

Principles of Ecology

BSc. Course 2024 – 2025

Lecture – 2

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Ecosystem Components

1- Abiotic Components

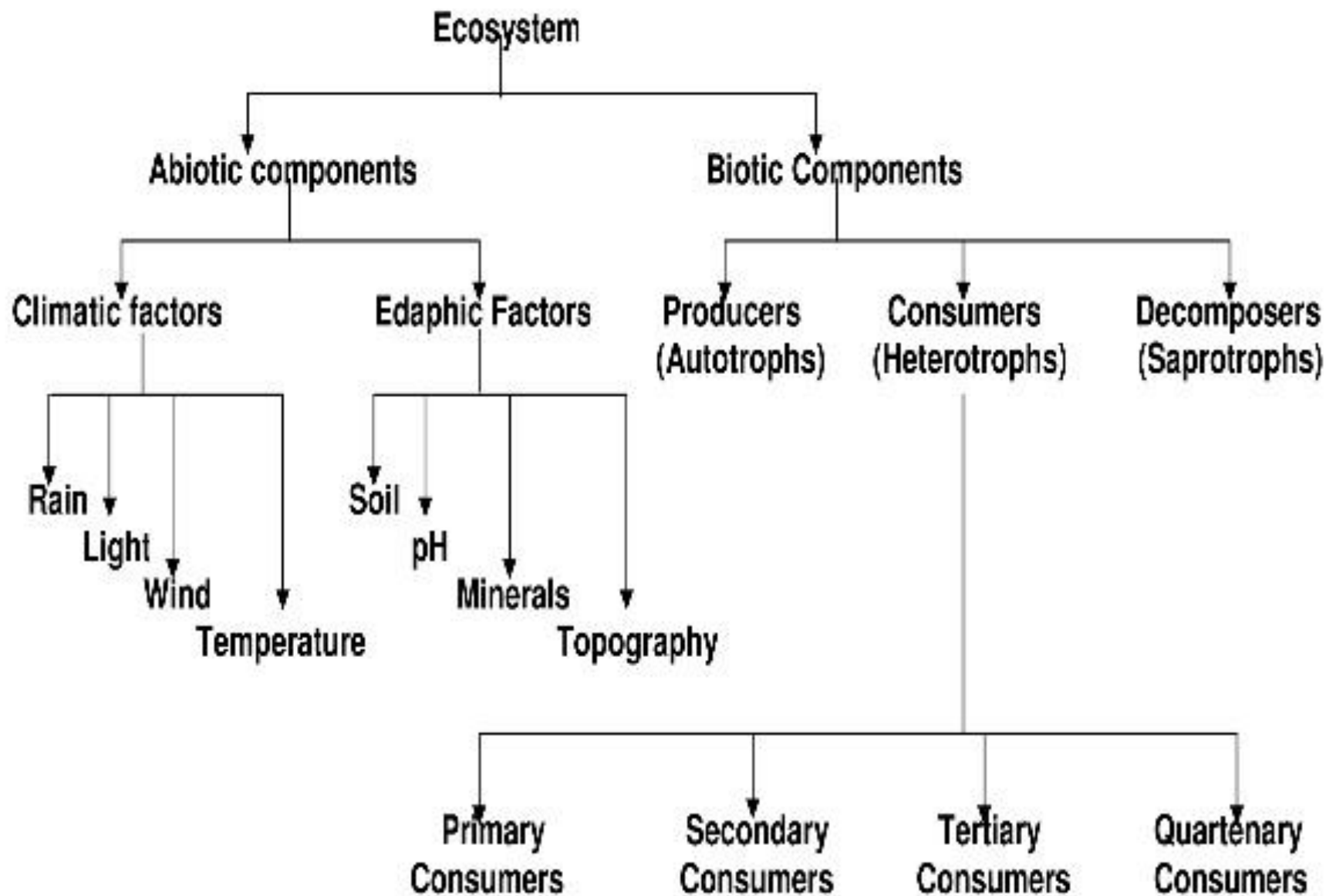
- Water,
- Air,
- Temperature,
- Soil,
- Light,
- Precipitation,
- Salinity.
- Sets Tolerance Limits for Populations and Communities.
- Some are limiting factors that structure the abundance of **populations**.

