

History of Ecology

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History of Ecology

- Concept used by human being from the primitive society before finding the term Ecology (study of organism at home/habitat)
- Necessity of environmental study was also realized by general people
- History also consists of contribution by philosophers and scientists directly or indirectly working on ecology
- Therefore, history should include the phases starting from primitive society to considerations by general peoples, philosophers, scientists and academicians

1. Ecological considerations by the primitive society
2. Philosopher's contributions in ecology
3. Pioneer study (on Ecology)
4. General people's awareness (on Environment)
5. Scientific study
6. Academic position of ecology
7. Sub-divisions of ecology

1. Ecological considerations by the primitive society

- Searching for food (hunting animals and collecting fruits/vegetables/crops)
- Searching for shelter (suitable place for living)
- Studies on natural forces (fire, air, storm, wind flow, sunlight etc.)
- Ultimately studied the ecology through study on plants/animals, their availability (habitats) and effects of forces (different factors) on organisms and environment

2. Philosopher's contributions in ecology

- Aristotle worked on animal and developed a book "Historia Animalia" : all the inland waters are not alike in terms of their animal inhabitants
- Theophrastus worked on plants: plants are different in shallow and deeper part of a lake.

3. Pioneer study

- Anton van Leeuwenhoek: microscope invention facilitated the study of food chain and population regulation

4. General people's awareness

- **Production ecology** (ecology of plants/fish/animals in agriculture, aquaculture)
- **Ecology for health/Medicine sector** (mosquito ecology in malaria medicine)

- Population density and alteration of habitat (reduction of habitat, reduction of species/biodiversity)
- Peoples realize- **all the natural systems are stable and in equilibrium condition unless people disturb them**
- Peoples need to depend on environment for survival
- There should be **relation between man and environment** (man should earn maximum through minimum destruction of nature)
- How ecology should be studied? (science of environment as applied physics theory to engineering e.g., preparing bridge)

5. Scientific study

- F A Forel first worked in 1869 on Lake Geneva in Switzerland (some aspects of geology, physics and chemistry of lake; study was related to limnology rather than ecology; limnology deals with only inland water whereas ecology for all types of water)
- German Biologist Ernst Haeckel in 1869 first used the term Ecology (“Oikos” means home/habitat; “Logos” means knowledge; study of organism at home)
- Study of relations of organisms to their environment
- Study of interrelations between organisms and environment
- Study of structure and functions of nature
- Study of the distribution and abundance of organisms in the environment
- **Approaches:** organism, habitat/environment and relations between organisms and environment

6. Academic position of ecology

- A. Division of biological science
 1. Basic division/horizontal : Biology, ecology
 2. Taxonomic/vertical division: Zoology, botany, bird/insect/fish/animal ecology
- B. Level of organization

(**Gene system** for gene study>**Cell system** for cell study>**Organ system** for organ study>**Organism system** for organism study>**Species system** for species study>**Population system** for population study>**ecosystem** for community study)

Ecosystem: four conditions (a) any place of nature; (b) existence of biotic and abiotic factors; (c) interactions between these factors; and (d) materials flow from biotic to abiotic or abiotic to biotic
- C. Theory of integrative level (characters of hydrogen and oxygen are not same with water; similarly ecosystems characteristics are different than their components)

7. Sub-divisions of ecology

Why sub-divisions?

- Development of specialization
- Finding out solution to a specific problem of the environment/ecosystem
- Better understanding of the environment

How sub-divisions?

1. Based on organism (autecology and synecology)
2. Based on taxonomy/organization (species, population, community)
3. Based on habitat

Why based on habitat?

- Facilitates for making field trip
- Presentation of descriptive data on biota
- Participation in development

How?

1. Terrestrial ecology
2. Aquatic ecology
 - a) Freshwater ecology (salinity up to 0.5 ppt)
 - b) Coastal water ecology (14-17 ppt)
 - c) Marine water ecology (above 30 ppt)