

# Video

- [https://www.youtube.com/watch?v=ysa5OBhXz-Q&ab\\_channel=SustainableHuman](https://www.youtube.com/watch?v=ysa5OBhXz-Q&ab_channel=SustainableHuman)

# Earth Science I

Living vs Non-living Organisms

Limiting Factors

Carrying Capacity

## Living and Non-Living Organisms

An individual living thing (like an animal or a plant) is called an organism. In order to be classified as a living organism, these individuals must display all of the following characteristics:

1. Made up of one or more cells
2. Respond to stimuli in their environment
3. Need energy
4. Move (at a cellular level)
5. Grow
6. Reproduce
7. Eliminate waste

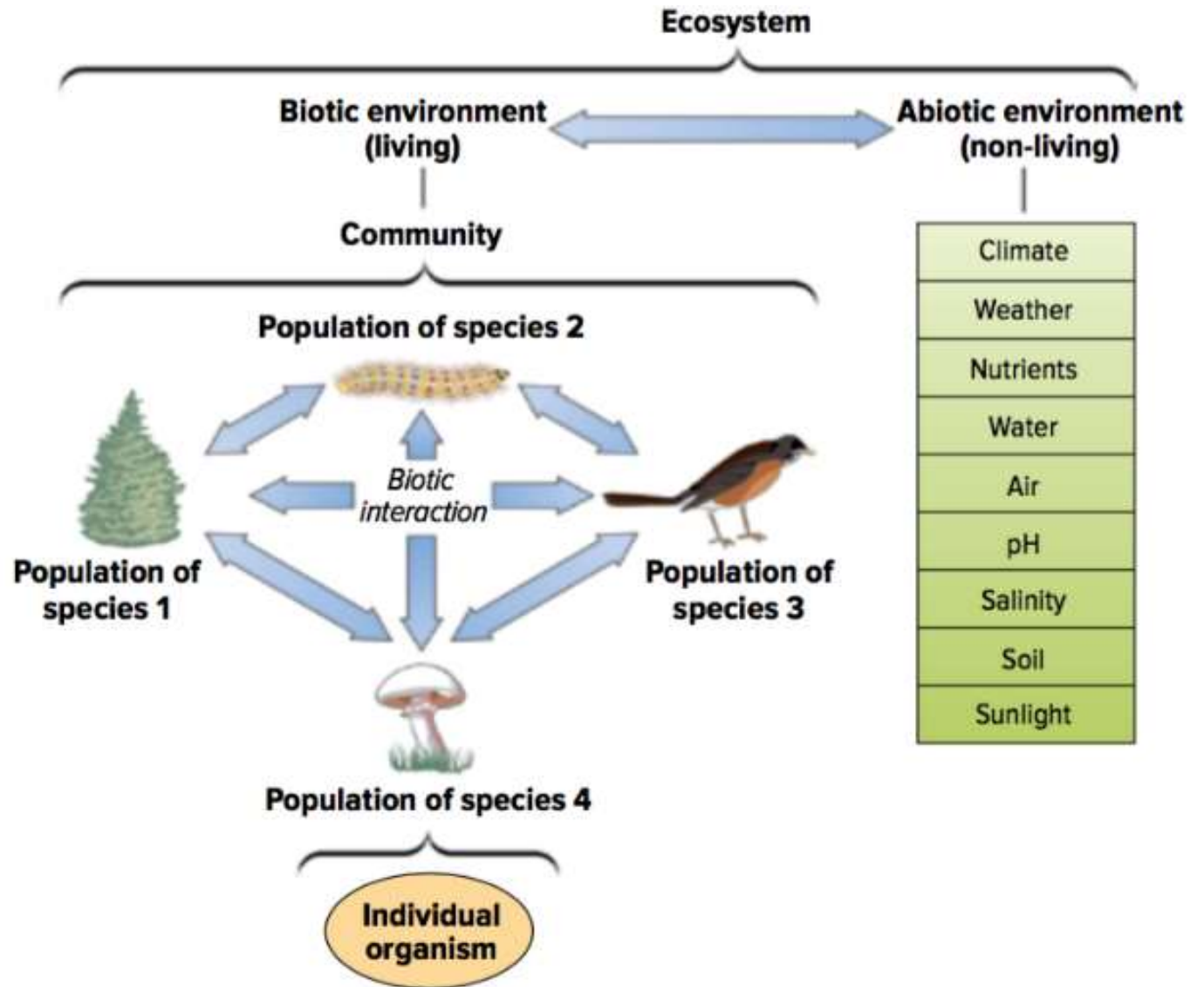
## Living and Non-living Organisms

In an environment, there will be a mixture of both living and non-living things.

- Living parts of an environment are called biotic
- Non-living parts of an environment are called abiotic

Both biotic and abiotic factors are important within an environment. Biotic and abiotic parts of an environment are connected through ways that they interact with one another.

