

Ecology Introduction

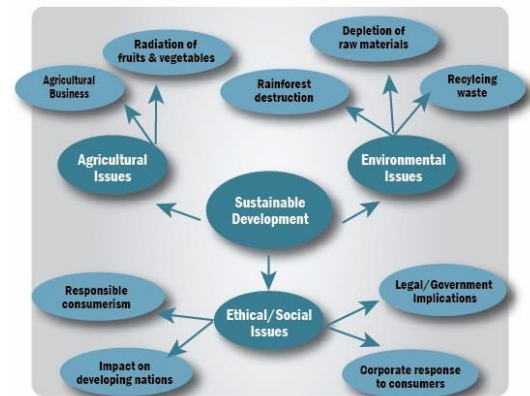
1. Using your textbook (sections 2.1, 2.2, 2.5) or the internet, define all of the following terms.

Biosphere, Atmosphere, Lithosphere, Hydrosphere,
Ecosystem, Biotic, Abiotic, Habitat, Niche,
Food web, Trophic level, Food chain, Autotroph/Producers, Heterotroph/Consumers,
Primary Consumer, Secondary Consumer, Decomposer, Biomass, Ecological pyramid,
Species, Individual, Population, Community, Biome.

2. Draw a concept map that links up all the terms in the space below.

A concept map is a way to visually display the concepts and relationships among ideas.

- First, write down the main idea(s) in the center.
- Next, think of some concepts/terms that directly relate to it and draw lines connecting them.



3. Use your knowledge to complete the worksheets “What is Ecology” and “Food Webs”

1. Use the following list of words to fill in the blanks below:

feed web	ecosystem	photosynthesis	scavengers	biosphere
niche	food chains	non-living environment	population	consumers
address	species	environment	habitat	Ecology
abiotic	community	biome	herbivores	carnivores
omnivores	nutrients	decomposers	prey	occupation
habitats	community	chlorophyll	interacting system	biotic
biomes	predators	breakdown		

INTRODUCTION

Everything around you is your environment. Part of your environment is living (or biotic) and part of it is non-living (or abiotic). Soil, air, water, wind and light are examples of abiotic factors. Ecology is the study of the relationships among organisms and between organisms and their environments. A population is a group of individuals of the same species, living together in the same area. All the populations in an area make up a community. Several communities then combine to make up a biome, which is a large area with a characteristic climate. The biosphere is the region on Earth in which life exists and consists of the thin layer from the lower atmosphere to the bottom of the oceans. The biosphere is made up of many biomes.

ECOSYSTEMS

An ecosystem is an interacting system that consists of a living community and a non-living environment. An ecosystem can be of any size, as an ecosystem is any community of living things interacting with its non-living environment. All parts of an ecosystem are an interacting system and therefore if one part is changed, all the other parts will be affected. The habitat of an organism is the place in which it lives and an ecosystem has many habitats. The niche of an organism is its total role in the community. The habitat can be thought of as the address of the organism and the niche can be thought of as its occupation.

FEEDING LEVELS

All ecosystems have feeding levels called producers, consumers, and decomposers. Some organisms such as plants, monerans, and protists contain chlorophyll and can therefore store some of the sun's energy in starch molecules by the process of photosynthesis. Thus, they produce their own food and are called producers. Animals that feed on other organisms are called consumers. Ones that feed mainly on plants are called herbivores, while those that feed on other animals are called carnivores. Organisms that are both herbivores and carnivores are called omnivores. Carnivores that feed on live animals

are called predators, and the animals that they catch are called prey.

Those that feed on dead organisms are known as Scavengers. The feeding level known as decomposers consists mainly of small organisms such as bacteria and fungi.

Decomposers breakdown or feed on organic matter (dead organisms and wastes) and return valuable nutrients to the ecosystem, so that they can be used again by the producers.

