

**Course Code:MCC102A**  
**Course Title:Environmental Studies**

**Lecture No: 9**  
**Title: Ecosystem**  
**Course Leader : Ms. Priyanka N**



# Lecture-9

## Intended Learning Outcomes

**At the end of this Lecture, students will be able to**

- Discuss different types of ecosystems
- Explain the biological components of Ecosystems
- Explain energy flow in Ecosystems and concept of food webs

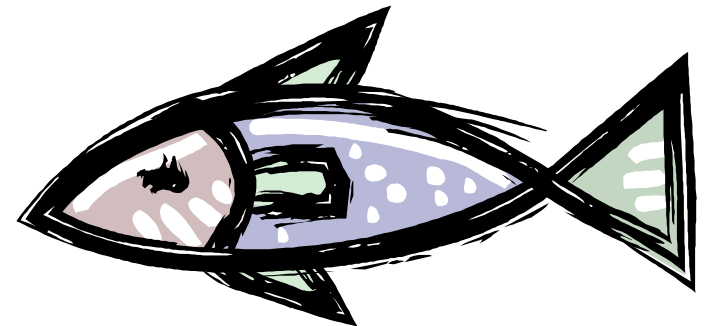


# Ecosystem Components

- Abiotic factors
- Biotic factors
- Range of tolerance for each species
  - what factors are important for...

