OPEN SCHOOL BC

Biology 11
Introduction Assignment

This assignment is an opportunity for you to demonstrate your ability to conduct a close reading of a text, and to respond to the text effectively.

Student Name _____

Student No. _____ **Date** _____

Address _____ **Postal Code** _____

_____

Based on the instructions provided by your school, complete the following *Biology 11* assignment independently and return it to your teacher.

There are two parts to this assignment:

Part A: Crossword Puzzle	10 marks
Part B: Written Response	20 marks

Contents:
12 pages

Assignment time:
1 hour

Before you start, read these important tips.

1. Read each question carefully before answering.
2. Answer all questions to the best of your ability.
3. Take your time. Check your work before handing in the assignment.
4. Write neatly and check your spelling.

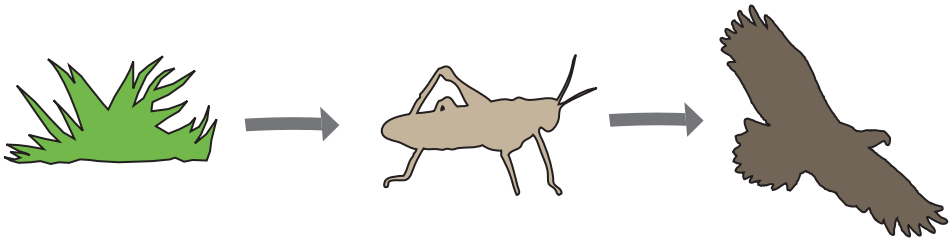
Ecology

Ecology is one branch of biology that you have studied in other courses and that you will study further in this course. Ecology is the study of the interactions of organisms with other organisms and with their environment. In other words, ecology has to do with the interrelatedness of all living things, and with how the living and non-living parts of an environment fit together and how one affects the other.

Ecologists often study individual *ecosystems*. An ecosystem is a community of organisms, the habitat they live in, and how they interact with one another. Ecosystems can cover large areas, such as the brush grasslands of the central Okanagan Valley or the coastal Douglas fir ecosystems on Vancouver Island. Ecosystems can also be small, such as a single tidepool or a rotting log. Ecosystems are made up of *biotic* and *abiotic* components. The biotic components are all the living, or once living, things in the ecosystem, for example trees, birds, bugs, etc. The abiotic components are all the non-living things for example rocks, soil, and even weather and climate.

The abiotic and biotic components of an ecosystem are closely tied. Changing even a single factor in an ecosystem can influence many components of that ecosystem. This is why when we define an ecosystem we must look at not only the individual components of that ecosystem, but all of the interactions between those components. An ecosystem is more than just a list of plants, animals and weather conditions—it is a system of interconnections between those components.

There are many relationships within a given ecosystem. Perhaps the most obvious type of relationship is a feeding relationship. We can use food chains and food webs to represent the feeding relationships in an ecosystem. A *food chain* is a step-by-step sequence that links organisms that feed on each other (see the graphic below). Food chains simply describe what eats what. They do not describe all of the feeding relationships in an ecosystem, or all of the paths of energy flow. They are useful for looking at simple relationships between specific members of an ecosystem. In reality, organisms feed on a variety of items that form a linking network. This network is called a *food web*. Food webs more clearly demonstrate the inter-relationships between members of an ecosystem. The more organisms that are included, the more complex the food web becomes.



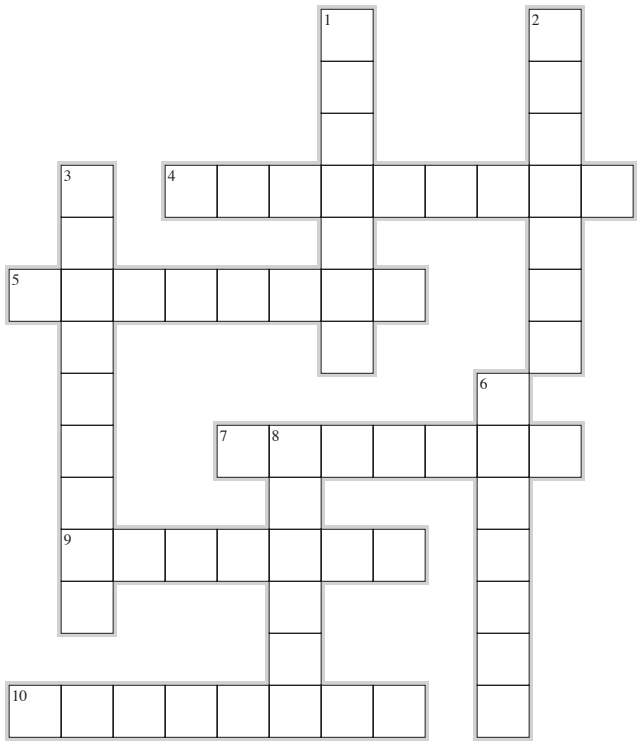
You should notice that the arrows in a food chain or web show the direction of energy flow: from the organism being eaten to the consumer. In other words, you could replace the arrow with the words “is eaten by.”

Feeding relationships are only a small portion of the many types of relationships that exist in ecosystems. The components of ecosystems interact with each other in many complex ways. Organisms in an ecosystem compete for food, water and space. Some organisms work together to achieve common goals. Climatic variations, natural disasters, and human activities all affect the organisms in an ecosystem. Ecology is the study of all of these interactions and more.

MARKS

Part A: Crossword Puzzle

Use the clues below to complete the crossword puzzle. (**10 marks**)



Across

4. A step-by-step sequence that links organisms that feed on each other.
5. An organism that gets its energy by eating other organisms.
7. The non-living components in an ecosystem.
9. The branch of biology that deals with the study of the interactions between organisms and between organisms and their environment.
10. An organism that generates energy from inorganic sources.

