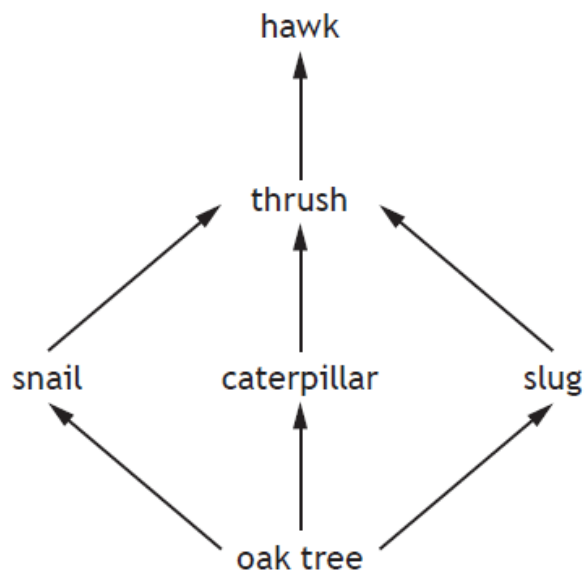


Key Area 1 Ecosystems

1. An ecosystem consists of abiotic factors plus a

- A community and its biodiversity
- B population and its biodiversity
- C population and its habitat
- D community and its habitat.

2. The diagram shows part of a food web.



A chemical was used to control the number of slugs.

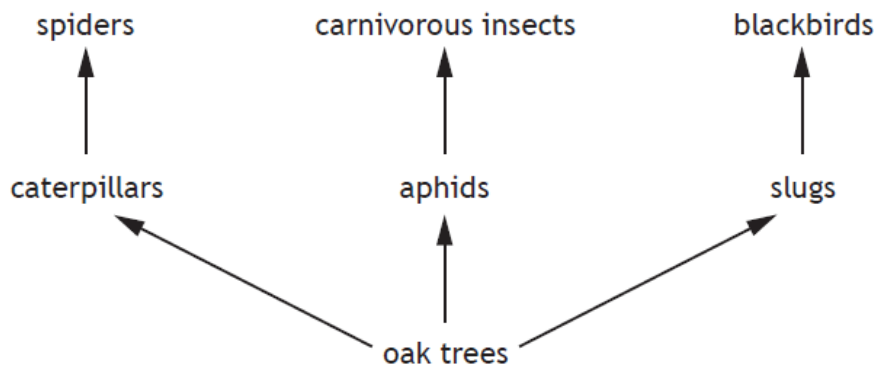
Which of the following could be a result of a large decrease in slug numbers?

- A An increase in snails.
- B An increase in hawks.
- C A decrease in caterpillars.
- D A decrease in oak trees.

3. Which of the following statements about a woodland describes a community?

- A All the oak trees.
- B All the plants.
- C All the oak trees and blackbirds.
- D All the plants and animals.

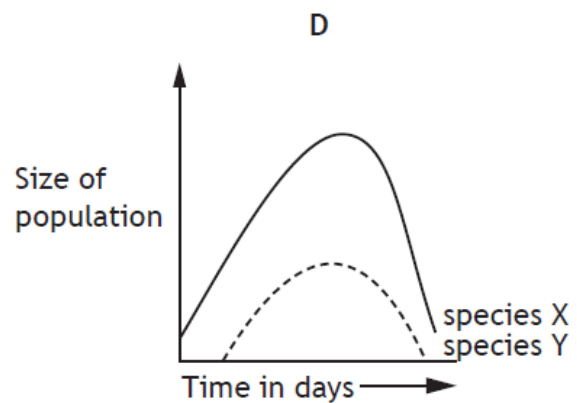
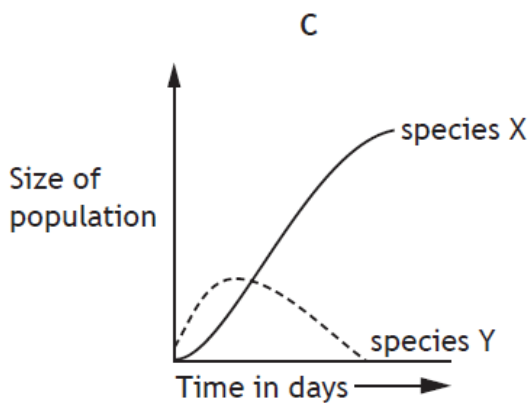
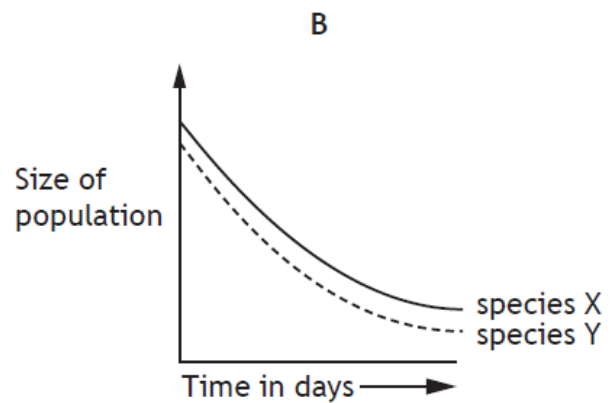
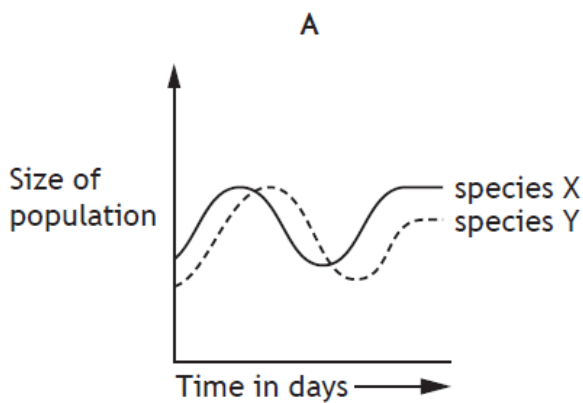
4. The diagram shows part of a food web in an oak woodland.