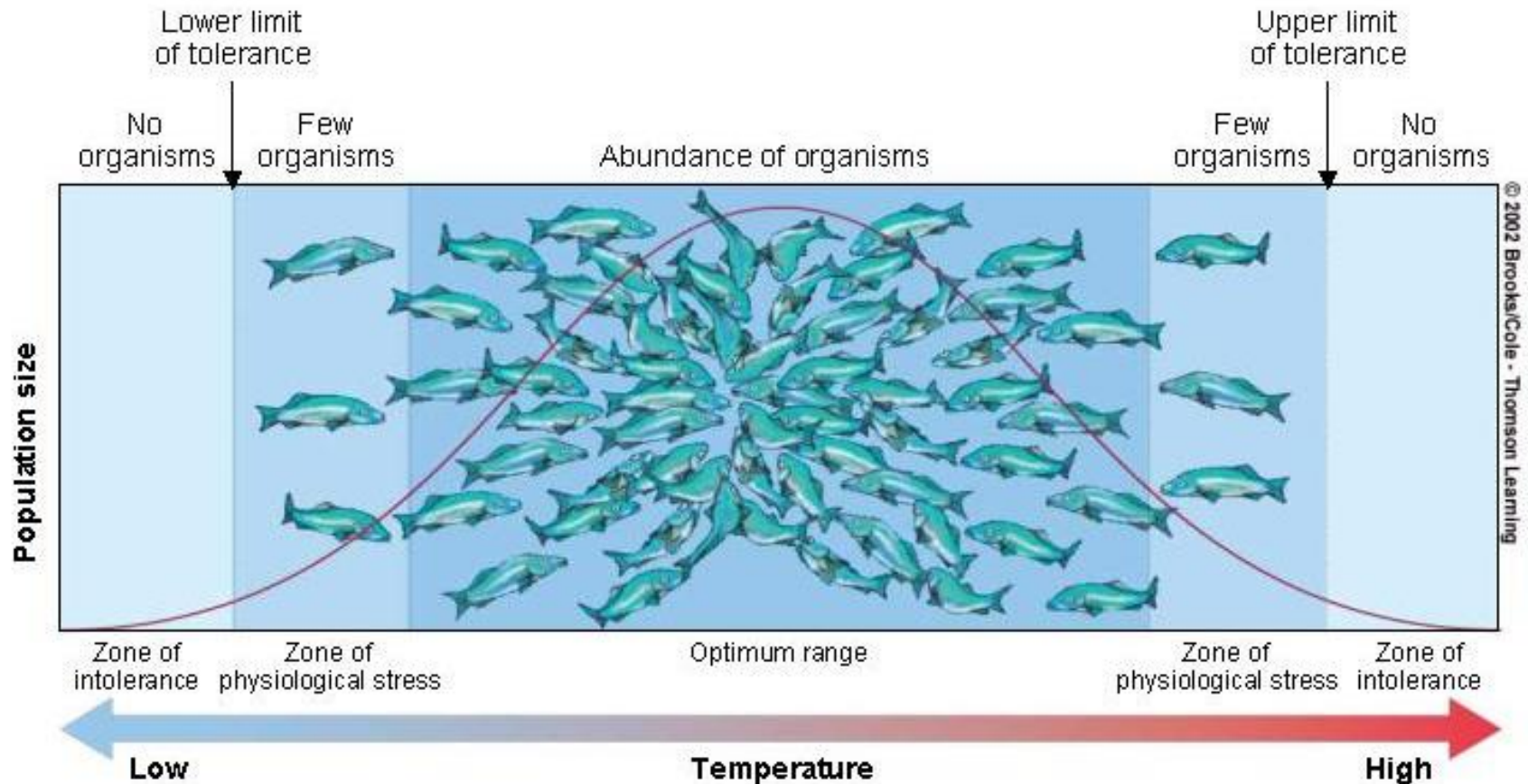
## Law of Tolerance

The existence, abundance and distribution of a species is determined by levels of one or more physical or chemical factors.



# Ecosystem Components

- Limiting factors determines distributions



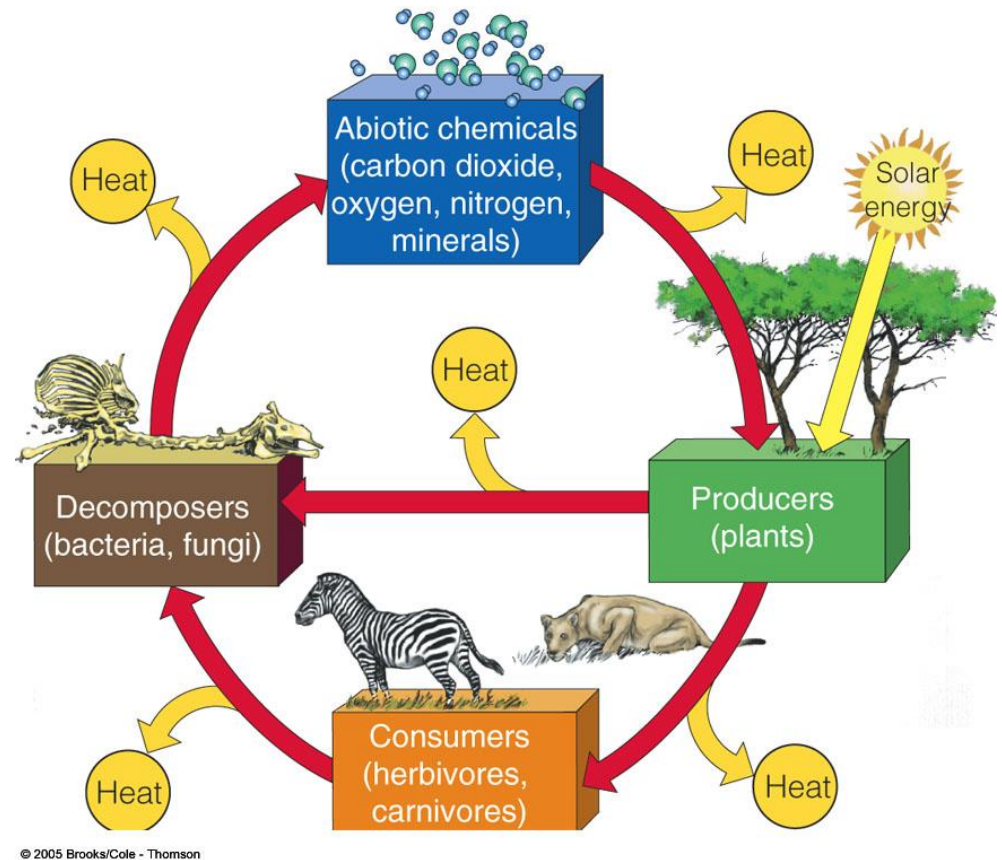
# Common limiting factors

- Limiting factors – more important in regulating population growth than other factors.
- Terrestrial ecosystems (on land)
  - precipitation
  - temperature
  - soil nutrients
- Aquatic ecosystems
  - temperature
  - sunlight
  - nutrients
  - dissolved oxygen
  - salinity