# Living and Non-Living Organisms



## Why are abiotic factors important?

Abiotic factors help the biotic factors survive in their environment.

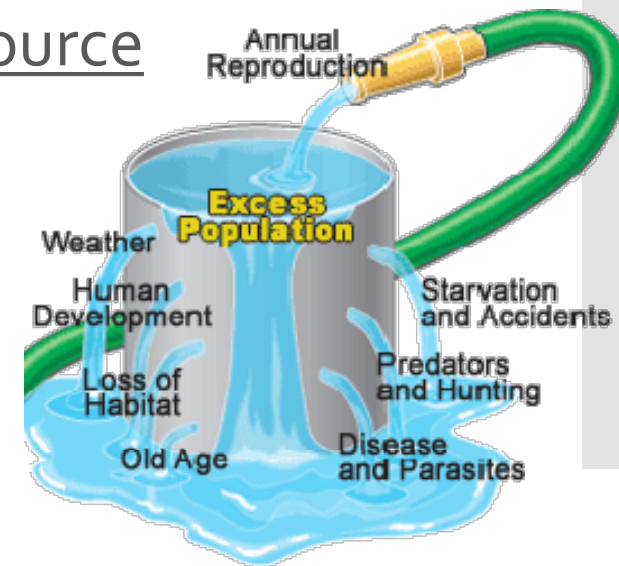
- Example:
- Oxygen allows animals to breathe
- Rocks help fish hide
- Water gives fish a home

## Limiting Factors

Limiting factors are factors that control how large a population can be in its environment.

These factors can be either living or non-living factors.

Limiting factors usually occur when there is a lack of a particular resource



# Limiting Factors

Example:

- If there is not enough food for predators, food becomes a limiting factor
- If there is not enough space for a large number of deer in an environment, space becomes a limiting factor
- If there is not enough sunlight for plants to photosynthesize, sunlight will become a limiting factor



## Carrying Capacity

Limiting factors will determine the carrying capacity of a population within an environment. Carrying capacity is the average number of organisms an environment can support. It can be referred to as the average population size in a habitat.

- The population size can be limited by environmental factors such as amount of food, space for shelter, amount of available mates, etc. (limiting factors)

# Carrying Capacity

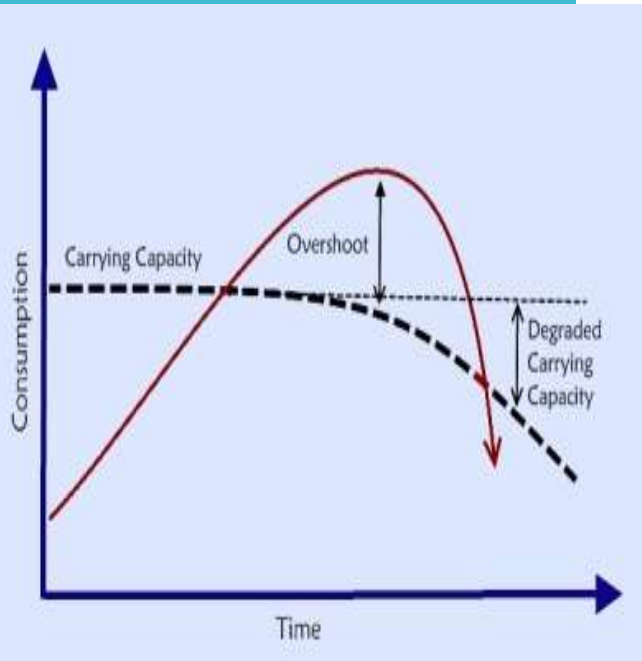
Example:

A piece of land can support a maximum amount of 10 animals.

- Scenario 1: The population is at 20 animals. These animals will starve as there is not enough food
- Scenario 2: The population is at 9 animals. These animals will eat well.
- Scenario 3: The population is at 10 animals. These animals can eat enough to survive.
- Scenario 4: The population is at 11 animals. These animals will starve some and the environment *degrades* which causes the carrying capacity to reduce. This can eventually cause starvation.

Some key terms:

- Carrying Capacity: The *largest population* an area can support with its resources (i.e. food, water, land)
- Overshoot period: When the population in an environment exceeds (goes over) the carrying capacity.
- Degrading Carrying Capacity: This will occur when the resources in an environment is destroyed or degraded (deteriorate; break down) which will then lower the carrying capacity.



# Earth's 4 spheres



Atmosphere (*atmos = vapour*)  
Layer of air about Earth's surface

Hydrosphere (*hydro = water*)  
all water found on Earth  
(including ground water)

Biosphere  
Living surface of Earth  
regions where living organisms exist

Lithosphere (*litho = stone*)  
Hard part of Earth's surface