



QUESTION WORKBOOK

Populations and their limits: what stops the numbers rising

Ecology, populations and environmental change · Unit B20

AQA 3.7.4 · OCR A 6.3.2 · Edexcel A Topic 5 · CAIE 18.1, 18.2

6 questions · 21 marks

NAVY SCREEN EDITION

SECTION A · Short, 1 to 2 marks

- A1** State what is meant by the carrying capacity of a habitat, and state why a population can rise above it for a time. [2]

SECTION B · Standard, 3 to 5 marks

- B1** Describe the four phases of a sigmoid population growth curve in terms of birth rate and death rate. [4]

- B2** Explain why the peak in a predator population arrives after the peak in the population of its prey, and explain what that lag shows about the claim that predators control prey numbers. [4]

- B3** A researcher catches 150 field voles in a wood of area 3.0 hectares, marks them and releases them. A week later she catches 120 voles, of which 18 carry a mark. Calculate the estimated size of the population and calculate its density. [4]

- B4** Larvae of two barnacle species settle across the whole of a rocky shore, but adults of one species are found only high up. When the other species is removed, the first survives much lower down. Explain these observations in terms of niche and competition. [4]

- B5** A student estimates the number of woodlice in a patch of leaf litter, but between her two samples several marked animals moult and lose their marks. Suggest how this affects her estimate, and suggest two changes to her method that would reduce the problem. [3]