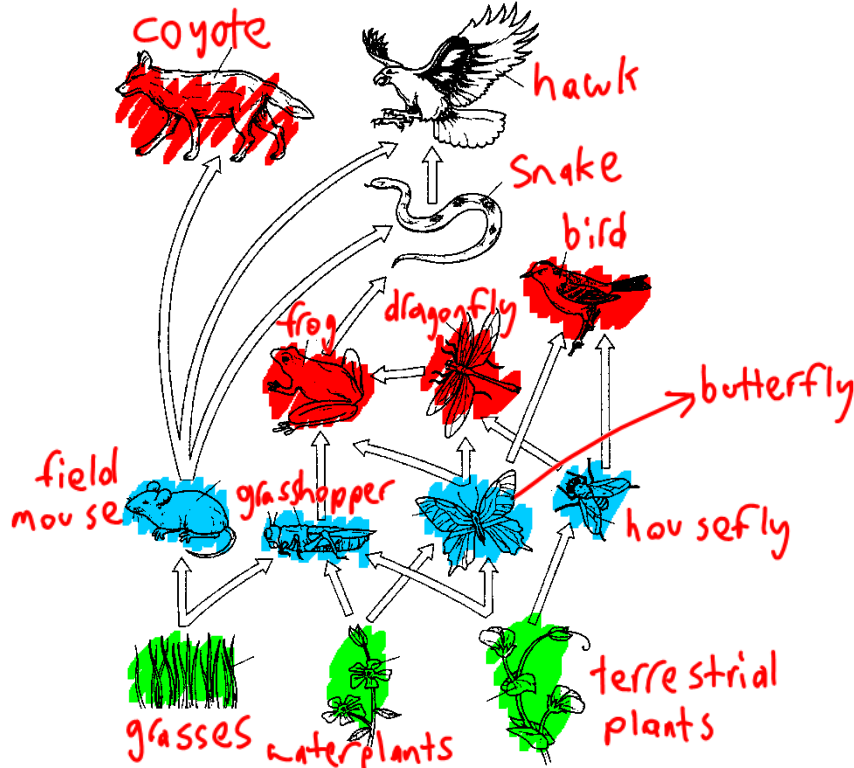
Organisms in an ecosystem may be linked in feeding relationships called food chains. Food chains can then be connected together to form a food webs.

2. Complete the following table as follows:

- Describe the role **each** of the following specimens plays in ecosystems. (In other words, what purpose does it serve in its ecosystem?)
- Identify each of the specimens as being either **biotic (B)** or **abiotic (A)**.
- Identify the biotic specimens as being either a producer or consumer.
- Classify the consumers as being an herbivore (H), carnivore (C), omnivore (O), scavenger (S), parasite (P) or decomposer (D).

Specimen	Role of the Specimen in an Ecosystem	Biotic (B) or Abiotic (A)?	If biotic, is it a Producer (P) or Consumer (C)?	If a consumer, what type is it?
Pollen		B	N/A	N/A
Rock		A	—	—
Fungi (Mushroom)		B	C	decomposer
Snake		B	C	carnivore
Oak Tree		B	P	—
Oak Table		A	—	—
Seashell (off a snail)		A	—	—
Seashell (on a snail)		A	—	—
Plastic Bag		A	—	—
Moth		B	C	parasite
Cow		B	C	herbivore
Bacteria		B	C	decomposer
Cheetah		B	C	carnivore

Use the food web below to complete the following questions.



1. Label each organism in the food web. Use the names listed below:

- ~~grasses~~
- ~~bird~~
- ~~hawk~~
- ~~field mouse~~
- ~~snake~~
- ~~water plants~~
- ~~grasshopper~~
- ~~dragonfly~~
- ~~frog~~
- ~~coyote~~
- ~~butterfly~~
- ~~terrestrial plants~~
- ~~housefly~~
- ~~snake~~

2. What is a producer or autotroph?

produces its own food using the sun's energy

3. Name the organisms in the food web that are producers, and colour them GREEN.

grasses, water plants, terrestrial plants

4. What is a consumer or heterotroph?

eats/consumes other organisms to obtain food for energy

5. Name the organisms in the food web that are PRIMARY consumers, and colour them BLUE.

field mouse, grasshopper, butterfly, housefly

6. Name the organisms in the food web that are SECONDARY consumers, and colour them RED.

frog, dragonfly, bird, coyote

7. What does the "arrow" mean in a food web?

points from the organism being eaten to the organism that eats it

8. Which organisms "provide energy for" the dragonfly?

butterfly and housefly

9. Which organisms "provide energy for" the hawk?

field mouse and snake

10. Explain what might happen to this food web if the frog population died from disease? Be specific about the what and the why.

↓ in snake and hawk population (less food)

↑ in grasshopper, butterfly, and dragonfly population (less predators)