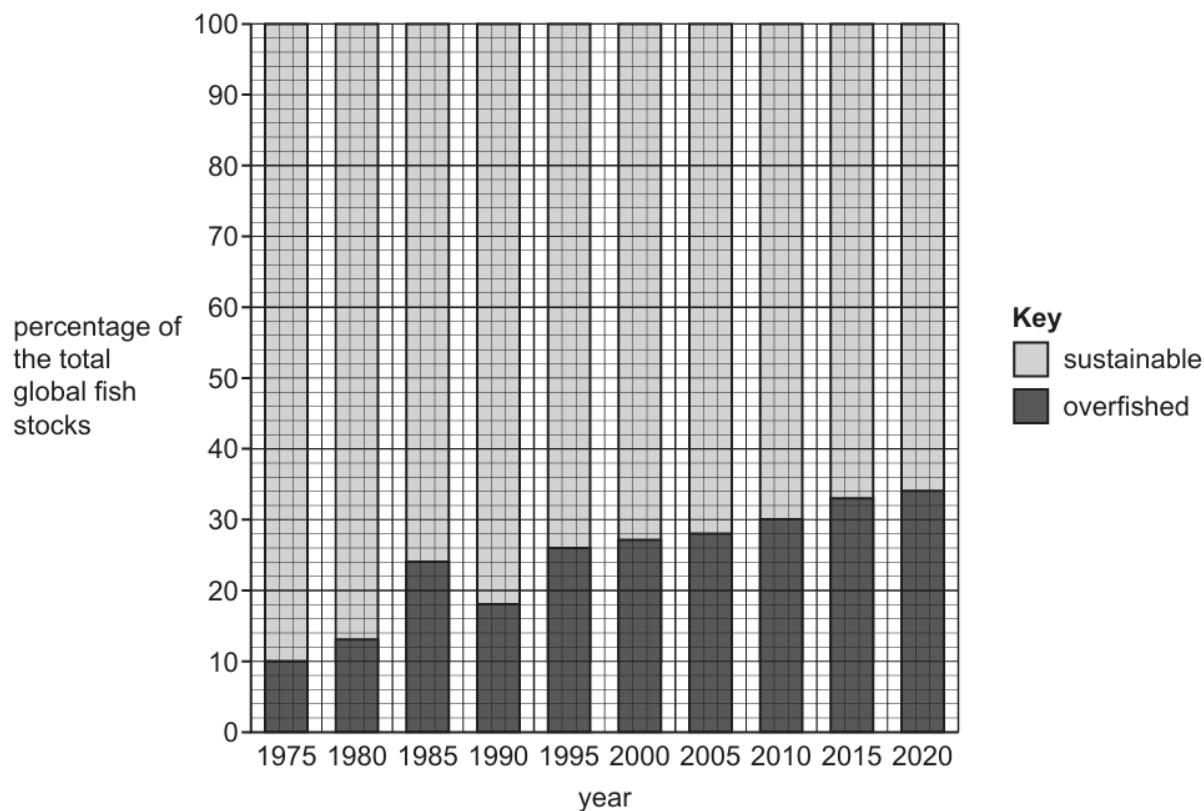
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[1]

## Paper 4

**Questions are applicable for both core and extended candidates unless indicated in the question**

9 Fig. 5.1 shows the changes in the percentage of the total global fish stocks that are overfished and those that are sustainable.



**Fig. 5.1**

(a) Use the information in Fig. 5.1 to:

(i) State the percentage of fish stocks that were sustainable in 2020.

..... % [1]

(ii) State which five-year period had the greatest increase in sustainable fish populations.

..... [1]

**(b)** Overfishing is one reason why populations of fish decline.

Explain the risks to a species if its population size decreases. **(extended only)**

[3]

(c) Describe **and** explain how fish stocks can be managed sustainably and how overfishing can be prevented through conservation. **(extended only)**

[6]

10 (c) Scientists in Malawi are working to prevent the extinction of the Mulanje cedar tree in its natural habitat.

Explain the benefits to other organisms on Mount Mulanje of conserving the Mulanje cedar tree in its natural habitat.

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[2]

(d) The seeds of many endangered tree species are kept in seed banks.

Suggest why it is important to collect seeds from many individual trees of each species rather than just one tree. **(extended only)**

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[2]

11 (e) Researchers have devised a process of artificial photosynthesis. They use gold nanoparticles as a catalyst to utilise green light to convert carbon dioxide to fuels, such as propane.

Suggest the advantages to the environment of using artificial photosynthesis on a large scale.

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[2]

12 (a) Climate change is one reason why a plant species could become endangered.

(i) State **other** reasons why a plant species could become endangered.

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.....  
.....

(ii) Describe how human actions are causing climate change.

[4]

**(b)** Seed banks are used to conserve endangered plant species.

Fig. 4.1 shows some of the steps involved in managing a seed bank.