Ecosystem Components

2- Biotic Components

- **Producers, Consumers, Decomposers.**
- **Plants, Animals, Bacteria/Fungi.**
- Biotic interaction with biotic components include:
 - **Predation,**
 - **Competition,**
 - **Symbiosis,**
 - **Parasitism,**
 - **Commensalism** etc..

Components of Ecosystem



Biotic Components of Ecosystems

- **Producers = Autotroph**
 - * **Source of all Foods**
 - * **Photosynthesis**

Producers

- What are some examples of producers/autotrophs?
 - Trees
 - Grass
 - Berries
 - Nuts
 - Algae
 - Phytoplankton

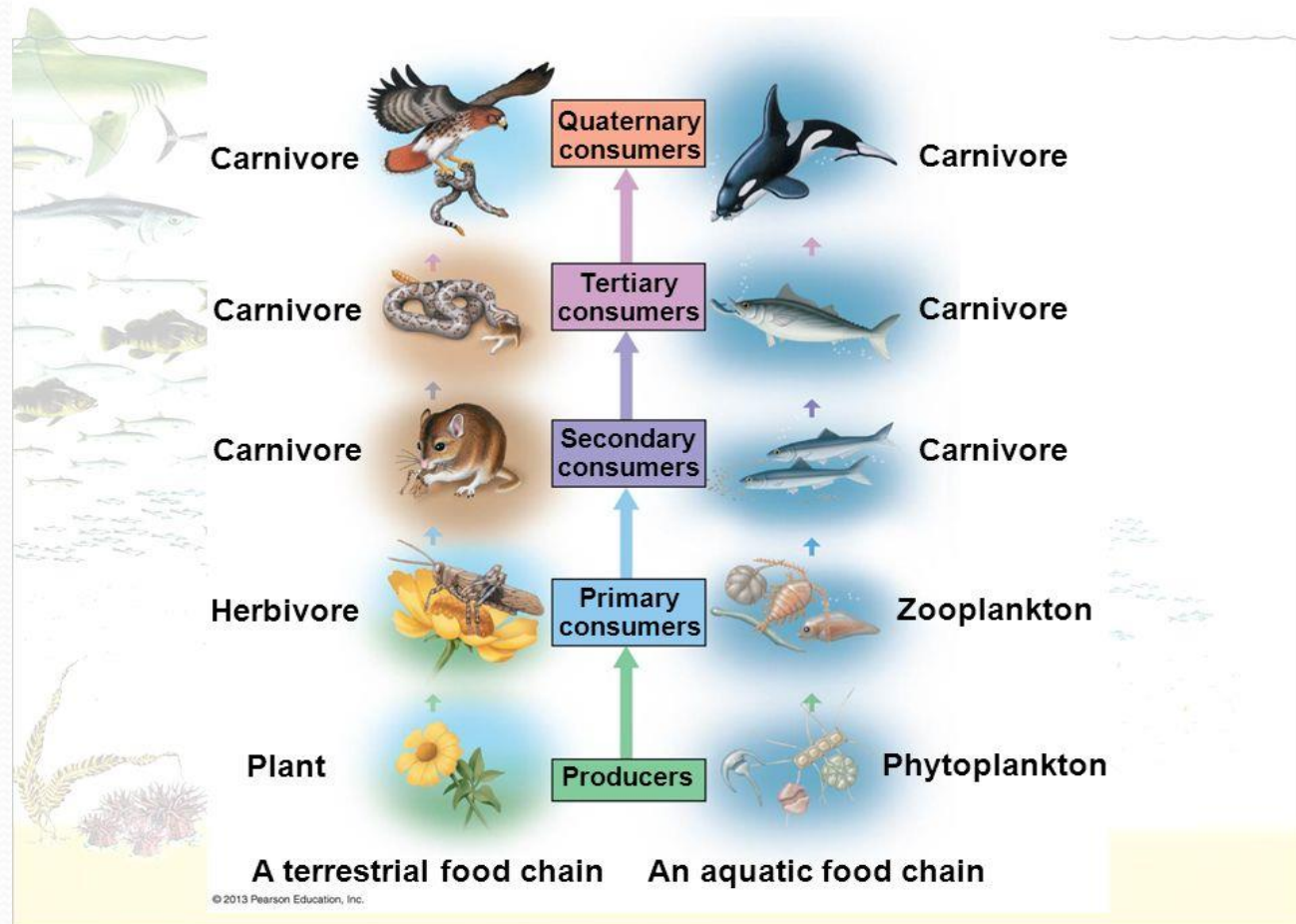


