

# Living World Review Questions

## Biome questions

1. Which statement correctly describes the difference between the boreal forest and the temperate forest?

	Boreal	Temperate
A	<ul style="list-style-type: none"> <li>- contains coniferous trees</li> <li>- has acidic, nutrient poor soil</li> <li>- cold winters and warm summers</li> </ul>	<ul style="list-style-type: none"> <li>- contains coniferous and deciduous trees</li> <li>- has a nutrient rich soil</li> <li>- average temperature is 8-10°C</li> </ul>
B	<ul style="list-style-type: none"> <li>- contains coniferous and deciduous trees</li> <li>- has acidic, nutrient poor soil</li> <li>- average temperature is 8-10°C</li> </ul>	<ul style="list-style-type: none"> <li>- contains coniferous trees</li> <li>- has a nutrient rich soil</li> <li>- cold winters and warm summers</li> </ul>
C	<ul style="list-style-type: none"> <li>- contains coniferous trees</li> <li>- has acidic, nutrient poor soil</li> <li>- cold all year long</li> </ul>	<ul style="list-style-type: none"> <li>- contains coniferous and deciduous trees</li> <li>- has a nutrient rich soil</li> <li>- average temperature is 8-10°C</li> </ul>
D	<ul style="list-style-type: none"> <li>- contains coniferous trees</li> <li>- has acidic, nutrient rich soil</li> <li>- average temperature is 8-10°C</li> </ul>	<ul style="list-style-type: none"> <li>- contains coniferous and deciduous trees</li> <li>- has nutrient poor soil</li> <li>- cold winters and warm summers</li> </ul>

Answer: A

2. Which biome is the area where marine and fresh water biomes mix?  
 A) Oceans                      B) River                      C) Coral reef                      D) Estuaries

Answer: D

3. Many cities and towns were once which type of biome?  
 A) Temperate forests                      B) Boreal forests                      C) Lakes                      D) Deserts

Answer: A

4. The picture below is an example of which type of wetland?  
 A) Marsh                      B) Swamp                      C) Peat bog                      D) Lake



Answer: B

5. Give the biome the following adaptations would be useful.

- a- The ability to resist current.
- b- The ability to survive in the absence of light.
- c- The ability to live in stagnant water.
- d- The ability to survive drought and fire.

**River**  
**Ocean**  
**Wetland**  
**Grasslands**

6. Valerie is packing her suitcase for her next trip. Her list of personal belongings to bring includes the following:

- lightweight pants long-sleeved lightweight blouses
- hiking boots (recommended because of scorpions)
- a large scarf to cover her head and mouth when it is windy
- warm pyjamas
- sunscreen
- sunglasses

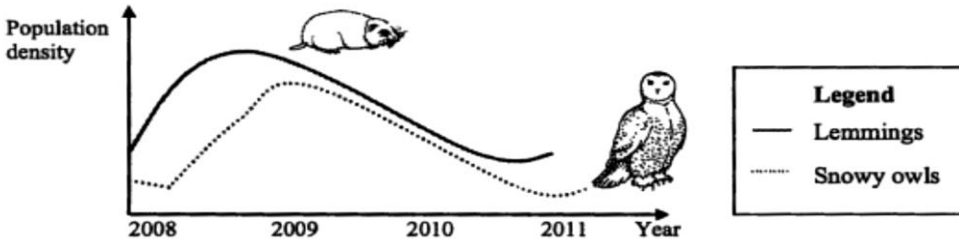
- a) In which biome is Valerie going to be travelling? **Desert**
- b) Explain why she needs warm pyjamas.

Answer: Because at night it becomes very cold since there are no clouds and all heat escapes when the sun goes down

### Population Questions

7. The snowy owl feeds mostly on lemmings. Its biological cycle is therefore closely linked to the size of the lemming population.

Graph I - Change in the Density of the Lemming and Snowy Owl Populations



Referring to the above graph, place the following four situations in the correct order to indicate what should happen starting in 2011 once the snowy owl population has reached its lowest point.

