



OUR DAILY BREAD

James 1: 17

"Every good and perfect gift is from above."

BIOLOGICAL SCIENCE (ECOLOGY AND ECOSYSTEMS)

ECOLOGY – study of the relations that living organisms have with respect to each other and their natural environment.

ECOSYSTEM – all living organisms (biotic factors) + all nonliving (abiotic factors) + physical components (air, soil, water, sunlight) in a particular area which is in constant interaction with each other.

- **Limiting factors** – factors in the ecosystem which determine the types of organisms which may exist in the environment.

BIOMES

Ecosystems with similar climatic conditions

Types	Description
Tundra	Permanently frozen subsoil
Taiga	Long, severe winters, summers with thawing subsoil
Desert	Sparse rainfall, extreme daily temperature changes
Grasslands	Rainfall and temperature vary greatly, strong prevailing winds
Tropical Rainforest	Heavy rainfall, constant warmth
Temperate-deciduous forest	Moderate precipitation, cold winters, warm summers

- **FOOD CHAIN:** demonstrates the transfer of energy from plants through a series of organisms with repeated stages of eating and being eaten.
- **FOOD WEB:** demonstrates the interactions of various food chains.
- **ENERGY PYRAMID:** can be used to illustrate the loss of usable energy at each feeding level. Energy decreases as one progress up the pyramid.

COMPONENTS:

1. **Sun** – provides energy for all living things
2. **Autotrophs** – "Producers" or the green plants
 - Ability to produce own energy through the energy of the sun and organic compounds
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- thus considered as the primary producers in ecosystems .
- Also produces oxygen needed by all aerobic organisms.

3. Heterotrophs – "Consumers"

- a) Herbivores (animals that eat plants)
- b) Carnivores (animals that eat other animals)
- c) Parasites (animals that live off of other organisms by harming it)
- d) Scavengers (animals that eat dead animal carcasses)

4. Saprophytes – "Decomposers"

- Organic wastes and dead organisms are eventually broken down to simpler substances

SYMBIOTIC RELATIONSHIPS

1. **Commensalism** – an association between two organisms in which one benefits and the other derives neither benefit nor harm
2. **Mutualism** – relationship that is beneficial to both organisms involved
3. **Predation** – association of a predator and a prey; the prey is hunted and killed by the predator for food
4. **Parasitism** – association of a parasite and a host; the parasite lives in or on the host and benefits by deriving nutrients at the host's expense