

**A Level Biology A**  
**H420/02 Biological Diversity**

**Question Set 8**

1

Penguins are flightless birds that eat fish. Most species of penguin live near the coast of Antarctica or on the many islands that surround Antarctica.

Fig. 17 shows the populations of three penguin species on an island off the coast of Antarctica.

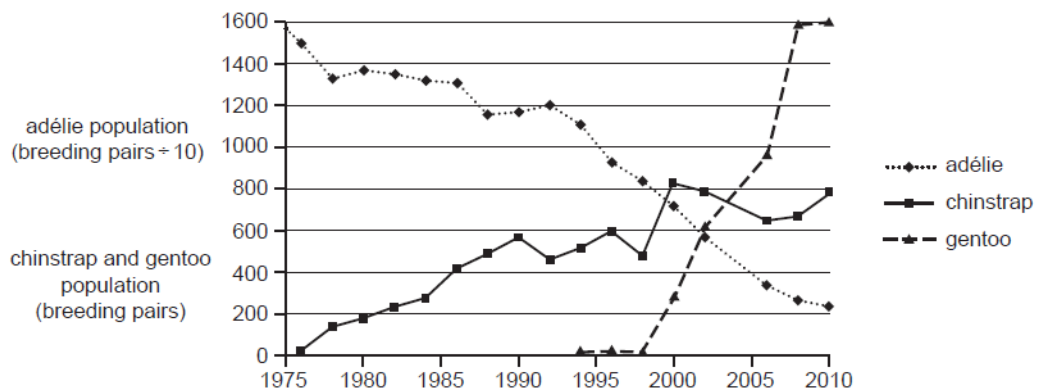


Fig. 17

- (a) (i) Before 1975 the only penguin species on the island was the adélie penguin. Chinstrap penguins were first recorded on the island in 1976.

The changes in the chinstrap penguin population are not directly related to abiotic factors.

Suggest explanations for the changes in the population of **chinstrap** penguins between 1976 and 2010. [3]

- (ii) Calculate the mean annual decrease in the **adélie** penguin population between **1988** and **2010**.

Show your working. Give your answer to **three significant figures**.

Answer ..... [2]

- (b) (i) Adélie penguins need a habitat that contains sea-ice. Gentoo and chinstrap penguins can survive without access to sea-ice.

Scientists have claimed that the population changes in the three penguin species on the island suggests that the Antarctic temperature is increasing.

Discuss whether the information in Fig. 17 supports the scientists' claim.

You should refer to the data in Fig. 17 in your answer. [3]

- (ii) Scientists working in the local area monitored water temperatures and populations of other water animals around the island between 1976 and 2010.

Suggest **two** further pieces of evidence that the scientists might have found to support their claim. [2]

**Total Marks for Question Set 8: 10**

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