

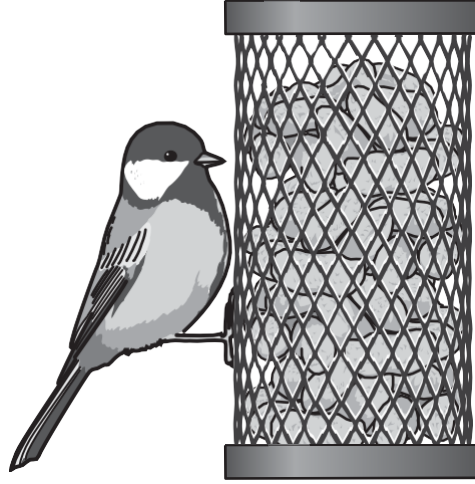
**GCSE Biology A (Gateway)**

**J247/04 Biology A B4-B6 and B7 (Higher Tier)**

**Question Set: 19**

1 Blue tits are small birds seen in gardens

- (a) Many people in the UK feed birds nuts using a bird feeder, as shown in the diagram below.



Scientists measured the mean lengths of blue tits' beaks in the UK.

They found that blue tit beaks in the UK are slightly longer than blue tit beaks in the rest of Europe.

Very few people in the rest of Europe put bird feeders out for their birds.

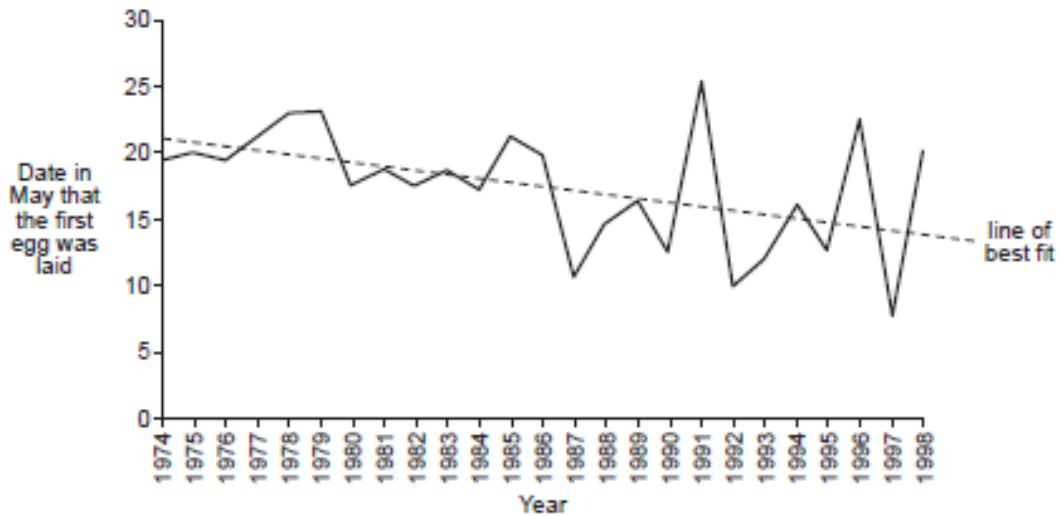
Use Charles Darwin's theory of natural selection to explain why the blue tits in the UK have slightly longer beaks than those in the rest of Europe.

[4]

Those with the allele that result in a phenotype of a longer beak are more suited to their environment so are more likely to survive and reproduce. Their offspring inherit the advantageous alleles so most of the population eventually have this characteristic, and those with short beaks in UK die out as longer beaks allow them to feed out of the bird feeders.

(b) Blue tits usually lay their eggs in the month of May.

For many years, the scientists have recorded the first day that an egg was laid. This data is shown in the graph.



The scientists made this explanation for the results:

**The results are due to climate change.**

Suggest arguments **for** and **against** this possible explanation.

Use information from the graph in your answer.

[4]

The graph shows that over the past 25 years, the first egg laid has occurred earlier each time. This suggests climate change may be the cause since it could be too warm in late May for eggs to be laid. However, many other factors could explain the pattern, as correlation doesn't mean causation and the graph doesn't directly show the relationship with climate change & date of egg laid but the change in the date itself. Thus, it is an assumption. Also, there are sharp rises in date in May when egg laid in the latter period which weakens the explanation.

**Total Marks for Question Set 19: 8**

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