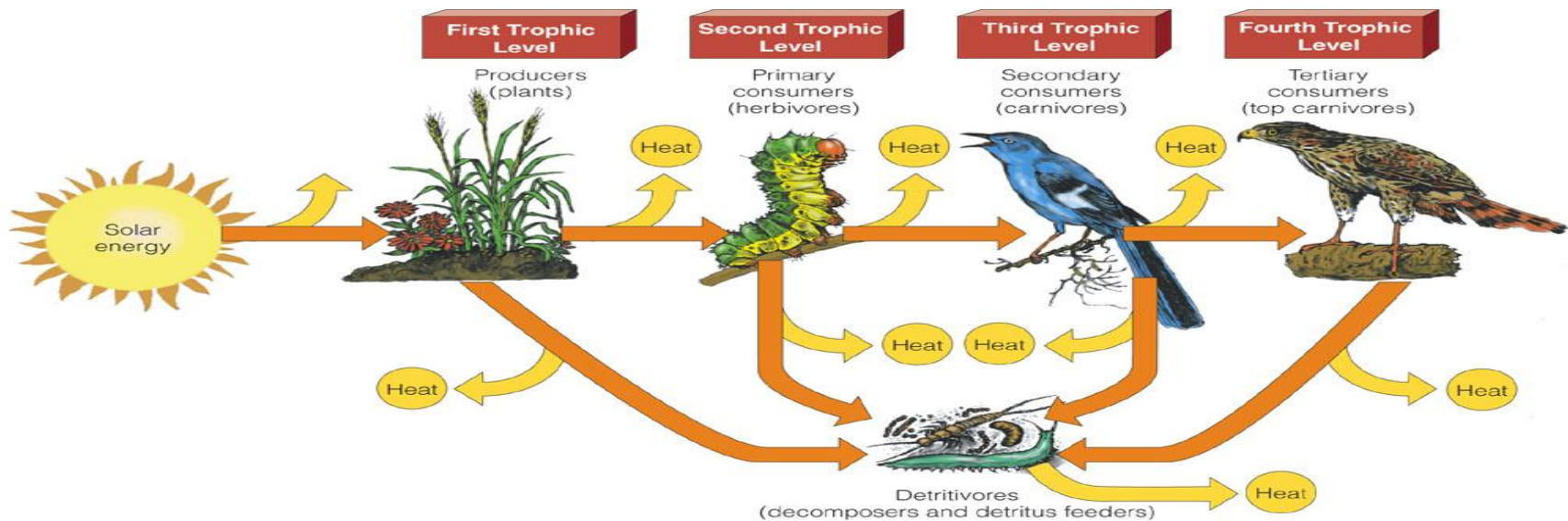
# Biological Components of Ecosystems

- Producers (autotrophs)
- Consumers (heterotrophs)
  - Herbivores, carnivores, omnivores
  - Decomposers and detritivores
    - detritus = dead organic material