1. The density of the snowy owl population will be reduced.
  2. The density of the snowy owl population will rise.
  3. The density of the lemming population will be reduced.
  4. The density of the lemming population will rise.
- A) 2-3-1-4      B) 2-4-1-3      C) 4-1-3-2      D) 4-2-3-1

Answer: D

8. In the hare/lynx biological cycle, what causes the hare population to decrease?  
 A) A lack of food and water      C) An increase in the lynx population  
 B) A decrease in the lynx population      D) A lack of shelter

Answer: C

9. Based on the data below, describe the changes to the population size in a snow goose colony that has migrated north.

<b>Data</b> Initial number of geese: 150 Number of births: 70 Number of deaths: - attributed to predators: 5 - attributed to hunting: 3 - attributed to exhaustion from the migration: 2 Number of geese that immigrated: 3 Number of geese that emigrated: 0
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Answer : 207 (increase of 57)

10. There are three packs of wolves in a national park, for a total population of 41 wolves. This year, 13 wolf cubs were born, and four of the older wolves died. Due to conflict in the packs, three wolves were chased off the territory. In addition, six two-year-olds left to form their own pack in a new territory. Finally, two new wolves arrived in the park and have been trying to gain acceptance into one of the packs. How did the size of the wolf population in the park vary this year?

Answer : 43 (increase of 2)

11. Name the pattern of population distribution in each of the following examples.

- |   |                |
|---|----------------|
| a) schools of herring along the coast   | <b>Clumped</b> |
| b) razorbill colonies on Île aux Grues  | <b>Clumped</b> |
| c) roaming packs of wolves              | <b>Clumped</b> |
| d) snow geese flying in a "V" formation | <b>Uniform</b> |

12. Is each of the following a biotic or an abiotic factor?

- |                 |                |                |                |
|-----------------|----------------|----------------|----------------|
| a) Predation    | <b>biotic</b>  | d) Soil pH     | <b>Abiotic</b> |
| b) Temperature  | <b>Abiotic</b> | e) Disease     | <b>biotic</b>  |
| c) Air humidity | <b>Abiotic</b> | f) Competition | <b>biotic</b>  |

13. This year, the deer population has fallen considerably. First, the saplings that deer eat were ravaged by disease. Weakened by lack of food, the deer became easy prey for wolves. To make matters worse, heavy snowfall at the end of the year made finding food on the ground more difficult. Name the abiotic factor and the two biotic factors that led to a decline in the deer population.

Answer: Biotic: Disease, lack of food, predation      Abiotic: snow

## Communities questions

14. Humans exhale carbon dioxide and plants take in the carbon dioxide during photosynthesis.
- A) This represents a part of the carbon cycle and is an example of mutualism.
  - B) This represents a part of the carbon cycle and is an example of commensalism.
  - C) This represents a part of the nitrogen cycle and is an example of mutualism.
  - D) This represents a part of the nitrogen cycle and is an example of commensalism.

Answer: A

15. Identify the type of interaction between the living organisms in each of the following situations. (competition, predation, parasitism, mutualism and commensalism)

In winter, moose and deer look for the same food	<b>Competition</b>
A hummingbird builds its nest in a tree	<b>Commensalism</b>
A louse feeds on a dog's blood	<b>Parasitism</b>
People do volunteer work	<b>Mutualism</b>
A carnivorous plant feeds on small insects	<b>Predation</b>
Lynx and coyotes hunt groundhogs	<b>Competition</b>
Ticks attach themselves to cows	<b>Parasitism</b>
A spider spins a web to catch insects	<b>Predation</b>
An eagle hunts a hare	<b>Predation</b>

16. The table below lists the contents of two aquariums, A and B, both with a capacity of 50 L. Answer the following questions.

<b>Aquarium A</b>	<b>Aquarium B</b>
5 goldfish	8 goldfish
3 striped fish	2 striped fish
2 snails	0 snails
0 bottom feeder	2 bottom feeders
4 green algae	2 green algae
1 fern	2 ferns



- a) Find the relative abundance of each of the species in the two aquariums.

