

REVIEW ... Key Concepts

Unit 1 – Interactions and Ecosystems

1.0 Relationships in an Ecosystem

- ❖ Ecosystems are where **biotic** and **abiotic** factors interact
- ❖ Symbiotic relationships include: **Commensalism** (One benefit – other no effect), **Mutualism** (Both benefit), **Parasitism** (One benefits – one harmed)
- ❖ Basic Needs include: Water, Energy, Food, Exchange of gases, Space (Habitat), Waste disposal
- ❖ Responsible Environmental Decision-making is made with scientific information and considers the impact such decisions have on the environment

2.0 Energy Flow

- ❖ **Food Webs** allow energy (supplied by the Sun) to flow
- ❖ Matter continuously moves from non-living to living and back to non-living in two cycles: **Water cycle** and **Carbon Cycle**
- ❖ Changes in a food web affect all living things in that ecosystem

3.0 Environmental Monitoring

- ❖ Ecosystems provide all needs for living things
- ❖ Ecosystems change because of: Human activity, Bio-Invasion, Resource competition, Predation, Weather

4.0 Sustainability in an Ecosystem

- ❖ Pesticides can be deadly, as they enter and move through an ecosystem
- ❖ Human actions can impact the local and global communities
- ❖ Scientific information can help in decision-making, but cannot explain everything
- ❖ Local environmental problems require input from many sources before a final informed decision can be made

1.0 Relationships in an Ecosystem

❖ Ecosystems are where **biotic** and **abiotic** factors interact

Describe the difference between biotic and abiotic parts of an ecosystem

Illustrate your schoolyard and identify biotic and abiotic parts of that ecosystem. Indicate the various relationships between the biotic and abiotic parts in your schoolyard (with different colored lines) and a brief description of the relationship.

Explain what each of the following is and give three examples to show you understand the difference.

species _____

Examples: _____

population _____

Examples: _____

community _____

Examples: _____

❖ **Basic Needs:**

What are the basic needs of living organisms in order for survival?

What are some things that you could do without and still have all of your basic needs met?

❖ **Symbiotic** relationships

What is **symbiosis**?

❖ **Commensalism** (One benefit – other no effect),

Describe two examples of **commensalism**

❖ **Mutualism** (Both benefit),

Describe two examples of **mutualism**

❖ **Parasitism** (One benefits – one harmed)

Describe two examples of **parasitism**

There are two different types of adaptations: **behavioral and structural**. Describe each with examples and explain how each type of adaptation enables an organism to survive.

Behavioral Adaptations

1. _____

2. _____

Structural Adaptations

1. _____

2. _____

❖ Responsible Environmental Decision-making is made with scientific information and considers the impact such decisions have on the environment

Explain why the beaver population in Yoho National Park was declining.

What is the difference between a 'dump' or landfill – and a **sanitary landfill**?

List the 5 basic garbage 'solutions' we have been involved in to clean up our act.

Describe some unintended consequences for discarding the plastic 6-pack pop/beer can holders in your household garbage.

2.0 Energy Flow

❖ Ecosystem Interactions

Describe each of the following **consumers** compared to each other.

Carnivores _____

Herbivores _____

Omnivores _____

Producers can make their own food and supply the matter and energy they need for survival. Illustrate the food-making process of **photosynthesis** carried out by producers.

Illustrate a word equation for the process of **photosynthesis**.

What are the two reasons that photosynthesis is important?

Illustrate a word equation for the process of **cellular respiration**.

What are the two reasons that photosynthesis is important?

Describe the interaction/relationship between **photosynthesis** and **cellular respiration**.

Describe the difference between **scavengers** and **decomposers**.

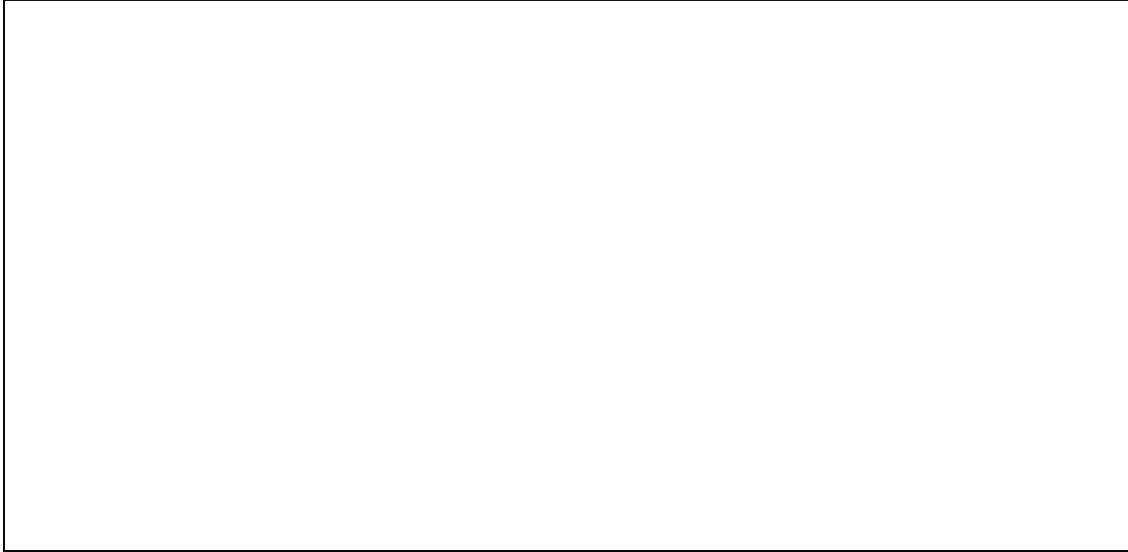
Complete the chart below identifying whether the organism is helpful or harmful and why.

