

# Biodiversity

## Question Paper 8

<b>Level</b>	International A Level
<b>Subject</b>	Biology
<b>Exam Board</b>	CIE
<b>Topic</b>	Biodiversity, classification and conservation
<b>Sub Topic</b>	Biodiversity
<b>Booklet</b>	Theory
<b>Paper Type</b>	Question Paper 8

**Time Allowed :** 41 minutes

**Score :** / 34

**Percentage :** /100

**Grade Boundaries:**

A*	A	B	C	D	E	U
>85%	'77.5%	70%	62.5%	57.5%	45%	<45%

- 1 The humpback whale, *Megaptera novaeangliae*, is one of the world's largest aquatic mammals. It can grow to a length of up to 15 metres and a mass of up to 36 000 kg. A large proportion of the mass of a humpback whale is a very thick layer of fat-filled cells stored under the skin, called blubber.

The humpback whales are seasonal feeders. They feed in polar regions during the summer and then migrate to warmer temperate and tropical waters to mate and have their young during the polar winter.

- (a) One reason that the humpback whale has managed to reach its enormous size is because it is a member of a simple food web. Fig. 3.1 is an example of such a food web.

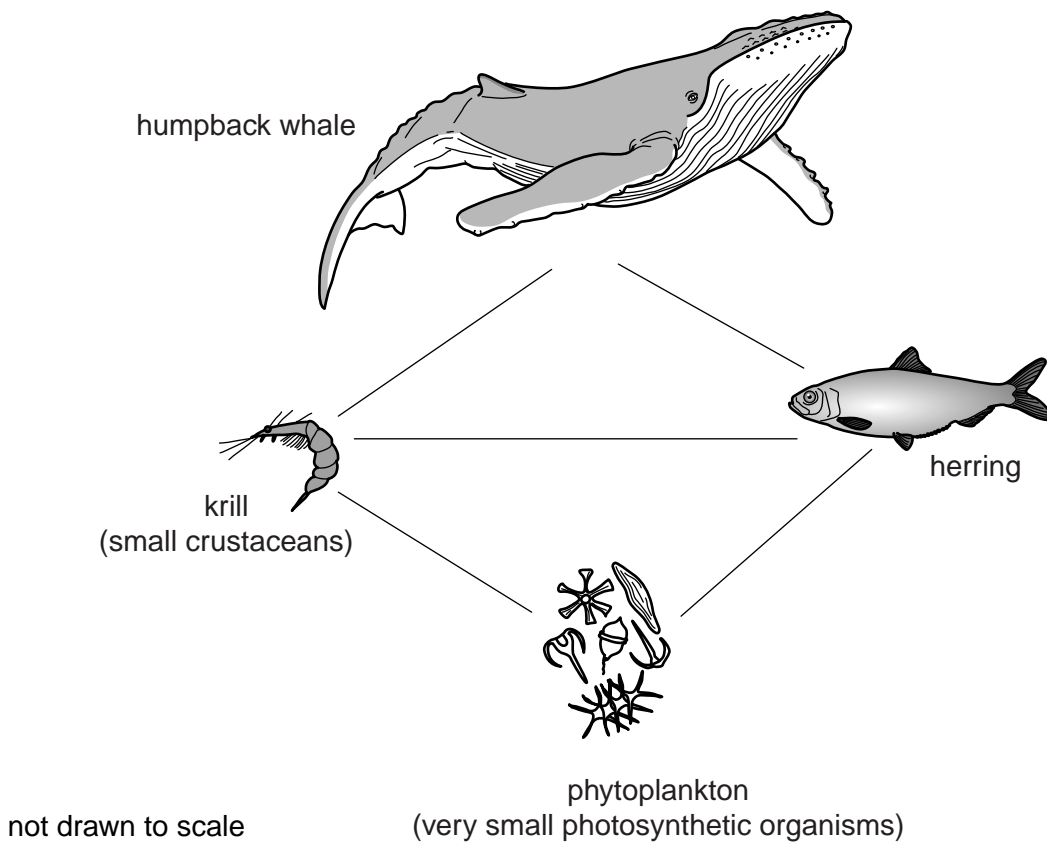


Fig. 3.1

- (i) The humpback whale is a carnivore, feeding on krill and herring. The herring feed on krill.

Add **arrow heads** to the lines drawn on Fig. 3.1 to show the direction of energy flow in the food web. [1]

- (ii) State the trophic level to which the humpback whale belongs.

..... [1]

(iii) In terms of energy transfer, explain how the humpback whale is able to reach such a large size.

.....  
.....  
.....  
.....  
.....  
..... [3]

(b) The thickness of blubber in humpback whales decreases during the non-feeding season and increases during the feeding season.

Suggest explanations for this observation.

.....  
.....  
.....  
.....  
.....  
..... [2]

(c) Describe the roles of water as an environment for organisms, such as those shown in Fig. 3.1.

.....  
.....  
.....  
.....  
.....  
.....  
.....  
..... [3]

- 2 Corals are simple marine animals and usually exist in colonies of thousands of individuals.

Fig. 7.1 shows a coral colony.



Fig. 7.1

Corals absorb calcium carbonate from the sea to build their skeletons, which help to form large coral reefs. Coral reefs provide a home for about 25% of known fish species and have the highest biodiversity of any marine ecosystem.