<b>Aquarium A</b>	<b>Aquarium B</b>
$5/15 = 33.3\%$	$8/16 = 50\%$
$3/15 = 20\%$	$2/16 = 12.5\%$
$2/15 = 13.3\%$	$0/16 = 0\%$
$0/15 = 0\%$	$2/16 = 12.5\%$
$4/15 = 26.6\%$	$2/16 = 12.5\%$
$1/15 = 6.7\%$	$2/16 = 12.5\%$

- b) Which aquarium has the greater biodiversity? Why

Answer: Aquarium A has a better biodiversity because it has a better distribution relative abundance.

17. Using the explanation for each picture, determine the type of interaction being displayed.

	Picture 1	Picture 2
		
Explanation	A human's hair with lice and nits (eggs). Lice are tiny wingless insects that live in human hair and feed on blood from the human scalp.	A bird eats insects from the crocodiles mouth and the crocodile does not eat the bird.

Answer: Picture 1= parasitism

picture 2= commensalism

### Ecosystems questions

18. Listed below are ecological disturbances that have occurred in Quebec over the last few years.

1	The floods in the Montérégie region in 2011
2	Gold mining operations in Malartic
3	Cod overfishing in the Atlantic
4	Intensive logging operations in the boreal forest
5	Hurricane Irene in 2011
6	The invasion of parasitic insects affecting spruce trees

Which of these disturbances were caused only by human beings?

A) 1, 3, and 6

B) 1, 4 and 5

C) 2, 3 and 4

D) 2, 5 and 6

Answer: C

19. The table below gives a list of disturbances. Some are natural, and others are the result of human activity. Table I -Different Possible Disturbances

Disturbances			
1.	Volcanic eruption	4.	Tree cutting
2.	Acid rain	5.	Forest fire
3.	Snowstorm		

Which of these disturbances result from human causes only?

A) 1, 2 and 3

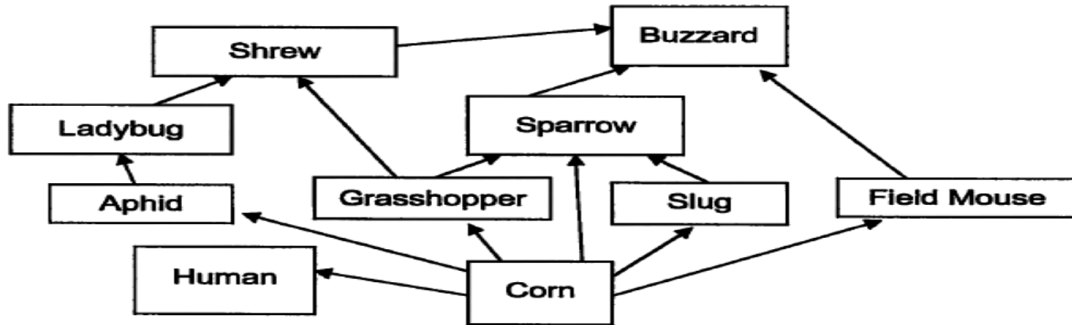
B) 1 and 3

C) 1, 3, 4 and 5

D) 2 and 4

Answer: D

Using the food web below, answer questions 20 and 21.



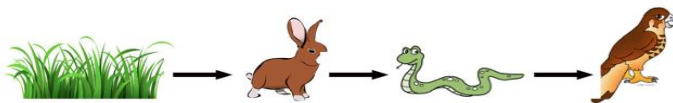
20. If a poison were to be spread affecting the mouse population, which answer will **not** likely occur in the ecosystem.
- A) Buzzards would attack more sparrows and shrews
  - B) The slug, ladybug and populations would consequently increase
  - C) The only corn consumers left would be the slugs and the grasshopper
  - D) The aphid population would decrease

Answer: C

21. Which would have the greater impact on the food web of the corn field: the extinction of ladybugs or the extinction of slugs?
- A) Ladybugs because the aphid population would rise dramatically and affect all the other consumers of corn.
  - B) Ladybugs because the shrew would run out of food and die.
  - C) Slugs because the sparrow would run out of food and die
  - D) Slugs because there will be too much corn being grown.

