

Meteorology Theory

Lecture 2

Some more Definitions related to Ecology

- **Niche**

A niche refers to the role of a species in its ecosystem. It includes all the ways that the species interacts with the biotic and abiotic factors of the environment.

- **Habitat**

The habitat is the physical environment in which a species lives and to which it is adapted. A habitat's features are determined mainly by abiotic factors such as temperature and rainfall. These factors also influence the traits of the organisms that live there.

- **Competition**

Compete between two or more different species in the same niche in the same place for very long.

If two species were to occupy the same niche, **what do you think would happen?** They would compete with one another for the same food and other resources in the environment. Eventually, one species would be likely to outcompete and replace the other.

- **Flow of Energy** : Energy enters ecosystems in the form of sunlight or chemical compounds. Some organisms use this energy to make food. Other organisms get energy by eating the food.

- **Producers**

Producers are organisms that produce food for themselves and other organisms

Producers are also called **autotrophs**. There are two basic types of autotrophs:

photoautotrophs and **chemoautotrophs**:

1. **Photoautotrophs**: they use energy from sunlight to make food by photosynthesis. They include plants, algae, and certain bacteria (see Figure 1.2).

2. **Chemoautotrophs**: they use energy from chemical compounds to make food by chemosynthesis. They include some bacteria and also archaea. Archaea are microorganisms that resemble bacteria.

Photoautotrophs and Ecosystems Where They are Found



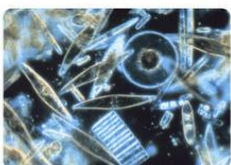

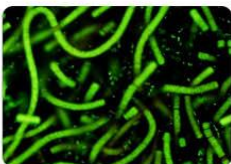

Type of Photoautotroph	Examples	Type of Ecosystem(s)
Plants	 <i>Trees</i>	Terrestrial
	 <i>Grasses</i>	
Algae	 <i>Diatoms</i>	Aquatic
	 <i>Seaweed</i>	
Bacteria	 <i>Cyanobacteria</i>	Aquatic Terrestrial
	 <i>Purple Bacteria</i>	

Figure 1.2: Different types of photoautotrophs are important in different ecosystems

- **Consumers**

Consumers are organisms that depend on other organisms for food.

They include all animals and fungi. (Fungi don't really "eat"; they absorb nutrients from other organisms.)

Consumers are also called **heterotrophs**. **Heterotrophs** are classified by what they eat:

- **1- Herbivores:** consume producers such as plants or algae. They are a necessary link between producers and other consumers. Examples include deer, rabbits, and mice.

- **2- Carnivores :** consume animals. Examples include lions, polar bears, hawks, frogs, salmon, and spiders.

Carnivores that are unable to digest plants and must eat only animals are called obligate carnivores. Other carnivores can digest plants but do not commonly eat them

- **3-Omnivores:** consume both plants and animals. They include humans, pigs, brown bears, and some species of fish.

- **Decomposers**

When organisms die, they leave behind energy and matter in their remains.

Decomposers break down the remains and other wastes and release simple inorganic molecules back to the environment. Producers can then use the

molecules to make new organic compounds. The stability of decomposers is essential to every ecosystem. Decomposers are classified by the type of organic matter they break down.

- **Adaptation**

Every organism is suited to live in its particular habitat. You know that coconuts are adapted for growing in water while a camel is adapted for life in the desert.

- **Species**

A species is defined as a group of organisms which can interbreed and reproduce successfully. These organisms may be separated in space and time into smaller groups called populations. For example human populations live in different geographical areas but all belong to the species, Homo sapiens

- **Population**

‘Population’ is defined as a group of freely interbreeding individuals of the same species present in a specific geographical area at a given time.

- **Density:**

The number of individuals per unit area, density which may vary from time to time and place to place.

Density of a particular organism in a region is determined by selecting random samples from an area of particular dimension (size) called quadrat from that region.