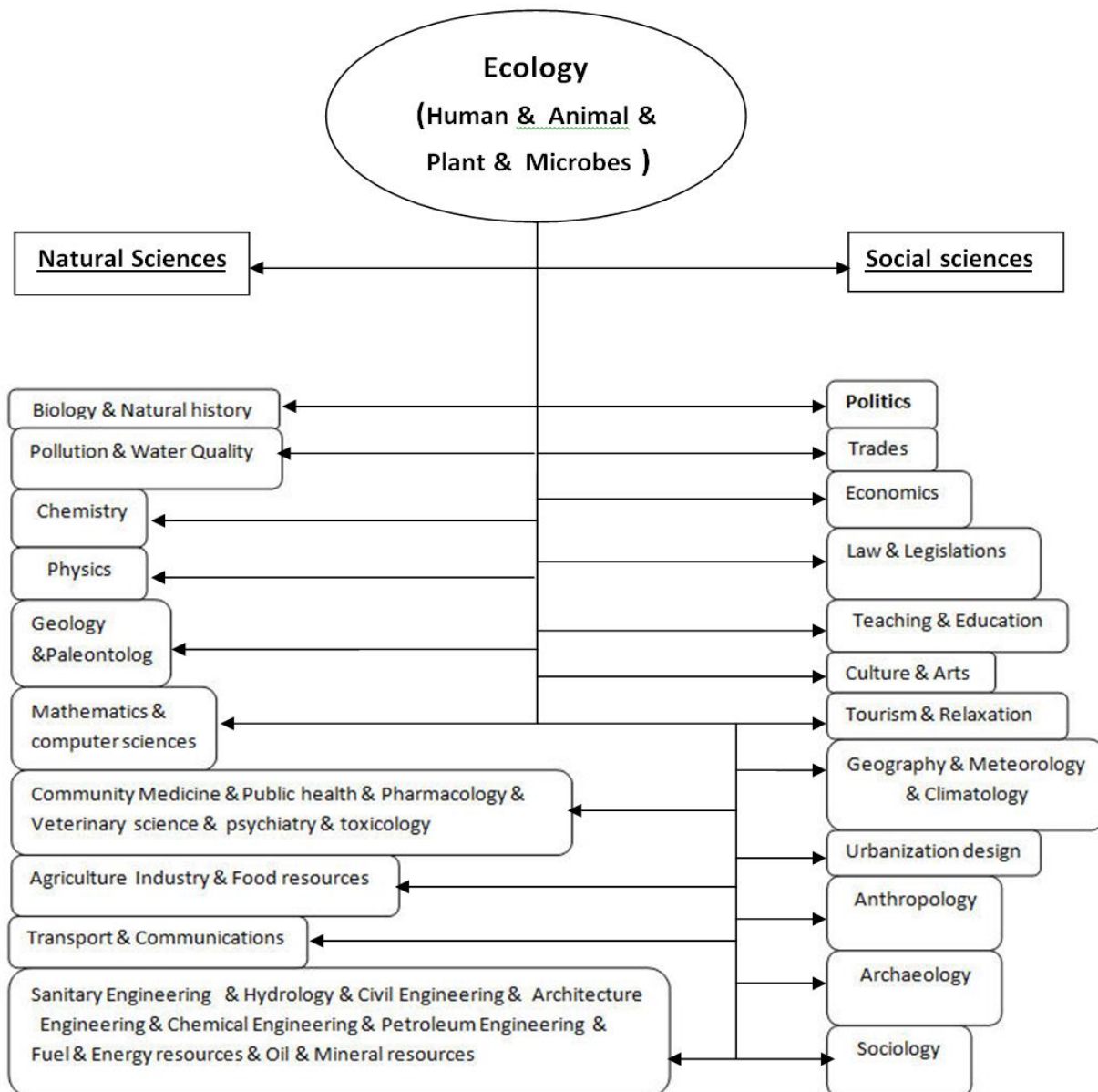


PRINCIPLES OF ECOLOGY

(B105)

Ecology is a vast subject .It includes the life habits of over a million different kinds of animals and plants , and it considers all manner of influences and interactions among them .Thus ecology must include not only the life sciences . In fact, ecology seems to have no limits at all , and ecologists could possibly claim dominion over all of the natural and social sciences



Ecology subject model

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Definitions of essential terms:

1 . Population ; is a group of interacting individuals , usually of the same species, in a definable place .

2 . Community ; consists of the populations of plants and animals living together in a given place .

3 . Environment & Habitat ; are terms refer to a definable place where an organism lives .

(**Environment** includes all the conditions and influences surrounding ,and affecting an organism . Similarly , **the habitat** is the natural locality of an organism , thus it also includes all features of the environment in a given locality .)

4 . Ecosystem ; is any spatial or organizational unit which includes living organisms and nonliving substances interacting to produce an exchange of materials between the living and nonliving parts. (an ecosystem includes populations ,communities ,habitats and environments ,and it specifically refers to the dynamic interaction of all parts of the environment, focusing particularly on the exchange of materials between the living and nonliving parts).

5 . Biosphere (Ecosphere) ; The biosphere, is the layer of the planet Earth where life exists and it is the sum of all the ecosystems. This layer ranges from heights of up to ten kilometers above sea level, to depths of the ocean at more than 8 kilometers deep. The biosphere is one of the four layers that surround the Earth (along with the lithosphere, hydrosphere and atmosphere) (Fig. 1).