The use of pesticides in a nearby field resulted in the death of most aphids and caterpillars. Which row in the table identifies the effect on the numbers of slugs and carnivorous insects?

	<i>Number of slugs</i>	<i>Number of carnivorous insects</i>
A	decreases	stays the same
B	increases	decreases
C	decreases	increases
D	increases	stays the same

5. Which of the following graphs shows the effects of competition for the same food between a successful species and an unsuccessful species?

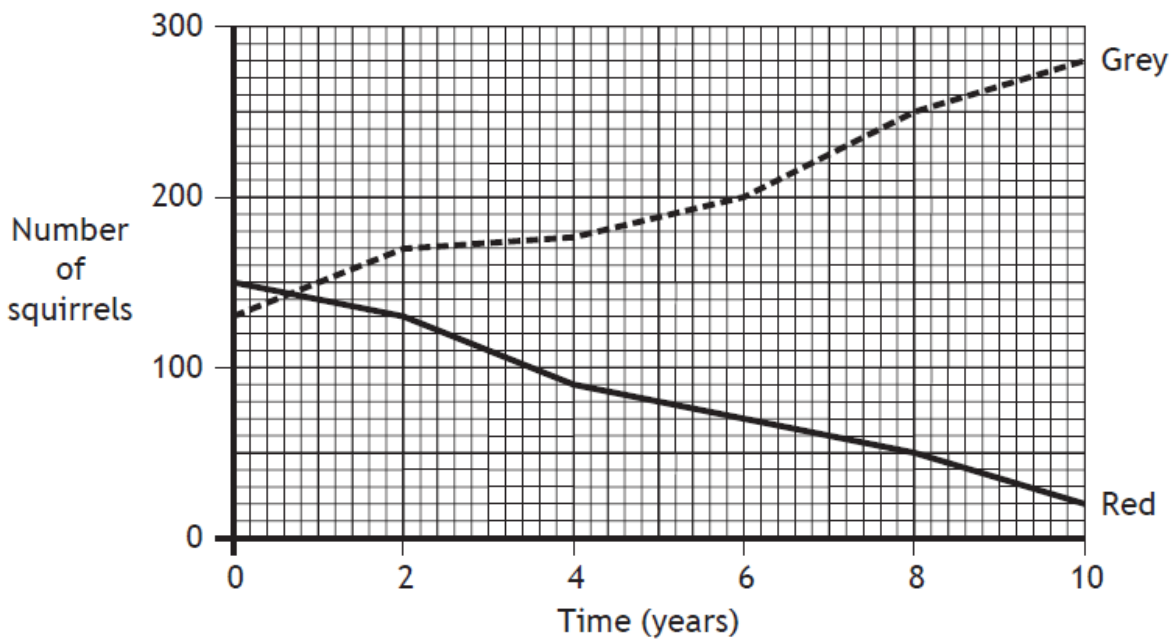


6.

Which row in the table describes a type of competition and a matching example?

