

Grade 7 Science

Unit 1: Interactions Within Ecosystems

At the end of this unit, students will be expected to:

1. Identify questions related to a local ecosystem such as “What types of species live in a particular ecosystem?”
2. Describe an **ecosystem** as a group of interacting living and non-living things.
3. Identify examples of ecosystem within Newfoundland and Labrador. Include:
 - Ocean and Coastlines
 - Forest
 - Freshwater
 - Arctic
4. List examples of organisms that live in each ecosystem.
5. Demonstrate the importance of choosing words that are scientifically appropriate.
6. Define and use terms in context. Include:
 - **Ecosystem**
 - **Abiotic**
 - **Biotic**
 - **Species**
 - **Organism**
 - **Population**
 - **Community**
 - **Habitat**
 - **Niche**
7. Investigate the biotic and abiotic factors of a local ecosystem.
8. Define range of tolerance.
9. Describe the following abiotic factors of local ecosystems.
 - Intensity of sunlight
 - Air, soil and water temperature
 - Wind direction and speed
10. Use a key to identify the biotic factors observed in the local ecosystem.
11. Identify the biotic factors of a local ecosystem.
12. Describe interactions between biotic and abiotic factors in an ecosystem. Include:
 - Biotic-abiotic
 - Abiotic-abiotic
 - Biotic-biotic
13. Investigate an interaction between a biotic and an abiotic factor in an ecosystem.
14. Design and carry out an experiment controlling major variables.
15. Organize, compile and display data using tables.
16. Defend a given position on an issue or problem based on their findings.
17. Describe symbiotic relationships as a form of biotic-biotic interactions.

18. Define **symbiosis**.
19. Define and give examples of **parasitism**, **mutualism** and **commensalism**.
20. Identify the niche of **producers**, **consumers**, and **decomposers** in a local ecosystem.
21. Define and use in context the terms producer, consumer and decomposer.
22. Given a diverse group of organisms, classify them as producers, consumers, or decomposers.
23. Describe how energy is supplied to, and how it flows through, a food chain.
24. Recognize that producers use light energy, carbon dioxide, and water (**photosynthesis**) to produce energy for the ecosystem.
25. Define **food chain**.
26. Construct simple food chains using local examples.
27. Define **herbivores**, **carnivores** and **omnivores** in terms of different types of consumers.
28. Classify the organisms within food chains as producers, herbivores, carnivores and omnivores.
29. Apply the concept of a food web as a tool for interpreting the structure and interactions of an ecosystem.
30. Define **food web**.
31. Interpret food webs using organisms from local ecosystems.
32. Describe, using an **ecological pyramid**, how energy flows through a food web.
33. Interpret an **energy pyramid**.
34. List the limitations of food chains, food webs and energy pyramids. Include:
 - They do not always indicate the exact amount of food energy required, but are simple generalizations.
 - That energy is transformed into other types of energy (heat) and is not always transferred to the next level in the pyramid.
 - Approximately 90% of the energy is lost at each step.
 - Food chains/ webs do not represent all interactions in the ecosystem.
 - Energy pyramids are best for simple food chains.
35. Describe how matter is recycled in an ecosystem through interactions among plants, animals, fungi and microorganisms.
36. Illustrate and explain the **nutrient cycle**.
37. Identify changes that have occurred in a local ecosystem over time.
38. Define **succession**.
39. Predict what an ecosystem will look like in the future based on the characteristics of the area.
40. Define **pioneer species**.
41. Define **climax community**.
42. Distinguish between **primary** and **secondary succession**.
43. Construct a flow chart of images to illustrate the changes occurring during primary and secondary succession. Include:
 - Bare rock to forest (primary)
 - Forest re-growth after fire (secondary)

44. Describe the ecosystem changes that occur in the examples above. Include:
- Soil composition
 - Plant types
 - Animals types
 - Amount of light
45. Describe how our need for a continuous supply of wood resulted in the development of a silviculture practice.
46. Make informed decisions about forest harvesting techniques taking into account the environmental advantages and disadvantages.
47. Provide examples of how our understanding of boreal forest ecology has influenced our harvesting practices identifying the positive effects of these practices.
48. Identify various science and technology based careers related to forest management and harvesting.
49. Propose and defend a course of action to protect the local habitat of a particular organism.
50. Recognize how humans have influenced the environment. Include:
- Habitat loss/ destruction
 - Harvesting resources
 - Pollution
 - Introduced species
51. Debate the pros and cons of habitat conservation.

PROS	CONS
Sustainability of resource	Artificial habitats
Preservation of biodiversity	Economic loss (job loss, etc.)
Eco-tourism	Limited human use

52. Identify individuals or groups in Canada interested in protecting the environment. Include:
- Local groups and individuals
 - National groups and individuals
 - International groups and individuals