# ENERGY FLOW IN ECOSYSTEMS

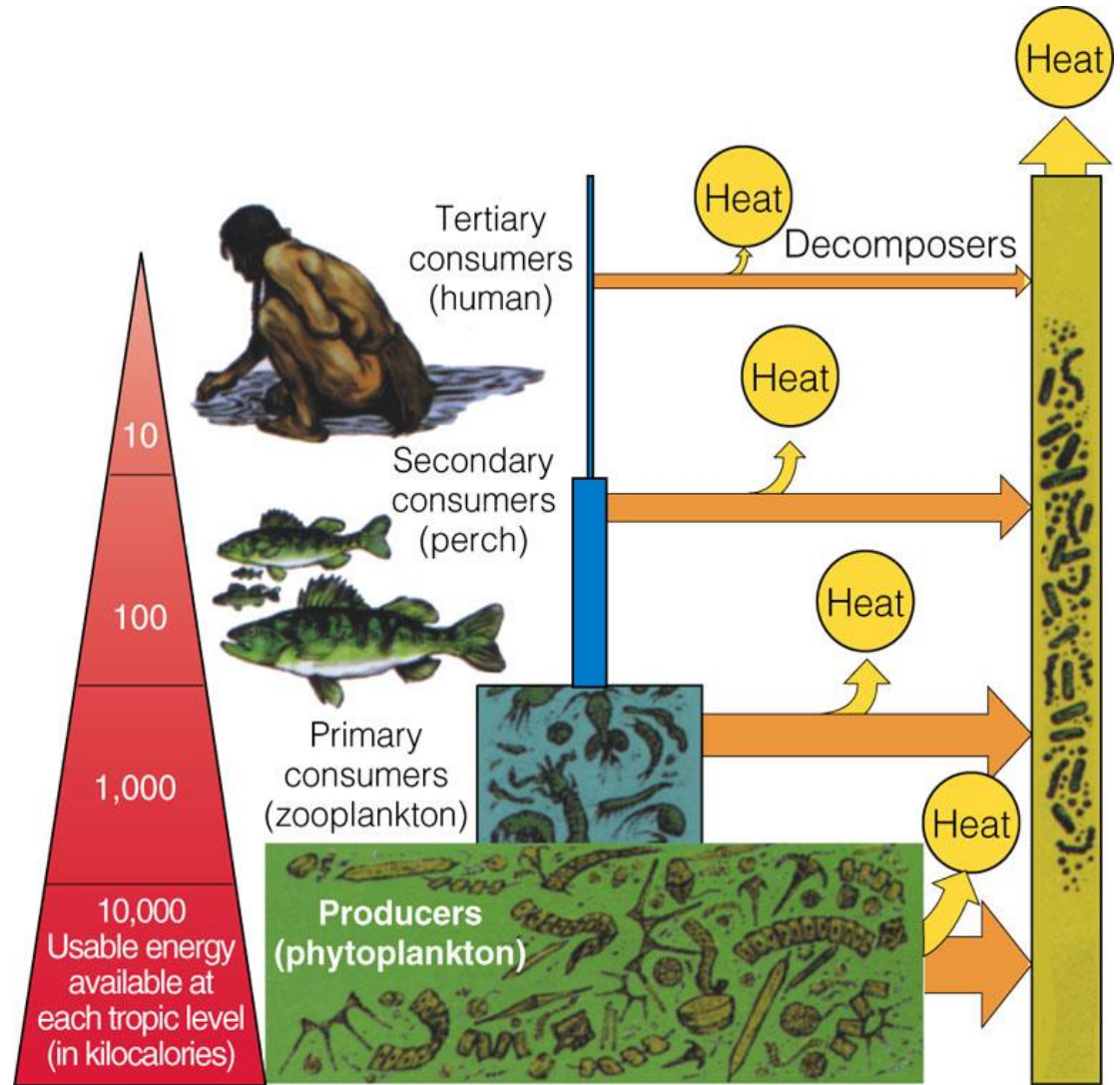
- Food chains – sequence of organisms which is a source of food for the next
- Food webs – most species participate in several food chains (they don't just eat one thing!)
- Trophic levels-each step in the flow of energy through an ecosystem (feeding level)





# Ecological Pyramids

- Pyramid of energy flow
- Ecological efficiency
- Pyramid of biomass
- Pyramid of numbers