| Scavengers | | Decomposers | | | |
|---------------------------|-----------|-------------|---------------|-----------|---------|
| Crows | Helpful | Harmful | Baker's yeast | Helpful | Harmful |
| | | | | | |
| | Why _____ | | | Why _____ | |
| | _____ | | | _____ | |
| Magpies | Helpful | Harmful | Mushroom | Helpful | Harmful |
| | | | | | |
| | Why _____ | | | Why _____ | |
| | _____ | | | _____ | |
| Housefly larvae (maggots) | Helpful | Harmful | Ecoli | Helpful | Harmful |
| | | | | | |
| | Why _____ | | | Why _____ | |
| | _____ | | | _____ | |
| Wolverines | Helpful | Harmful | Ecoli 0157:H7 | Helpful | Harmful |
| | | | | | |
| | Why _____ | | | Why _____ | |
| | _____ | | | _____ | |

❖ **Food Chains** allow energy (supplied by the Sun) to flow

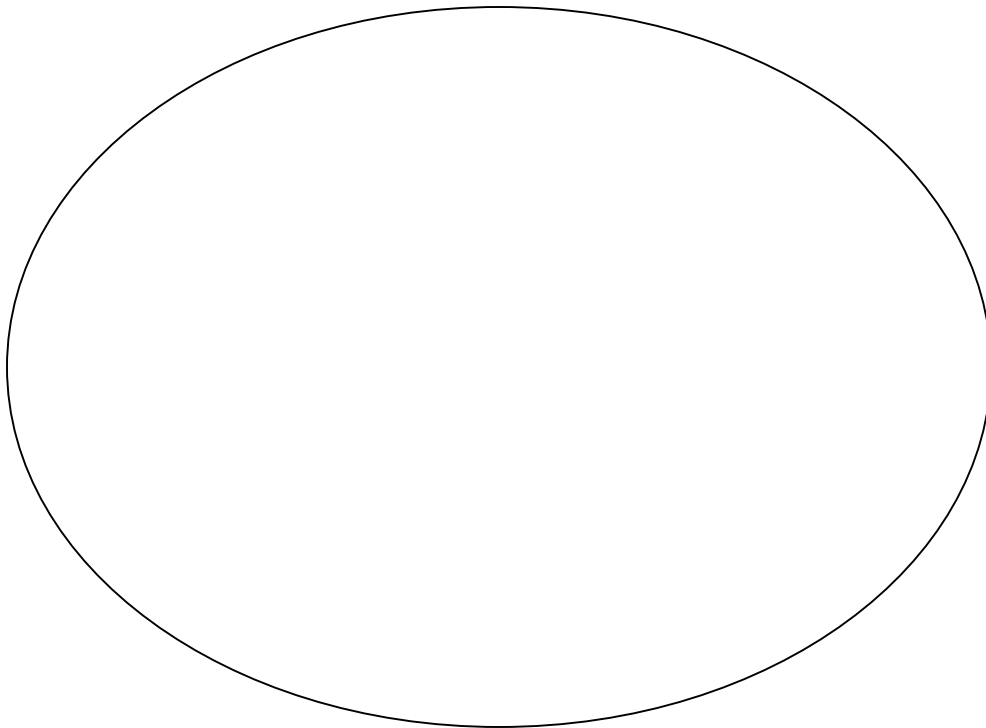
Illustrate an example of a food chain (include arrows showing the flow of energy). Identify the type of organism you are illustrating (eg. producer, primary consumer, secondary consumer, decomposer, etc.)

Illustrate the **flow of energy** from producer to primary consumer, to secondary consumer, to tertiary consumer, to scavenger, to decomposer.