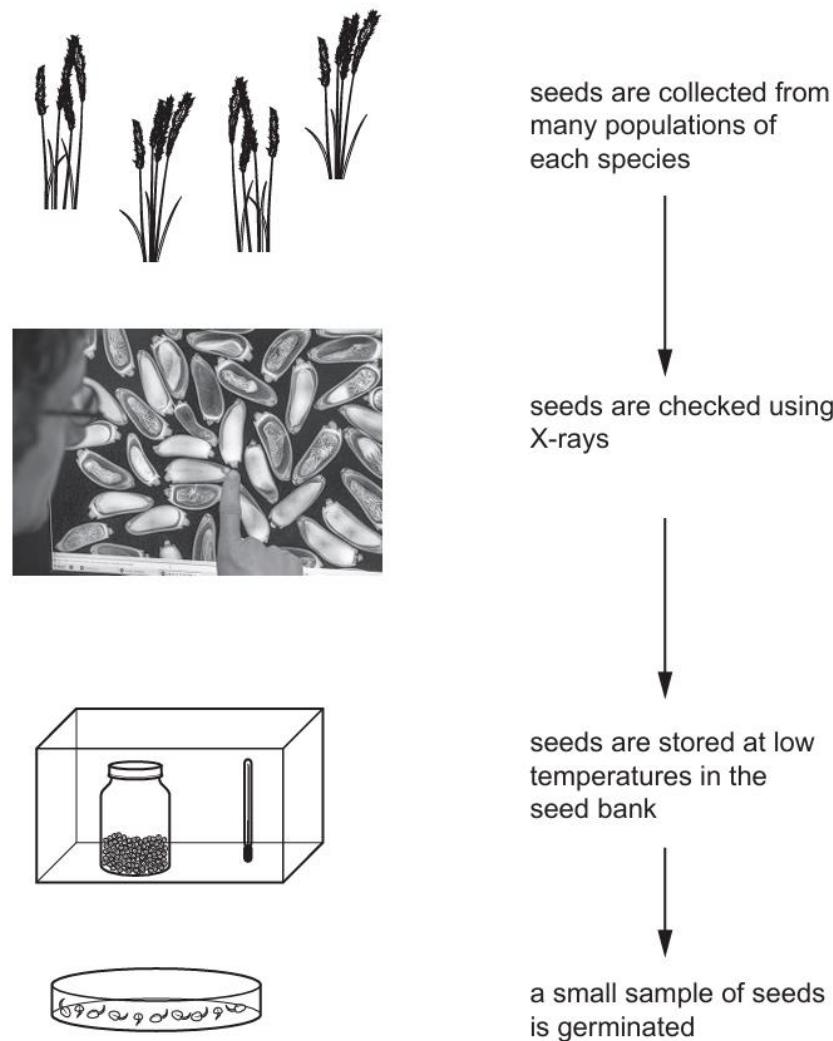


Fig. 4.1

(i) Explain why seeds from one species are collected from many populations to store in a seed bank. **(extended only)**

[3]

[3]

13 (c) Cheetahs are at risk of becoming endangered.

(i) Suggest why the cheetah is at risk of becoming endangered.

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[3]

(ii) Describe how species like the cheetah can be conserved.

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[3]

14 (b) Many fish stocks have declined.

Marine ecologists considered the three topics shown in Fig. 6.1 when they discussed the decline of fish stocks.

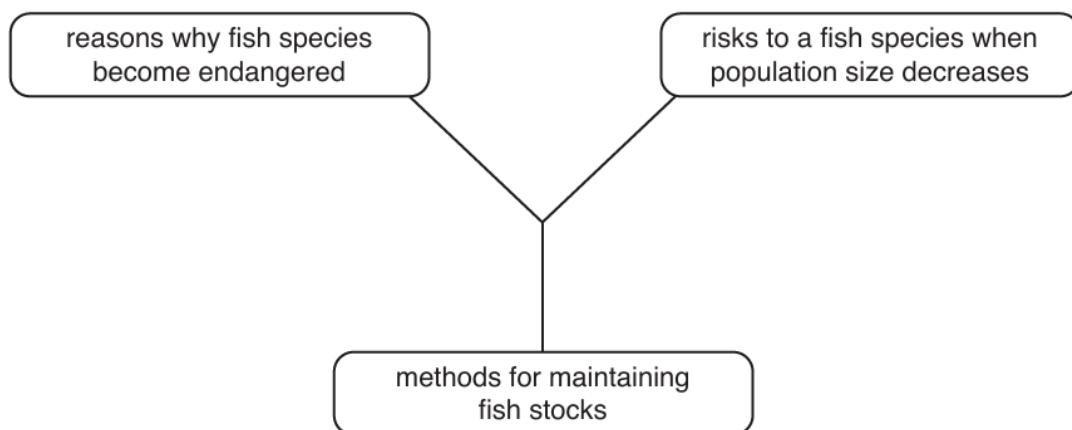


Fig. 6.1

Describe the key points for each of the three topics shown in Fig. 6.1. (extended only)

15 (d) Many species of spider are thought to be endangered.

State **three** reasons why animal species such as spiders become endangered.

1 .....

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2 .....

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3 .....

..... [3]

16 (c) Wheat is an important crop plant in many countries. Wheat can be infected by diseases leading to total loss of the crop which results in famine.

Outline factors, **other than** plant diseases, that can cause famines.

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..... [3]

17 (c) There are many threats to wildlife in the Galapagos.

Describe ways in which endangered species can be conserved.

(d) One aim of conservation is to maintain resources in natural ecosystems.

State **three** resources that natural ecosystems provide for humans.

1 .....

2 .....

3 .....