Biotic Components of Ecosystems

- **Consumers = Heterotroph**

- * **Aerobic Respiration**

- * **Anaerobic respiration (Methane, H₂S)**



Biotic Components of Ecosystems

- **Decomposers**

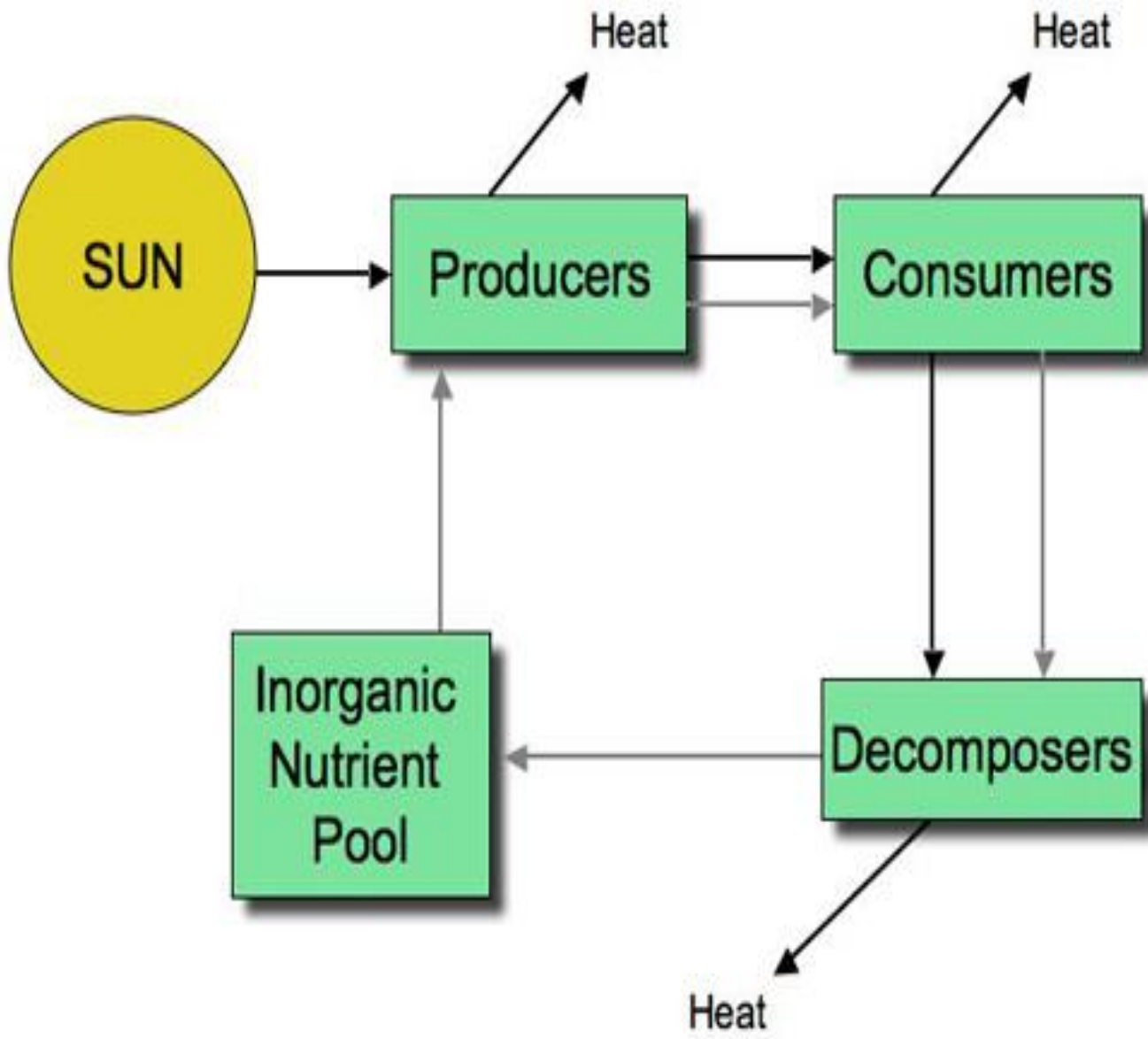
- * **Matter Recyclers**

- * **Release Organic compounds into Soil & Water where they be used by producers.**

Examples of Decomposers

- Mushrooms
- Earthworms
- Mold
- Tiny algae





Ecosystem Components

- **Consumers: Organisms that Consume Producers**
- **Primary consumers** = second trophic level
 - * Organisms that consume producers.
