

3. In Lake Victoria there are two populations of male cichlid fish. One population is red and the other is blue.

The fish move freely between shallow and deep water. In shallow water, female cichlid fish are only attracted to and breed with blue males. In deeper water, females are only attracted to and breed with red males.

- (a) (i) Name the type of isolation barrier that exists between these populations. 1

- (ii) State the importance of isolation barriers in the evolution of new species. 1

- (b) An investigation was carried out into the effect of the depth of water on the distribution of blue and red male cichlid fish. The fish were counted using underwater video cameras.

The results are shown in the table.

Depth of water (m)	Number of blue male cichlid fish	Number of red male cichlid fish
0–10	9924	57
10–20	7587	84
20–30	4457	119
30–40	301	6650
40–50	103	9210
50–60	74	11 570

- (i) Predict the number of red male cichlid fish at a depth of 60–70 m. 1

- (ii) Suggest a reason why the method used to count the cichlid fish could lead to inaccurate results. 1



3. (b) (continued)

- (iii) Compare the distribution of blue and red male fish as the depth of water increases.

1

- (c) It is predicted that these two populations will evolve into different species. State how it could be proved that they are no longer the same species.

1

[Turn over