	<i>Type of competition</i>	<i>Example</i>
A	Interspecific	Two birch trees growing close together in a wood
B	Interspecific	Lions and hyenas feeding on zebra
C	Intraspecific	Seals and dolphins feeding on small fish
D	Intraspecific	Buttercups and daisies growing in the same field

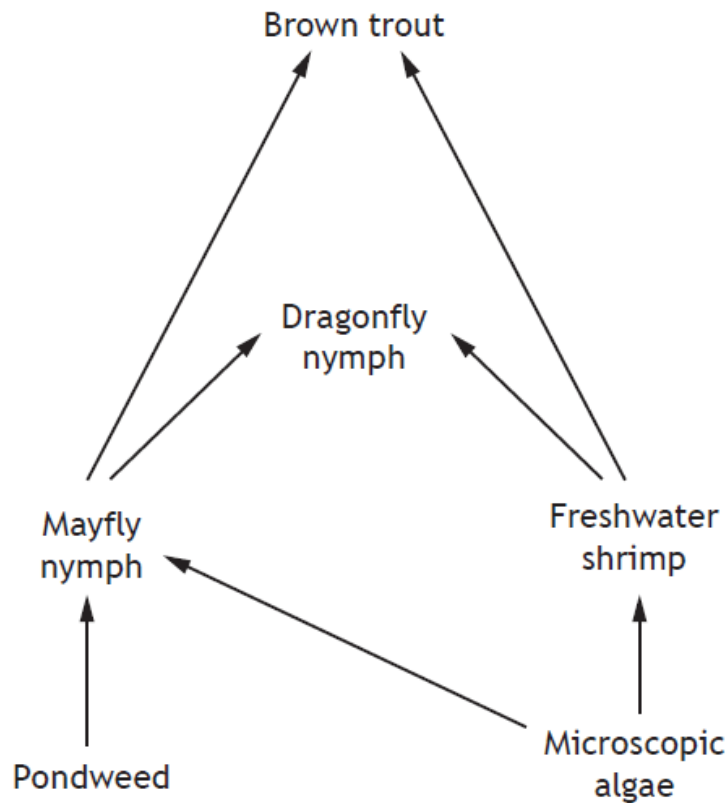
7. Which of the following statements best describes a niche?
- A A living factor which affects biodiversity in an ecosystem.
 - B A region of our planet as distinguished by its climate, fauna and flora.
 - C All the organisms in an area and their habitat.
 - D The role that an organism plays within a community.
8. The graph below shows changes in the population of red and grey squirrels in an area of woodland over a 10 year period.



Which of the following conclusions can be drawn from the graph?

- A The total number of squirrels decreased over 10 years.
- B The population of red squirrels showed a greater change than the grey squirrels.
- C The population of grey squirrels showed a greater change than the red squirrels.
- D After 8 years there were 4 times as many grey squirrels as red squirrels.

9. The diagram below represents a freshwater food web.



The number of freshwater shrimps was found to have decreased dramatically.

Predict the effect this will have on the numbers of dragonfly nymphs and microscopic algae.

- A Both populations would decrease.
- B Both populations would increase.
- C Microscopic algae would decrease and dragonfly nymphs would increase.
- D Microscopic algae would increase and dragonfly nymphs would decrease.

10.

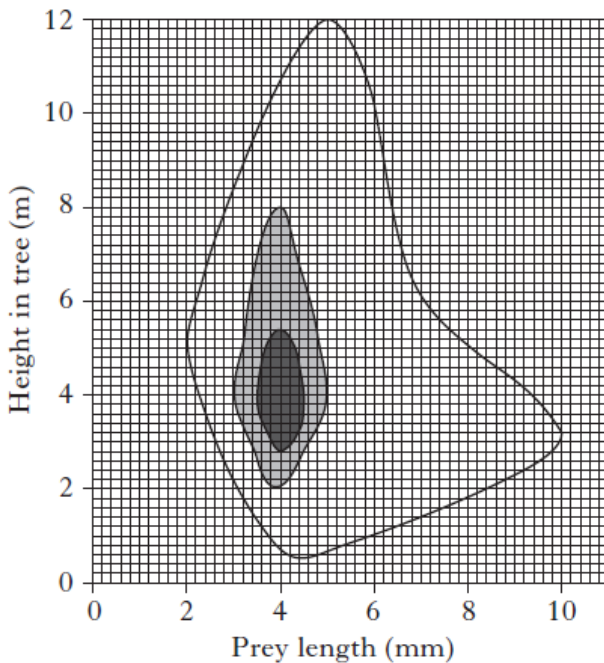
Which of the following describes interspecific competition?

