

## 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

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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?

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

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❖ **Symbiotic** relationships

What is **symbiosis**?

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

Describe two examples of **commensalism**

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❖ **Mutualism** (Both benefit),

Describe two examples of **mutualism**

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

Describe two examples of **parasitism**

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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.

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

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## 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?

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

What are the two reasons that photosynthesis is important?

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

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

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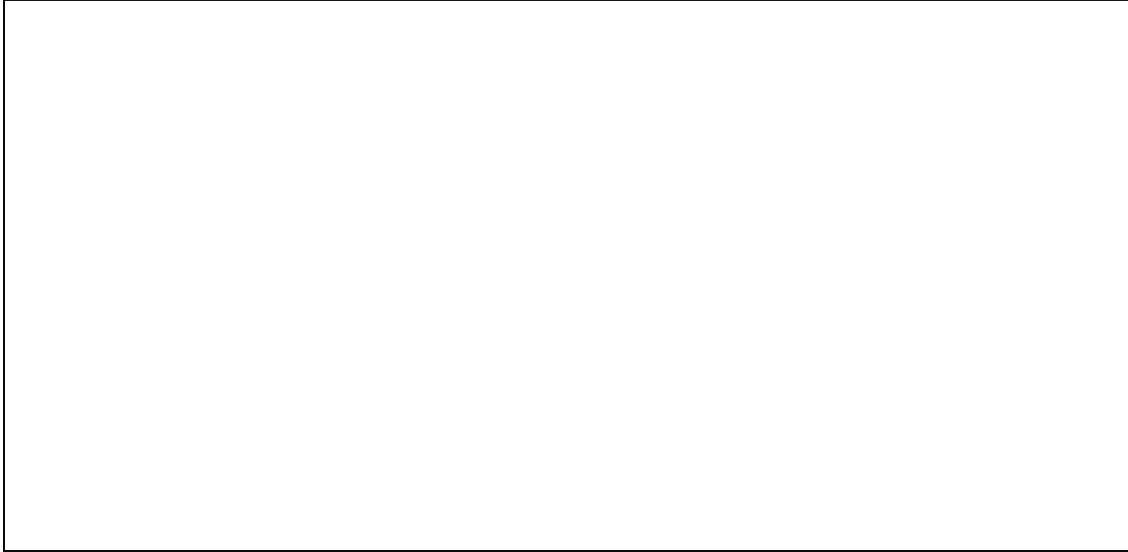
Complete the chart below identifying whether the organism is helpful or harmful and why.

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

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

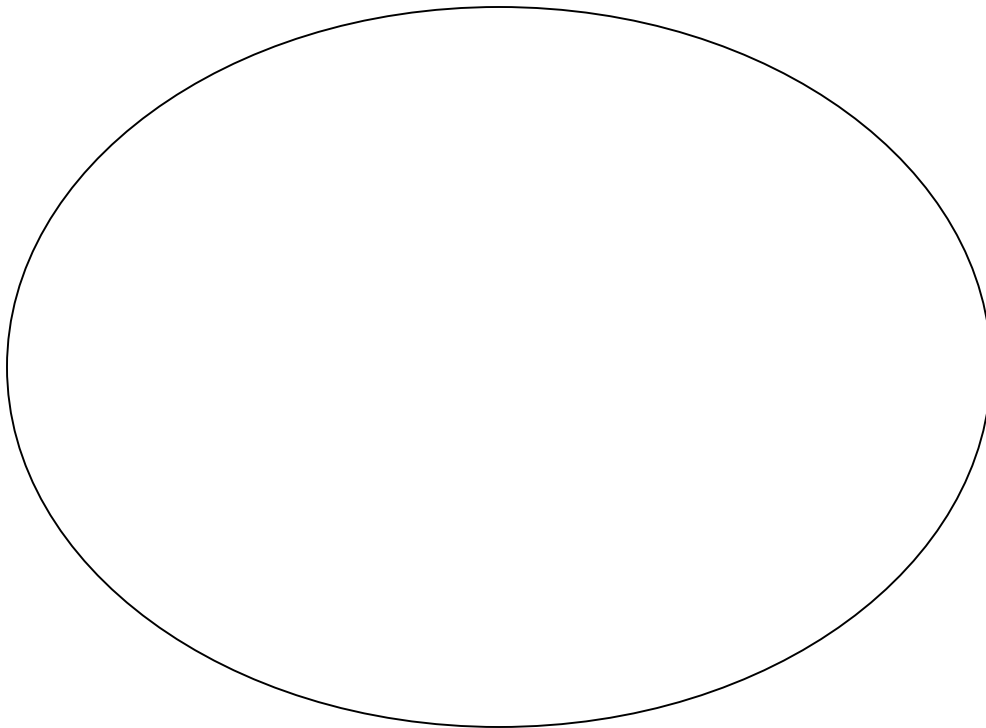
Illustrate an example of a food chain (include arrows showing the flow of energy). Identify the type of organism you are illustrating (eg. producer, primary consumer, secondary consumer, decomposer, etc.)