 - * **Herbivores** consume plants.
 - * **Deer, Grasshoppers.**



Ecosystem Components

- **Secondary Consumers** = third trophic level
 - * Organisms that prey on primary consumers.
 - * **Carnivores** consume meat.
 - * **Wolves, Rodents.**

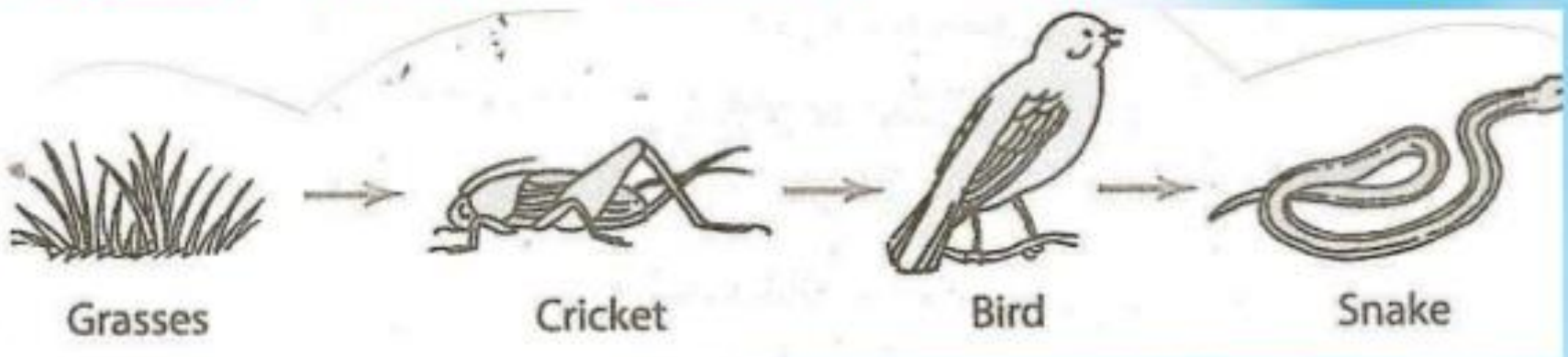


Ecosystem Components

- **Tertiary Consumers** = fourth trophic level.
 - * **Predators** at the highest trophic level.
 - * Consume secondary consumers.
 - * Are also **Carnivores**.
 - * **Hawks, Owls.**
- * **Omnivores** = Consumers that eat both plants and animals.