- A Individuals of different species requiring different resources.
- B Individuals of different species requiring similar resources.
- C Individuals of the same species requiring different resources.
- D Individuals of the same species requiring similar resources.

11. A rabbit feeds on grass, is eaten by foxes and is a habitat for fleas.
The statement above describes the rabbit's
- A ecosystem
 - B community
 - C niche
 - D prey.




12. In which of the following would competition not occur?
- A Rabbits grazing in a field
 - B Owls and foxes hunting for mice
 - C Daisies and dandelions growing in a lawn
 - D Algae and fish in a loch

13. The graph below shows information about the height a bird feeds at and the length of its prey.



Key

Percentage of diet

-  Greater than 5%
-  3-5%
-  1-3%

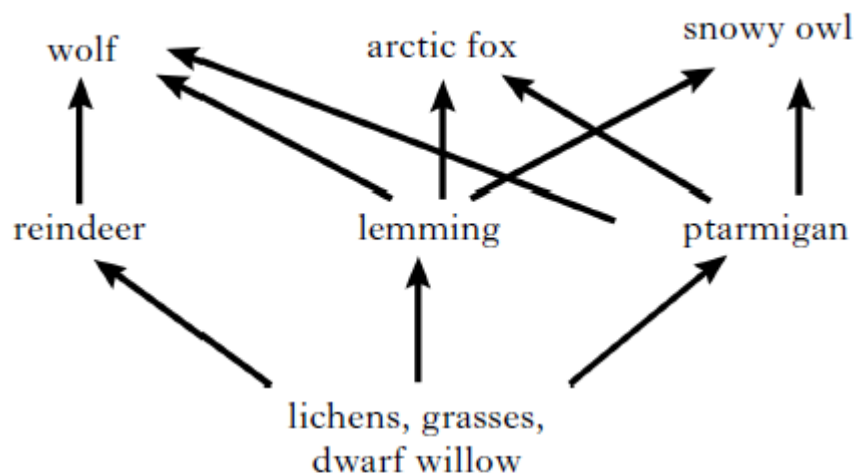
A correct conclusion would be that these birds eat most prey of length

- A 4 mm
- B 5 mm
- C 10 mm
- D 12 mm.

14. The total variety of all living things on Earth is described as
- A an ecosystem
 - B biodiversity
 - C a community
 - D random assortment.

15. A species can be defined as a group of organisms which
- A breed together to produce fertile offspring
 - B have the same phenotypes
 - C contain the same number of chromosomes
 - D contain identical genetic material.

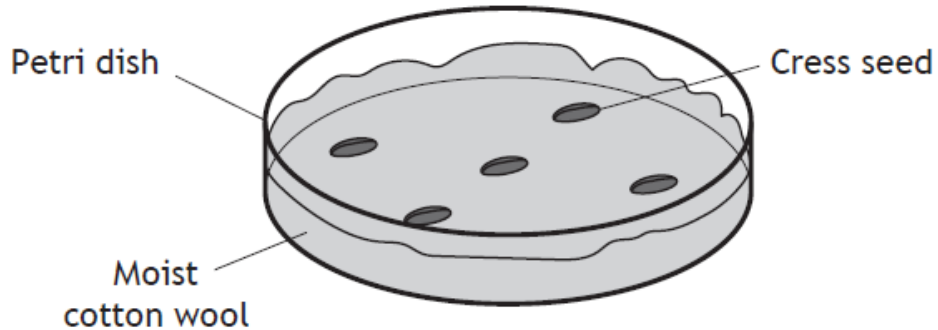
16. The diagram below shows part of a food chain in the Arctic tundra.



- A population in this food web is all the
- A plants
 - B reindeer
 - C animals
 - D living organisms.

17. To investigate the effect of competition on the growth of cress seeds, five Petri dishes, labelled A–E, were set up and left for six days. Each dish contained a layer of moist cotton wool with different numbers of cress seeds sown evenly across its surface.

Dish A is shown in the diagram.



The results are shown in the table.

<i>Dish</i>	<i>Number of seeds sown</i>	<i>Number of seedlings surviving after six days</i>	<i>Percentage of seedlings surviving after six days</i>
A	5	5	100
B	10	10	100
C	20		95
D	40	34	85
E	80	60	75

- (a) (i) Complete the table by calculating the number of seedlings surviving in Dish C.

1

Space for calculation

- (ii) Describe the relationship between the number of seeds sown and the percentage of seedlings surviving after six days.

1

17 (continued)

- (iii) Explain why the type of competition shown in this investigation is described as being intraspecific.

1

- (b) The diagram represents positions of organisms in a food chain.

