

Ecosystem Worksheet

1. Draw a diagram of a food chain, using arrows and the organisms in the box below. Specify the trophic level of each living organism in the chain.

plants, wolf, fungi, insects, rabbit, bacteria, fox

Food Chain: $\overset{p}{\text{Plant}} \rightarrow \overset{c}{\text{rabbit}} \rightarrow \overset{c}{\text{wolf}} \rightarrow \overset{d}{\text{bacteria}}$

$\overset{p}{\text{Plant}} \rightarrow \overset{c}{\text{rabbit}} \rightarrow \overset{c}{\text{wolf}} \rightarrow \overset{d}{\text{insects}}$

2. The forest in Québec is home to a surprising carnivore: the fisher. It is the principal predator of the porcupine, which feeds on shoots and various plants. Meanwhile, the fisher is sometimes the prey of the black bear, whose menu varies widely, from relatively large carnivores like the fisher to handfuls of wild berries. The forest floor beneath these animals contains many fungi and insects, which live off dead plants and trees.

- a) Create a food chain, using the information above.

$\text{Plant} \rightarrow \text{porcupine} \rightarrow \text{fisher} \rightarrow \text{bear} \rightarrow \text{fungi}$

- b) Name the different trophic levels of your food chain and give an example at each level.

plant = producer decomposer = fungi

consumer = porcupine, fisher, bear

- c) What are autotrophs and heterotrophs?

auto = producers hetero = consumers

3. The Earth contains many biomes, including the arctic tundra, the tropical forest, the desert, the boreal forest and grasslands.

- a) Which of these biomes has the greatest primary productivity? *rainforest*

- b) Which of the factors that affect primary productivity make this biome the most productive? *light, temp, nutrients & water*

4. Which of the following descriptions does not correspond to an ecosystem? Explain your answer. (It is a multiple choice)

- a) Bears, hares and beavers live in the Forêt rare du Lac-Duparquet, a forest in the Abitibi region. Fir and birch are the predominant tree species that benefit from the rich soil and the long hours of summer sunshine.

b) Felix owns a terrarium, home to his pet lizard. He has equipped the terrarium with a heat lamp, a water dispenser and a hollow branch to shelter the lizard, and he feeds his pet crickets.

c) On one of the continents lies a desert of rocks. Conditions there are extreme: daytime temperatures are very high, precipitation is low, and high winds buffet the area. *all abiotic*

d) Sparrows and thrushes frequently visit my small urban back yard. Squirrels come by, too; last summer they ate the sunflowers I had planted, while the birds feasted on the grapes from my vine. My garden thrives nonetheless because I water it frequently and the soil is fertile.

5. A researcher has determined that the temperate forest receives 2000 J of energy from solar radiation within a specific period of time. The forest is home to a large variety of plants and animals, forming a complex trophic network. Use this information to answer the following questions.

a) How do the living organisms at the various trophic levels obtain the energy they need? *Through photosynthesis or ingesting food*

b) What happens to the 2000 J of solar energy as it is passed along the food chain? Explain your answer.

10% goes to animal + 90% lost.

6. An ecosystem is composed of water, trees, beavers, ducks, aquatic plants and soil. Which of these elements are not calculated as part of the biomass?

Water + soil not organic

7. What is the difference between a community and an ecosystem?

*Community = different population sharing habitat
ecosystem = organic + inorganic*

8. What is the name of the feeding relationships between the living organisms of an ecosystem? *Trophic level - producer, consumer + decomposer*

9. A carnivore cannot be a primary consumer in a food chain. Explain your answer.

Carnivore eats meat ∴ must be second eater because eats herbivore.

10. Which trophic level do detritivores belong to?

detritivores are decomposers

11. What is transferred from one organism to another within each ecosystem?

energy.

12. All the living organisms in an ecosystem need organic matter to survive.
 a) Which organisms are responsible for producing new organic matter (biomass)?

producers

- b) Name four factors that can affect the production of new biomass.

light, water, temp & nutrients

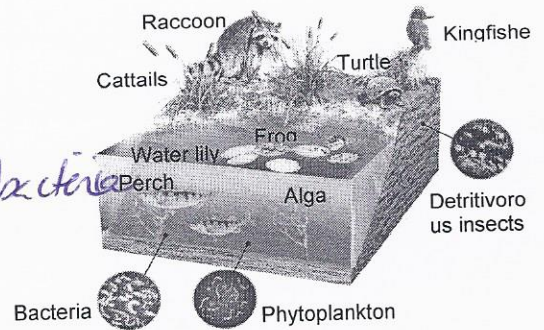
13. Give the trophic level of each organism below.

Wolves	<i>C</i>	Maple trees	<i>P</i>
Frogs	<i>C</i>	Bacteria	<i>D</i>
Insects	<i>D</i>	Coyotes	<i>C</i>
Earthworms	<i>D</i>	Algae	<i>P</i>

14. Look at the illustration opposite.

- a) Among the organisms in the illustration, name those that are:

producers (consumers (decomposers - insect bacteria)
 - phyto algae Raccoon Kingfisher
 - Water lily cattails Turtle frog perch



- b) Draw a possible food chain from the illustration.

algae → perch → raccoon → insect

15. Look at each picture and label each as an example of an individual, a population, a community or an ecosystem. Justify your choice.

