BASIC ECOLOGICAL CONCEPT WEEK TEN (10)

BIOLOGY SS1

Ecology is the study of living organisms in relation to their environment. The study deals with the relationship of living organisms with one another and with the environment in which they live. Ecology measures factors affecting the environment; it studies the distribution of living organisms and how they depend on one another and their non-living environment for their survival.

Ecology is divided into two
(i) **Autecology** which is the study of a single individual organism or a single species of organism and their environment example the study of Tilapia fish in a particular stream.
(ii) **Synecology** which is the study of interrelationships between groups of organisms or species of organisms living together in an area.

Ecological concepts

1. **Environment**: This refers to all the factors in an organism's surroundings, living or non-living. The external surroundings including all of the biotic and abiotic factors that surround and affect the survival and development of an organism.
2. **Habitat**: This is the place where an organism lives. It is the place that is suitable to the organism's way of life e.g. the habitat of fish is water.
3. **Ecological Niche**: This is the functional role and space/specific portion of habitat occupied by a particular organism or species. it. The functional role includes the organism's behaviour, its feeding habits and breeding habits.
4. **Population**: This is the total number of all organisms of the same species or kinds, living together in a given area/habitat.
5. **Community**: This is made up of all the populations of living organisms that exist together in a habitat.
6. **Biosphere**: This refers to all parts of the atmosphere, hydrosphere and lithosphere where life can be found and is made up of various ecosystems.
7. **Ecosystem**: This is a self-supporting unit that is made up of a living part and a non-living part. It is a community of plants and animals interacting with themselves and with the non-living factors in their environment

COMPONENTS OF AN ECOSYSTEM

The living part of the ecosystem is called its **biotic** component while the non-living parts are called the **abiotic** component.
(a) **Biotic component:** This includes all living things/organisms in an environment. It is also called the biotic community. It is made up of;
Food producer's e.g. autotrophs (green plants),
Food consumer's i.e. heterotrophs such as animals, protozoa and some bacteria.
Decomposer's i.e. saprophytes like fungi and some bacteria.

(b) Abiotic component: These are non-living. E.g. sunlight (a source of energy) and inorganic nutrients like water, nitrogen, carbon dioxide, phosphorus etc.
(i) ***Climatic factors*** such as temperature, wind, light intensity, humidity, water currents, turbidity, rainfall, e.t.c.
(ii) ***Edaphic factors*** such as soils, rocks, topography, etc.
Other factors include air, water, storms, etc.

BIOMES
A biome is a major, geographically extensive ecosystem, structurally characterized by its dominant life forms. Terrestrial biomes are usually distinguished on the basis of the major components of their mature or climax vegetation, while aquatic biomes, especially marine ones, are often characterized by their dominant animals.. It is the largest community of organisms interacting with the non-living environment. Biomes are identified by their vegetation. Examples include forest, desert, savannas, etc.

Local biomes in Nigeria
This can be grouped into two major zones
1. The forest zone
2. Savanna zone

The forest zone: This is made up of vegetation having mainly trees, they include:
(a) Mangrove swamp.
(b) Tropical Rainforest.
Tropical rainforests are characterized by vertical layers of vegetation.
On the forest floor is a sparse layer of plants and decaying plant matter. The annual rainfall in tropical rainforests ranges from 125 to 660 cm (50–200 in). The vegetation is characterized by plants with spreading roots and broad leaves that fall off throughout the year.

Savanna zone: This is made up mainly of grasses and includes;
(a) Southern Guinea Savanna
(b) Northern Guinea Savanna (Sudan Savanna)
(c) Sahel Savanna

Savannas are grasslands with scattered trees and are found in Africa. Savannas are hot, tropical areas with temperatures averaging from 24oC –29oC (75oF –84oF) and an annual rainfall of 51–127 cm (20–50 in). Savannas have an extensive dry season.