

CHAPTER 14

ECOSYSTEM

Sir Tansley coined the term 'ecosystem'

DEFINITION

It is an assemblage of different communities with abiotic factors in an environment.

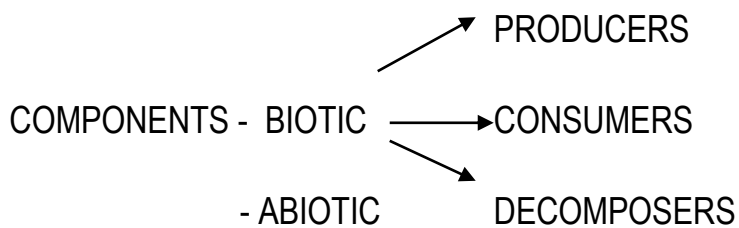
TYPES

Terrestrial and aquatic

Terrestrial include Forests, Grasslands, Deserts

Aquatic- Fresh water (lotic & lentic)

- Marine water bodies



STRUCTURE AND FUNCTION

STRUCTURE FEATURES ARE 1. Species composition

2. Stratification

FUNCTIONAL FEATUERS ARE 1. Productivity

2. Decomposition

3. Energy Flow

4. Nutrient cycle

PRODUCTIVITY

It includes -Primary Productivity (plants)-producers

Has two aspects 1. GPP 2. $NPP = GPP - R$

- Secondary Productivity involves assimilation and formation of new organic matter by consumers

Primary productivity is high in terrestrial systems rather than in aquatic systems because of BIOMASS.

DECOMPOSITION

Detritus is the starting matter.

The steps involved :\

1. Fragmentation- Breaking of detritus into smaller particles.
2. Leaching – Water soluble substances are seeped into the soil.
3. Catabolism- The role of enzymes in the conversion process.
4. Humification- Forming of dark coloured matter called HUMUS.
5. Mineralisation- Humus is degraded into simpler inorganic substances.

ENERGY FLOW

The main source of energy is the light energy obtained from sunlight.

Plants capture 2-10% of the light energy and prepare the food and all other organisms depend on it.

FOOD CHAIN

TYPES

Grazing Food chain (GFC)

Producers trap the sunlight and prepare the food.

Consumers- Herbivores depend on the producers

PYRAMID OF BIOMASS

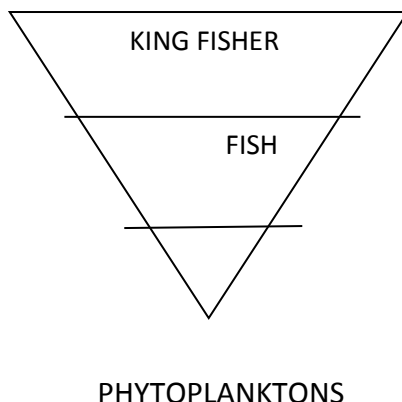
It is composition of amount of matter present in the dry state or amount of C/g

UPRIGHT

Eg., A single tree

INVERTED

EG., Pond ecosystem



PYRAMID OF ENERGY

It is always upright because there is transfer of energy from one trophic level to another.

You are familiar of 10% law (RECALL CLASS X SCIENCE- Our Environment)

There is loss of energy in every state as we move upwards by 10 %.

ECOLOGICAL SUCCESSION

There is gradual change in the state of species composition from one form to other with relation to time factor in a particular habitat.

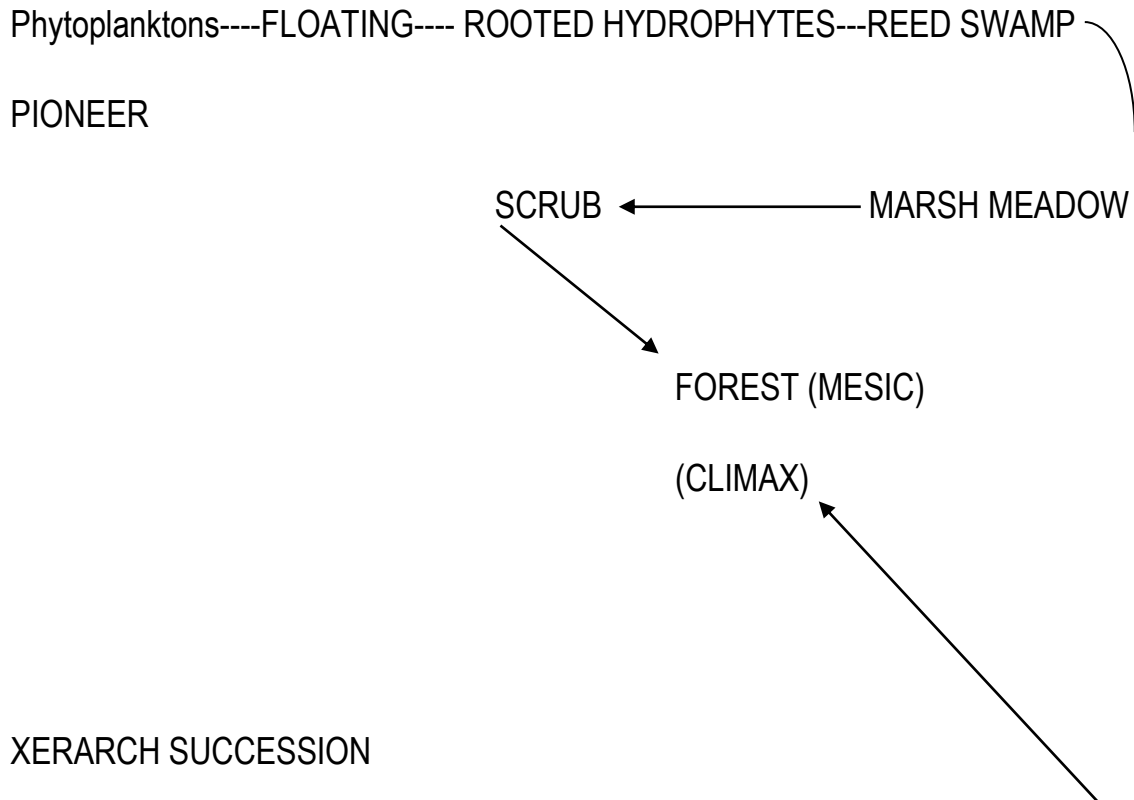
The change of species is called seral communities.

TYPES

- A) Primary succession- It is a state of environment where no life exists. It may include dry, bare rock.
In such circumstances, the living state begins very slow because there is no suitable substrata-nutrients, soil. It consumes time duration and depend on factors. (REFER TO CLASS IX-SCIENCE- Environment)
- B) Secondary succession-It exists in a place where life exists earlier.
Presence of soil or sediment

SUCCESSION OF PLANTS

-HYDRARCH SUCCESSION



XERARCH SUCCESSION

LICHENS-----BRYOPHYTES(MOSS)-----FERNS-----HERB---SHRUB---TREES

PIONEER

It is found that both the succession lead to mesic community.

NUTRIENT CYCLING

TYPES- GASEOUS- CARBON CYCLE(REFER TO NCERT TEXT BOOK Pg No253. SEDIMENTARY-
PHOSPHORUS CYCLE(REFER TO NCERT TEXT BOOK PgNo.255)