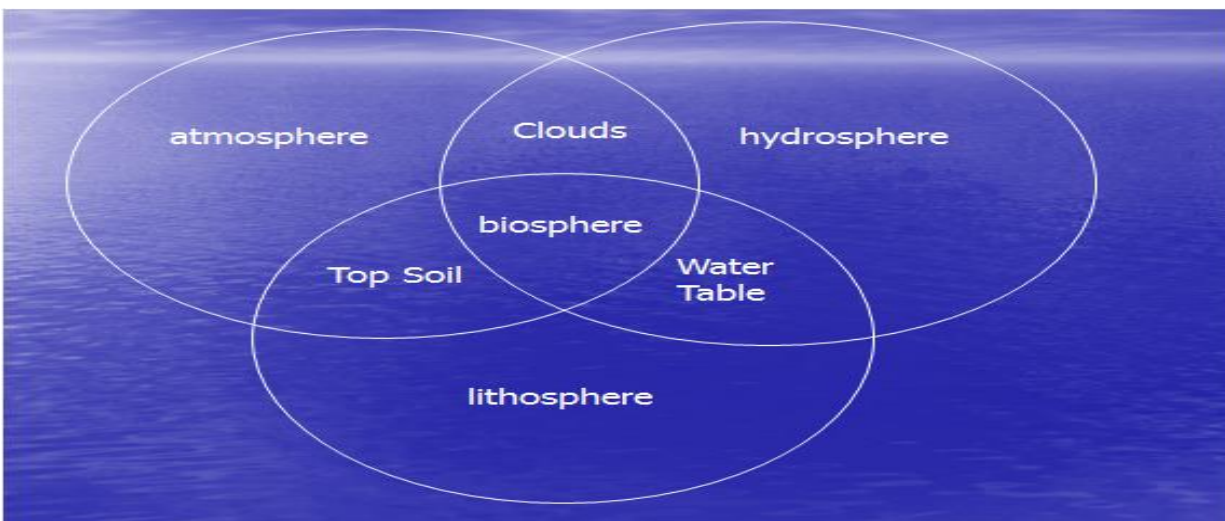


Fig .1 : The four layers that surround the Earth

Components of the ecosystem:

An ecosystem is consisting of four basic components : abiotic substances , producer organisms , consumer organisms and decomposer organisms (Fig 2) .

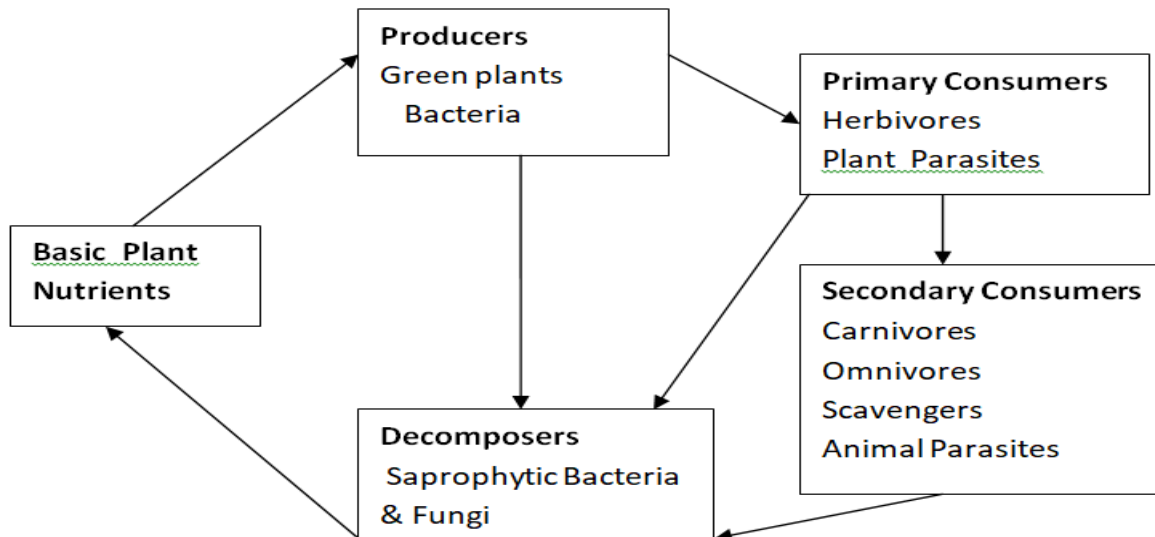


Fig 2 : Basic component of an ecosystem

Abiotic substances ; are the inorganic and organic substances not momentarily present in living organisms . Bioactive elements , such as oxygen , may be in a form readily available to living organisms such as free O₂ or CO₂ , or they may be in an inaccessible form such as silicon dioxide (SiO₂) in quartz , a major component of granite . Similarly , potassium may be readily available to plants in the form of KCL in soil , but relatively unavailable in the form KAlSi₃O₈ in feldspar , one of the commonest of all minerals .The form and composition in which bioactive elements occur, and the rate of their release from solids , represent the most important properties of an ecosystem which regulate the rate of its functions and determine its productivity . For example, an ecosystem may have a substantial abundance of vital nutrients , such as nitrates and phosphates, but if they are present in relatively insoluble particulate form as they would be if linked to ferric ions , they would not be so readily available to plants as if they were in the soluble form of potassium or calcium nitrate and phosphate