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?

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- ❖ 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?

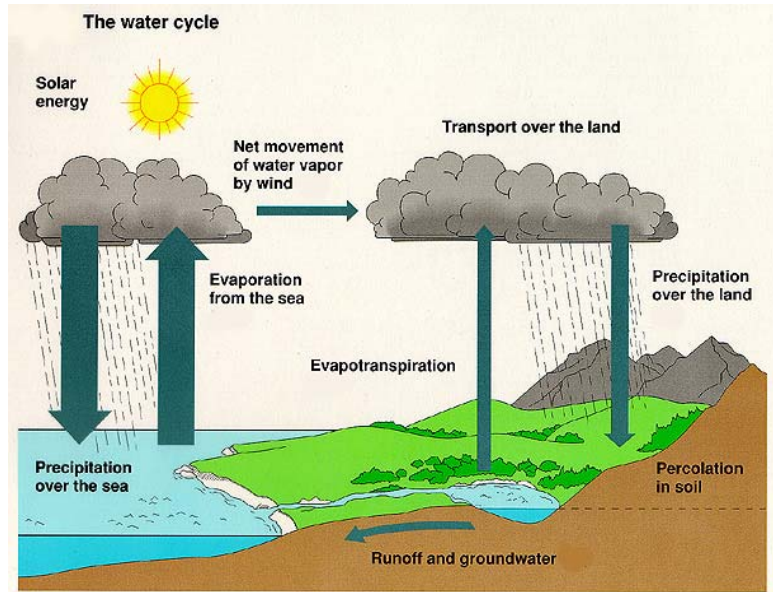
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What activities or organisms add carbon to the Atmosphere?

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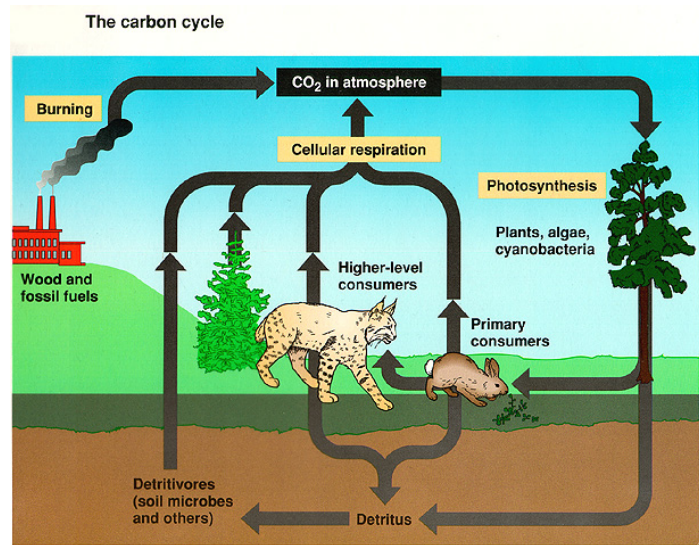
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What activities or organisms take carbon out of the atmosphere?

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- ❖ What other substance are cycled in the environment?

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### 3.0 Environmental Monitoring

- ❖ Ecosystems provide all needs for living things

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

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- ❖ 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**

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#### **Resource Competition**

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#### **Predation**

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#### **Weather**

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

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

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What is a **climax community**?

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#### **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.

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❖ Human actions can impact the local and global communities

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

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

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Why are Pemberton potatoes special?

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

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

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Describe one of the successes of COSEWIC

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❖ 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?

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

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

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What are some ways you can reduce your ecological footprint?

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What is meant by **sustainable lifestyle**?

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