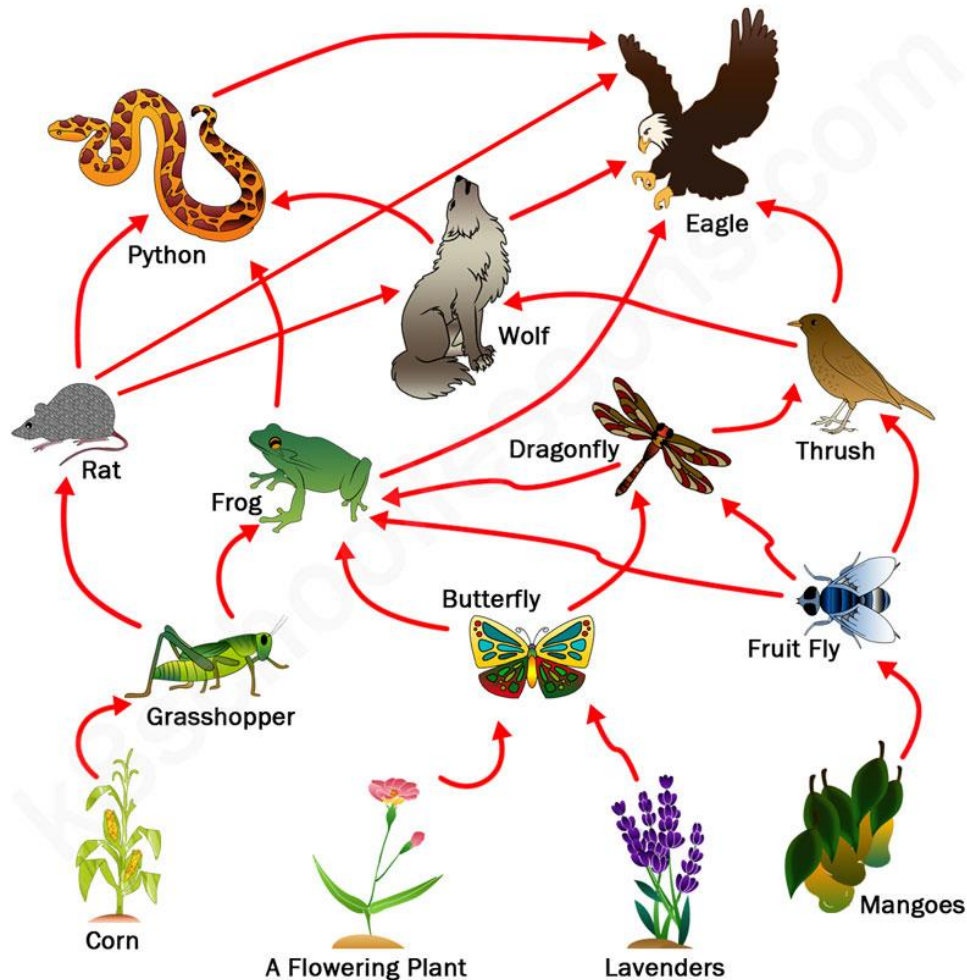


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# Food webs

A Food Web



reality tends to be more complex than a linear food chain

# Terrestrial Ecosystems

- Terrestrial ecosystems are ecosystems on land.
- They can be as big as a continent, or as small as an island!
- They make up about 28% of the entire World's ecosystems.



# What Animals Live There?

- Many different animals call terrestrial ecosystems home.
- The most common are:
  - Birds
  - Mammals of all shapes and sizes
  - insects





# What Plants Live There?

- Many plants also call terrestrial ecosystems their home also, we see many of them everyday!
- Common plants are:
  - Flowering plants, like roses
  - Mosses, like moss that grows on rocks
  - Conifers, which are pine trees



# Examples of Terrestrial Ecosystems

- Forests
- Deserts
- Grasslands



# Aquatic Ecosystems

- There is something special about aquatic ecosystems.
- There is actually two different types of aquatic ecosystems.
- One type is freshwater
- The other type is saltwater.
- Both types, however, are ecosystems that are in the water.





# Freshwater Ecosystems

- Freshwater ecosystems are places in the water where there isn't much salt in the water.
- These include places like lakes, rivers, and creeks.



# What Animals Live in Freshwater Ecosystems?

- A lot of animals live in freshwater ecosystems.
- Animals include
  - Freshwater fish, these fish can't live in the ocean because it is too salty for them, so they live in freshwater
  - Amphibians, like frogs
  - Reptiles, like water snakes



# What Plants Live in Freshwater Ecosystems?

- Many plants call freshwater ecosystems their home, even if we can see them from the surface of the water
- Some plants are:
  - Cattails
  - Grasses
  - Trees



# Saltwater Ecosystems

- Saltwater ecosystems are again in the water, but unlike freshwater ecosystems, saltwater ecosystems have very salty water.
- They also make up the vast majority of the Earth's ecosystems.
- They are the world's largest ecosystems.
- Some examples of saltwater ecosystems are oceans and coral reefs.





# What Plants are in Saltwater Ecosystems?

- Seaweed is one of the most common types of plants that live in saltwater ecosystems.
- Another plant that lives in the ocean is kelp.



# What Animals Live in Saltwater Ecosystems?

- There are so many animals that live in saltwater ecosystems
- Animals that live in saltwater ecosystems include:
  - Fish
  - Sharks
  - Jellyfish
  - Whales





# Summary

- The types of ecosystems are :-
  - Terrestrial ecosystem
  - Aquatic ecosystem
- There are various components of an ecosystem such as biotic factors, abiotic factors, range of tolerance for each species
- Terrestrial ecosystems are ecosystems on land
- Ecosystems that are in water are called aquatic system



# Summary Cond....

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