- (a) Corals, although they are animals, are sometimes mistaken for members of the plant kingdom.

State **two** ways in which corals differ from plants.

.....  
.....  
.....  
..... [2]

- (b) Outline what is meant by the term *ecosystem*.

.....  
.....  
.....  
..... [2]

- (c) Coral reefs are at risk of damage due to human activities. All the coral reefs in three regions were classified as being at low, medium or high risk of damage.

Table 7.1 shows the areas of coral reef at risk of damage in these three regions.

**Table 7.1**

region	area of coral reef at risk of damage / 1000 km <sup>2</sup>			percentage of coral reef at high risk of damage
	low	medium	high	
Caribbean Sea	9	8	7	29
Indian Ocean	20	15	10	
Pacific Ocean	60	30	9	

- (i) Complete Table 7.1, giving your answers **to the nearest whole number**. [1]

- (ii) Suggest how human activities could damage coral reefs.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [3]

[Total: 8]



A study was carried out in 2006 to show how four food crops are pollinated.

Fig. 7.2 shows the results of this study.

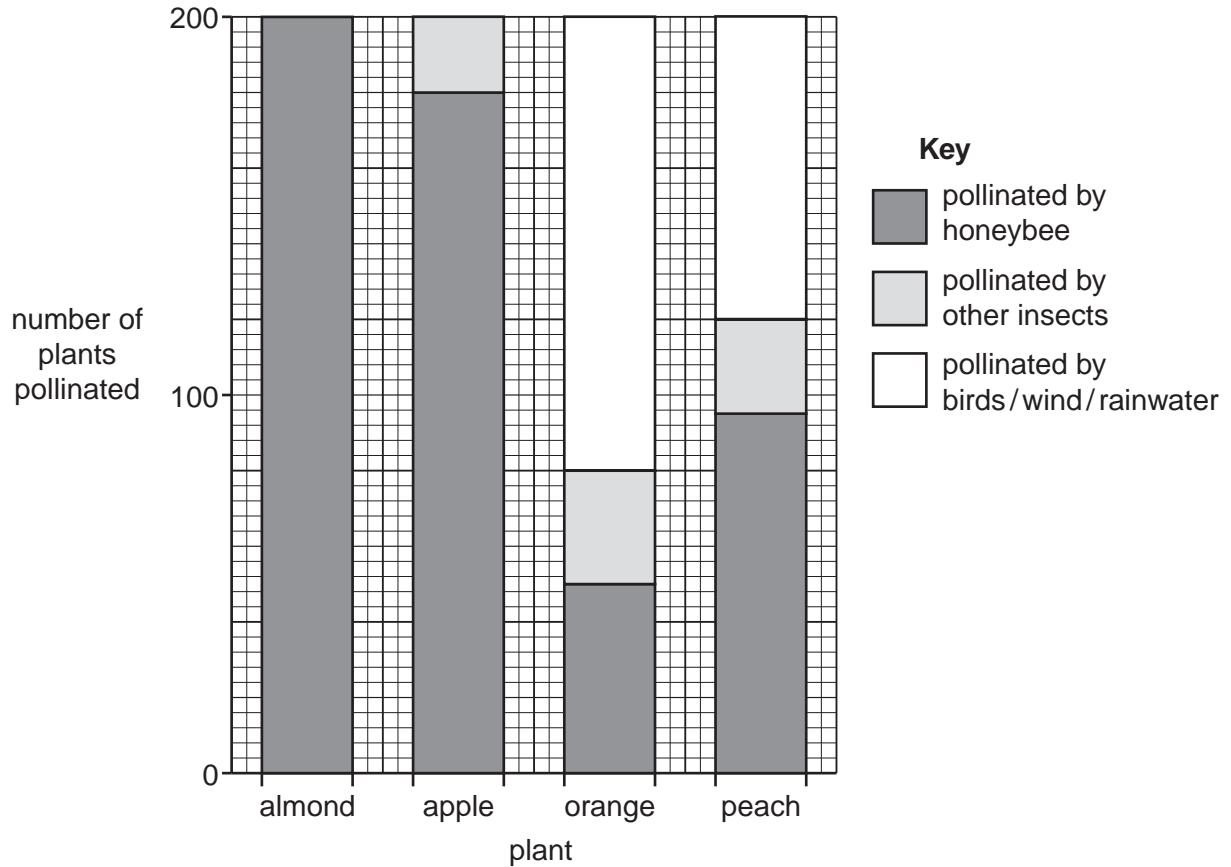


Fig. 7.2

The populations of honeybees in some parts of the world have declined in recent years.

- (i) With reference to Fig. 7.2, **explain** which crop will be most affected **and** which crop will be least affected by the decline in honeybees.

*most affected*.....

.....

*least affected*.....

..... [2]

(ii) Suggest reasons why honeybee populations have declined.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [3]

[Total: 8]





**(b)** Explain what is meant by the term *biodiversity*.

.....  
.....  
.....  
..... [2]

**(c)** Discuss the benefits of maintaining the biodiversity of a marine ecosystem, such as that in the coastal waters of Canada.

.....  
.....  
.....  
.....  
.....  
..... [3]

[Total: 8]