Answer: A

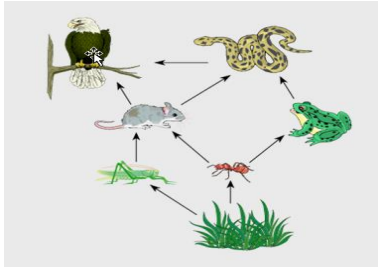
22. If a disease strikes the snake population in the food chain shown, what will happen to the populations of hawks?



- A) The population of hawks would decrease
- B) The population of hawks would increase
- C) The population of hawks would stay the same.
- D) The population of the hawks would increase and then decrease.

Answer: A

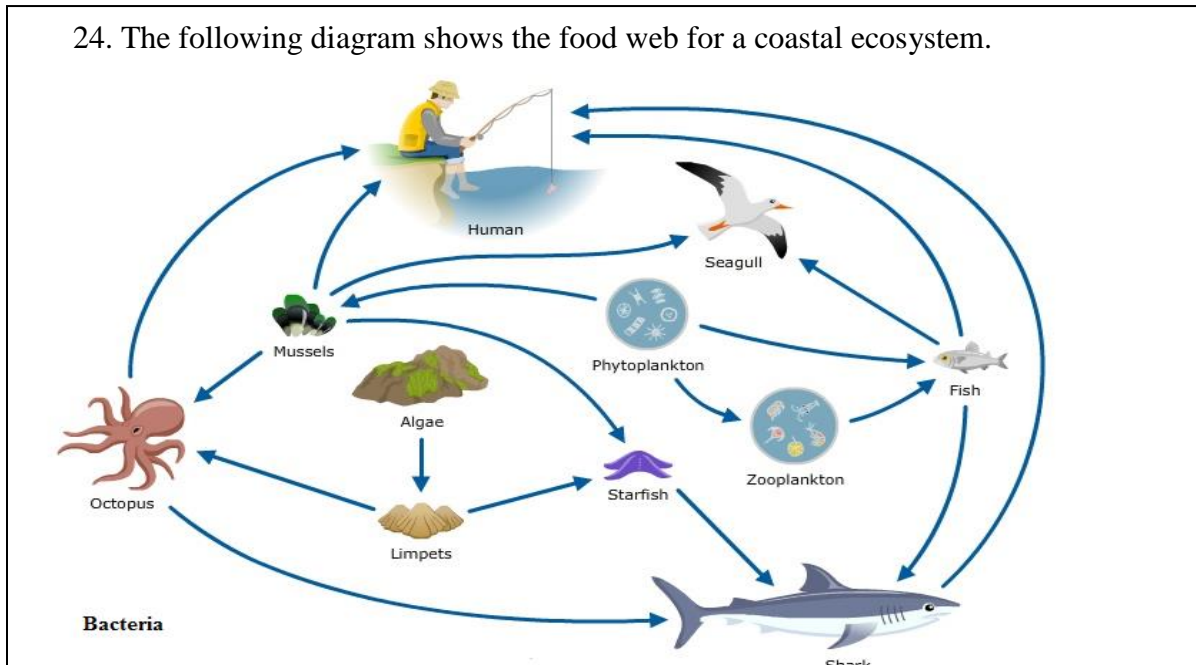
23. Trapping and hunting has greatly reduced the population of snakes. Looking at the picture below, what is the most likely effect of this change in the ecosystem?



- A) The population of frogs will increase
- B) The population of mice will decrease
- C) The population of ants will increase
- D) The population of frogs will decrease

Answer: A

24. The following diagram shows the food web for a coastal ecosystem.



Which choice has the organisms in the correct trophic level?