Down

1. A pictorial representation of the complex feeding relationships between organisms in an ecosystem.
2. The area or natural environment where an organism lives.
3. The living and non-living components of a biological community and their interrelationships.
6. The branch of science that deals with the study of life.
8. The living, or once-living, components of an ecosystem.

MARKS

Part B: Written Response

1. Classify the following items as either biotic or abiotic, and briefly explain your choices. (**6 marks**)

   a. A spider

   b. A rainstorm

   c. A sirloin steak

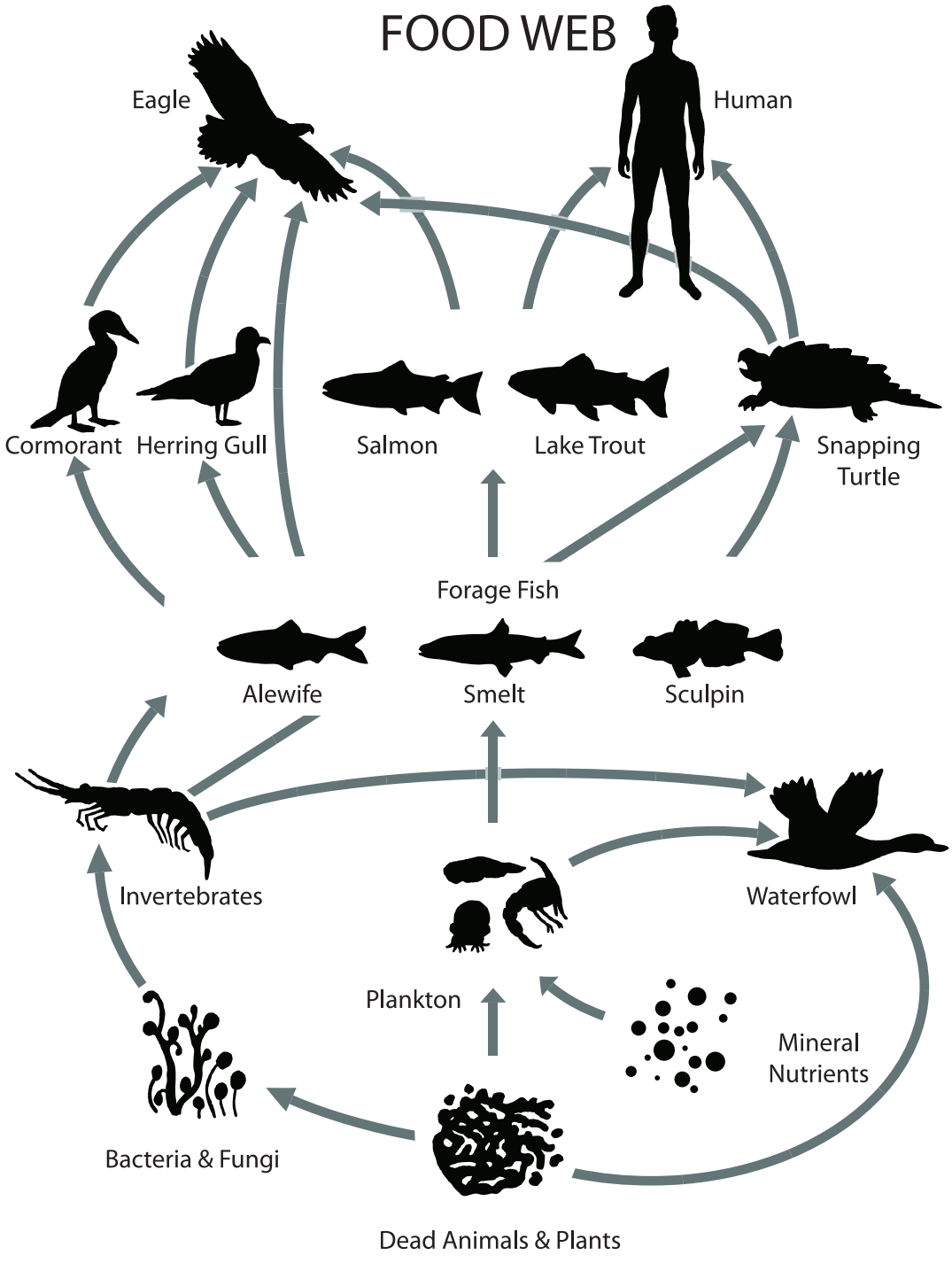
   d. A decaying tree

   e. Sand

   f. Aluminum

MARKS

Use the food web below for question #2.



MARKS

2. a. From the food web, draw a food chain that includes four of the organisms from the food web. (**3 marks**)

b. Look closely at the food web. Describe what might happen if there was a sudden decrease in the population of salmon. (**3 marks**)

MARKS

c. Look closely at the food web. Describe what might happen if there was a sudden increase in the waterfowl population. (**3 marks)**

3. The word "ecology" comes from the greek words *oikos* and *logia*. *Oikos* means household or place to live. *Logia* means the study of. Describe how these root words are related to your understanding of ecology. (**2 marks)**

MARKS

4. A famous Native American proverb says:

   "We do not inherit the Earth from our ancestors, we borrow it from our children."

   Using what you know about ecosystems, ecology, sustainability and natural resources, write a short paragraph that describes what this quote means to you. (**3 marks**)

MARKS	
/10	Part A: Crossword Puzzle
/20	Part B: Written Response
/30	**Total**