

## BIOTIC / ABIOTIC

### Biotic and Abiotic Environmental Factors

**Biotic Environment:** the living parts of the environment (plants, animals and Micro-organisms).

**Abiotic Environment:** the non-living parts of the environment (land, soil, environmental conditions, water) that can affect survival of biotic components.

## LIVING or NON-LIVING

### Characteristics of Living Things

Living things are Made of Cells  
Living things need Energy (food)  
Living things need Water  
Living things need Oxygen  
Living things Grow and Develop  
Living things Reproduce  
Living things need Suitable Living Conditions (Shelter)  
Living things Respond and Adapt to their Environment

## SYMBIOSIS

Beneficial or harmful relationships between living organisms is called SYMBIOSIS.

**Mutualism:** A relationship in which both species benefit.

**Commensalism:** A relationship in which one species benefits, while the other species does not benefit and is not harmed.

**Parasitism:** A relationship in which one species benefits, while the other species is harmed.

## ADAPTATION

### Adaptations

**Behavioral Adaptations:** are actions taken by organisms to survive in their environment.

**Structural Adaptations:** are physiological characteristics that an organism has that enable it to survive in its environment.

## MANAGEMENT

### Human Impacts on Ecological Balance

**Management of Living Resources within ecosystems -** Intended changes to an ecosystem can have far reaching unintentional consequences.

**Management of Non-living Resources within ecosystems -** Landfill Management can impact the environment both positively and negatively, depending on what considerations have been taken into account.

## ECOSYSTEM

**Ecosystem** is an area where all the biotic and abiotic parts interact

**Species:** living organisms that are structurally similar and are able to reproduce and have young that reproduce.

**Population:** A group of organisms of the same species living together within the same ecosystem.

**Community:** All the populations of different species living and interacting together within the same ecosystem.

## RELATIONSHIP

### Relationships

**Producers:** organisms that can make their own food and provide food to others in an ecosystem.

**Consumers:** organisms that seek out and consume other organisms  
Carnivores, Herbivores, Omnivores

**Decomposers:** organisms that recycle dead plants, animals and waste back into the ecosystem.

## ENVIRONMENTAL CYCLE

### Abiotic Cycles

#### Water Cycle:

Evaporation, Condensation, Precipitation, Storage.

#### Carbon Cycle:

Release (CO<sub>2</sub>), Absorption (CO<sub>2</sub>), Deposition (C), Intake (organic).

(Other cycles – Nitrogen, Oxygen, Phosphorus, Sulfur)

## ENERGY FLOW

**Food Chain:** A producer provides food for a primary consumer (herbivore), who then provides food for a (carnivore) secondary consumer.

**Food Web:** Food chains linked within an ecosystem.

**Food Pyramid:** Indicates the biomass levels and numbers within an ecosystem.

**Distribution** of Biomass varies from one ecosystem to another.

## INTERACTIONS

### Relationships

**Bioinvasion:** Species introduced into an ecosystem they are not native to.

**Competition:** organisms compete for food, water and space within an ecosystem.

**Predation:** organisms seeking out other organisms for food. Often referred to as Predator-Prey.

## SUCCESSION

### Succession (Life begins anew)

**Primary Succession:** where no living organisms lived before.

**Secondary Succession:** occurs when a community has been destroyed or disturbed.

A **climax community** is a stable community with diverse populations of species

## IMPACTS

### Human Impacts On Ecosystems

#### Habitat Destruction

#### Chemical Use

#### Hunting

#### Garbage

#### Pollution

## STATUS

### Status and Protection of Species

**Extinction:** none of a species is left on Earth.

**Extirpation:** none of a species is left within an area where many existed previously.

**Endangered:** individual numbers of a species is critically low.

**Threatened:** number of individuals of a species is declining rapidly.

**COSEWIC:** CDN committee that monitors species numbers and recommends species 'at risk' status.

## ECOLOGICAL FOOTPRINT

### Ecological Footprint

How much energy, materials, and land we need (including the land needed to dispose of our waste). This is then converted into an estimate of the total amount of land required to support each one of us.

The average Canadian ecological footprint is approx. 7.7 hectares.

Earth can support 1.7 hectares per person

## SUSTAINABILITY

### Sustainability

Resource use and restoration, for as long as possible, to sustain life

**REDUCE**

**REUSE**

**RECYCLE**

**RESTORE**



## MONITORING

### PHYSICAL

Changes in the landscape

### ENVIRONMENTAL

Changes in climate, temperature and weather patterns

### CHEMICAL

Quality of land, air and water

### BIOLOGICAL

Changes in living resources and populations of these resources

## NICHE

Within an ecosystem individual members of that ecosystem assume roles that interact with the biotic and abiotic parts of that ecosystem to ensure its survival.

To determine the **niche** of an individual organism you must consider what nutrients it consumes, and how it interacts with other organisms, or the abiotic parts of that ecosystem, to get the nutrients it needs.

## BIOACCUMULATION

**Bioaccumulation:** increases in concentrations as pollutants enter and move up the food chain.

**Biomagnification:** The greatest concentration is at the top of the food chain where higher level consumers accumulate these substances.

Pollutants move into the environment from the point source and are dispersed and deposited, because they cannot be broken down, stored or recycled quickly.