

# Ecology Study Guide

## Ecosystems and Energy Flow

Use the word bank to complete each statement below.

abiotic factors      biotic factors      primary succession      secondary succession  
succession      pioneer species      ecology      ecosystem      biodiversity  
habitat      community      biome      biosphere



1. A regular progression of species replacement is known as succession.
2. Nonliving factors, such as weather, that can affect ecosystems is known as abiotic factors.
3. The study of living things and their interaction with each other and the environment is known as ecology.
4. Plants or mosses that first grow in a newly formed ecosystem are called pioneer species.
5. The variety and genetic differences of living things found within an ecosystem represents the ecosystem's biodiversity.
6. A(n) ecosystem consists of a community and all of the physical aspects of the habitat.
7. The biosphere is the portion of the planet that can sustain life.
8. All the different species that live together in an ecosystem are known as the community.
9. Succession that occurs in places where there has previously been growth is called secondary succession.
10. Living factors that are part of the ecosystem are called biotic factors.
11. Succession that occurs where no soil has existed (no previous growth) is known as primary succession.
12. A biome is part of the biosphere that has a specific climate and community.



13. Give one example of PRIMARY succession:

Receding glacier

14. Give one example of SECONDARY succession:

Forest fire

15. Why are producers an essential component of an ecosystem? Producers make all of the energy that is required for the growth and success of an ecosystem and the planet.


16. Why are decomposers an essential component of an ecosystem? Decomposers break down any dead organisms into reusable components as matter is neither created nor destroyed, but transformed into new life.

17. In a marine food web, the total biomass of algae far outweighs the total biomass of all the killer whales. Why? There must be a high number of algae at the bottom of the food chain to support high order carnivores such as killer whales, because only 10% of the energy is passed on through each trophic level.

Term	Description
<b>D</b> 18. Primary productivity	a. An assigned level in a food chain or other diagram based on how an organism obtains food.
<b>I</b> 19. Producers	b. An interconnected web of food chains.
<b>F</b> 20. Consumers	c. An animal that eats plants (or another producer).
<b>C</b> 21. Herbivores	d. The rate at which producers make energy.
<b>J</b> 22. Carnivores	e. The dry weight of organic matter.
<b>K</b> 23. Omnivores	f. Organisms that obtain energy by eating plants or animals.
<b>G</b> 24. Detrivore	g. An organism that obtains energy from wastes and dead bodies.
<b>H</b> 25. Decomposer	h. Organisms that cause decay, such as bacteria and fungi.
<b>L</b> 26. Food chain	i. Organisms in an ecosystem that are able to capture energy.
<b>A</b> 27. Trophic level	j. An organism that eats other animals.
<b>B</b> 28. Food Web	k. An organism that is both herbivore and carnivore.
<b>M</b> 29. Energy pyramid	l. Path of energy flow through the trophic levels.
<b>E</b> 30. Biomass	m. A diagram in which each trophic level is represented by a block of space proportional to the amount of energy stored within that trophic level.

31. Produce a FOOD CHAIN using 4 organisms of your choice:

Answers vary. Example: algae → krill → cod → seal



32. Determine which organisms in your food chain are the following: producer, primary consumer, secondary consumer, etc. Write this terms under each organism above.

33. Assign each organism in your food chain above to each of the trophic levels below:

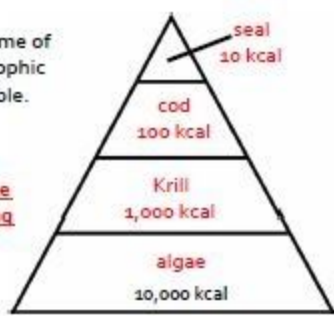
First trophic level algae	Second trophic level krill	Third trophic level cod	Fourth trophic level seal
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34. Describe the 10% law

**Most of the energy in ecosystems is released as heat or used for life. Only 10% of it is passed on from one trophic level to the next.**

35. In the energy pyramid at right, write the name of the organisms from your food chain in each trophic level as well as the number of calories available.

36. In order to make your food chain a food web, what would you need to add to it? **More organisms to include additional overlapping food chains.**



58. Define symbiosis: A close, long-term relationship shared among species.

For each scenario below, determine if it is predation, parasitism, mutualism, or commensalism. The term may be used more than once.

Type of symbiosis	Description
59. <u>mutualism</u>	For centuries, dogs and humans have lived together. Dogs provide protection and companionship, and humans provide food and shelter.
60. <u>parasitism</u>	Tapeworms live inside the gut of other organisms. Though tapeworms do not cause pain, they eat the food that their host ingests and may deprive them of nutrients.
61. <u>commensalism</u>	Squirrels live in oak trees and eat their seeds (acorns). The tree is not negatively or positively affected by this.
62. <u>predation</u>	Leopard seals consume adelic penguins for nutrients, killing them in the process.
63. <u>mutualism</u>	Monarch butterflies consume nectar from the milkweed plant and lay their eggs on its leaves. As they collect nectar from plant to plant, they help pollinate the milkweed.

64. What is coevolution?

Back and forth evolutionary adjustments between species.

Provide an example:

Examples vary. May include bees and flowers; examples of toxicity and resistance, etc.

65. What is a niche? The role that an organism plays in its ecosystem and how it affects the ecosystem.