❖ **Food Webs** allow energy (supplied by the Sun) to flow

Illustrate a **Meadow Food Web**

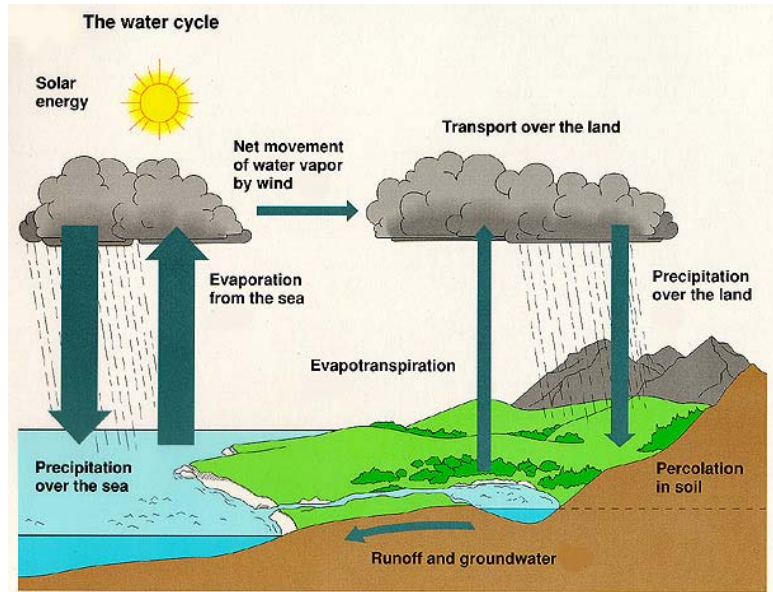


❖ Changes in a food web affect all living things in that ecosystem

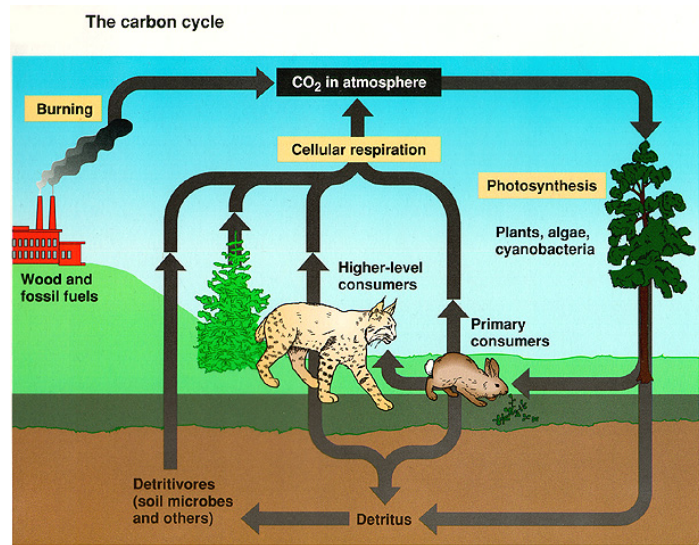
What would happen if the meadow mice were poisoned and became extirpated?

- ❖ Matter continuously moves from non-living to living and back to non-living in two cycles: **Water cycle** and **Carbon Cycle**

What are the three main processes responsible for the Water Cycle?



What activities or organisms add carbon to the Atmosphere?



What activities or organisms take carbon out of the atmosphere?

- ❖ What other substance are cycled in the environment?

3.0 Environmental Monitoring

- ❖ Ecosystems provide all needs for living things

How do scientists determine the distribution of organisms in an environment?

- ❖ Ecosystems change because of: human activity, Bio-Invasion, Resource competition, Predation, Weather

Explain the ecosystem changes identified and give an example of organisms that this affects.

Bioinvasion

Resource Competition

Predation

Weather

Describe the difference between **Primary Succession** and **Secondary Succession**

What is a **pioneer species** and describe the role they play in an environment (their *niche*)?

What is a **climax community**?

4.0 Sustainability in an Ecosystem

❖ Pesticides can be deadly, as they enter and move through an ecosystem

Explain the '*unintended consequences*' of the use of the pesticide DDT, in Borneo.

❖ Human actions can impact the local and global communities

Why is **DDT** a banned chemical in North America?

What are the differences between **threatened**, **endangered**, **extirpated**, and **extinct**?

Why are Pemberton potatoes special?

❖ Scientific information can help in decision-making, but cannot explain everything

What does **COSEWIC** stand for and what does it do?

Describe one of the successes of COSEWIC

❖ Local environmental problems require input from many sources before a final informed decision can be made

Why are there '**wildlife overpasses and underpasses**' in Banff national Park?

How effective are these wildlife structures (overpasses and underpasses)?

How do you determine your **ecological footprint**?

What are some ways you can reduce your ecological footprint?

What is meant by **sustainable lifestyle**?