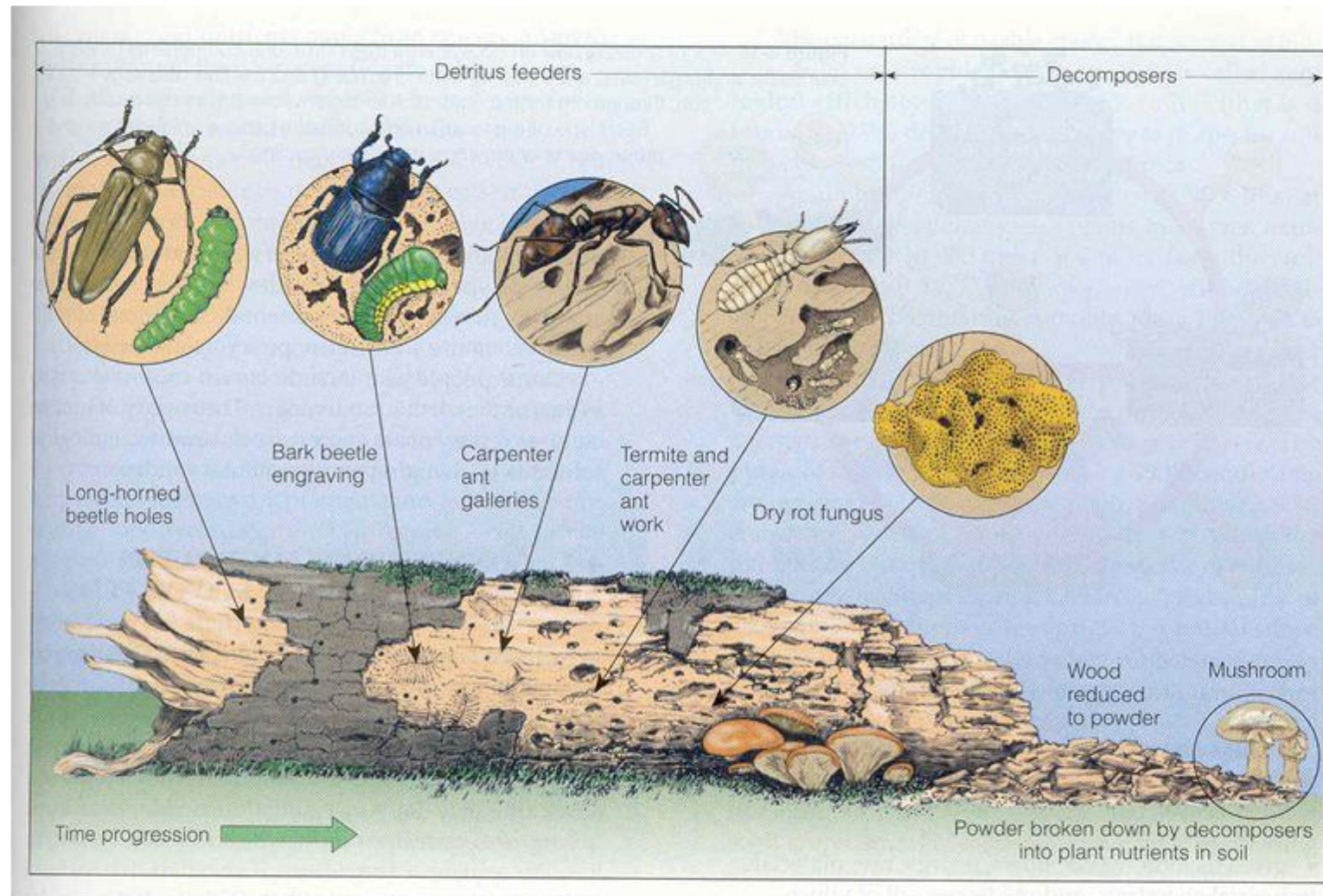


Examples



- **Detritivores and Decomposers**
- Organisms that consume nonliving organic matter.
 - * Enrich Soils and/or recycle nutrients found in dead organisms.
- **Detritivores** = scavenge waste products or dead bodies.
 - * **Millipedes.**
- **Decomposers** = break down leaf litter and other non-living material.
 - * **Fungi, Bacteria.**
 - * Enhance topsoil and recycle nutrients.

Detritus Feeders and Decomposers



Without detritus feeders and decomposers, the lack of nutrients would quickly stop primary production!