Tick one of the boxes to show the position cress would occupy in the food chain.

1



- (c) Name one resource, other than water, for which plants may be in competition.

1

18. A fresh water environment is an example of an ecosystem.

Describe what is meant by the term ecosystem.

1

19.

A food chain from a river is shown below.

algae → water flea → stickleback → perch

Using the information in the food chain, answer the following questions.

- (a) (i) Identify an organism which is both predator and prey.

1

20. During the investigation the students found four different species of periwinkles at different positions on the rocky shore.



The highest position that the sea water reaches on the shore is called the high tide level.

The bars in the table below represent the positions on the shore where each species of periwinkle was found.

	<i>Species of periwinkle</i>			
<i>Position on shore</i>	<i>Small</i>	<i>Edible</i>	<i>Rough</i>	<i>Flat</i>
High tide level ↓ Low tide level	█	█	█	█

- (i) State which species of periwinkle is least likely to compete with the small periwinkle.

Explain your answer.

1

Species _____

Explanation _____

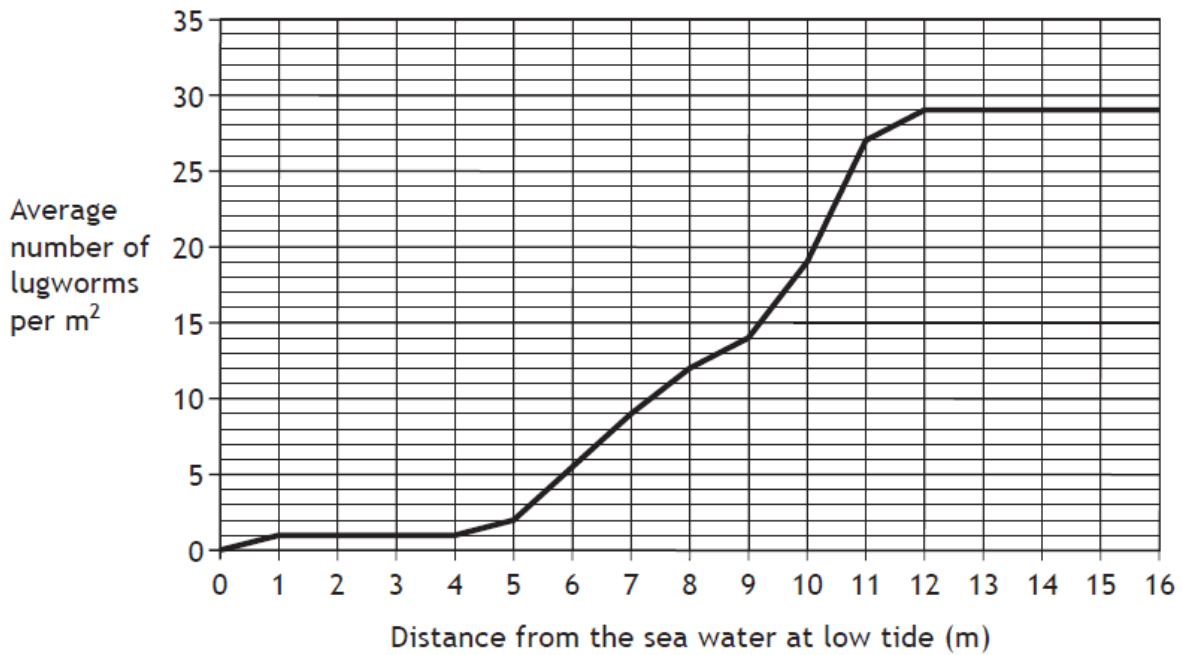
- (ii) Using the information given, explain why the competition between these periwinkles is described as interspecific.

1

21.

(a) Lugworms live on the seashore in dark moist burrows under the sand.

The graph below shows the average number of lugworms at different distances from the seawater at low tide.



(i) Describe the relationship between the distance from the seawater at low tide and the average number of lugworms per m². 2

(ii) Calculate how many times greater the average number of lugworms at 11 metres is compared to 7 metres from the seawater at low tide. 1

Space for calculation

_____ times greater

(b) Dover sole and rex sole are different species of flatfish and are predators of lugworms. Curlews, which are a species of wading bird, also feed on lugworms.

(i) Complete the table below by placing a tick (✓) in the correct box to show the type of competition that would occur between the different predators.

1

<i>Predator</i>	<i>Type of Competition</i>	
	<i>Intraspecific</i>	<i>Interspecific</i>
rex sole and curlew		
curlew and curlew		
rex sole and dover sole		