	<b>Producers</b>	<b>Consumers</b>	<b>Decomposers</b>
A	Algae and phytoplankton	Zooplankton, limpets, octopus, mussels, fish, shark, seagull, human and starfish	Bacteria
B	Algae and zooplankton	Limpets, octopus, mussels, fish, shark, seagull, human, phytoplankton and starfish	Bacteria
C	Algae	Zooplankton, limpets, octopus, mussels, fish, shark, seagull, human, phytoplankton and starfish	Bacteria
D	Algae and phytoplankton	Zooplankton, limpets, octopus, mussels, fish, shark, seagull, human and starfish	None

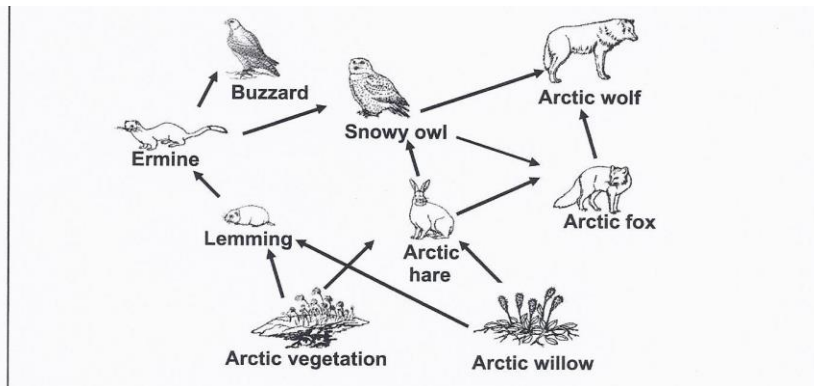
Answer: A

25. Multiple words can describe the role of an organism in an ecosystem. Which three terms correctly describe a **primary consumer**?

- A) Primary consumers are abiotic, carnivores and predators
- B) Primary consumers are biotic, carnivores and often are the prey of larger animals
- C) Primary consumers are abiotic, omnivores and consumers
- D) Primary consumers are biotic, herbivores and often are the prey of larger animals

Answer: D

26. Struck by a serious disease, the Arctic hare population is declining significantly.



Using the picture above, answer the following questions.

a) Make a food chain with a 4<sup>th</sup> order consumer.

Answer: Possibility 1: Willow → lemming → ermine → owl → wolf

Possibility 2: Willow → hare → owl → fox → wolf

b) If the arctic hare population decreases, what will happen to the producer populations? (Increase, decrease or no effect)

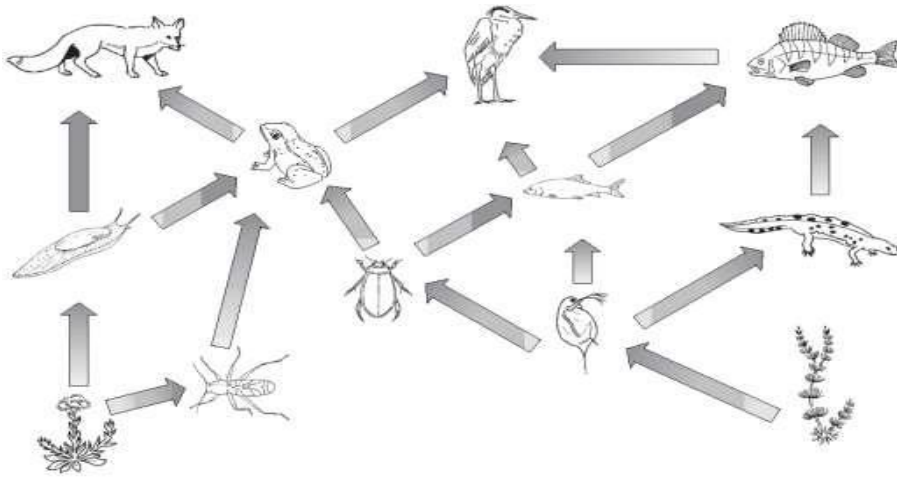
Answer: Increase because less predator

c) Explain how the snowy owls will change their diet as a result of the decrease in the Arctic hare population and explain the direct consequence of this change.

Answer: They will eat only ermines



27. On the diagram below, make a food chain pathway that goes until the 5<sup>th</sup> order consumer.



Answer: Plant → aphid → beetle → small fish → bigger fish → heron