

Ecology and Society

Defining basic concepts

Distinguish between:

- ▶ Environment and Ecology
- ▶ Development, Economic Growth and Sustainable Development
- ▶ Society, Nature and Culture

What is ecology?

- ▶ Understand the relationship of living organisms to one another and to their physical environment.
- ▶ Refers to the interrelations of human beings, flora, and fauna with elements of the natural and the physical environment-biotic and non-biotic components.

What is environment?

- ▶ Refers to the surroundings, or the context within which humans, animals, plants and other exist.
- ▶ We live in close interaction with the natural environment that has shaped our cultural identity, values system, and our economic well-being.

Living without

- ▶ Can we live without this environment?
- ▶ Debate the possibilities of life outside EARTH in films and science [E.g. Avatar; 2012]

Context of Environment

- ▶ Environment in association with learning and experience refers to the sum of outside influences on the organism that is distinguished from the inherited potential that together influence human behavior and development.
- ▶ In relation to the natural world which is currently seen as fragile and threatened by human technology and development after the Industrial revolution and with the increase of human population.

Animate and Non-animate World

- ▶ **Animate** - plants and animals including humans

VS

- ▶ **Inanimate** - objects, machines, and the physical world around us

SOME BASIC PRINCIPLES OF ECOLOGY

- 1) All levels of organization overlap and interact.
- 2) Within ecological systems virtually everything is related to everything else.
- 3) The abundance and distribution of living organisms on earth are affected by aspects of the physical, biotic and social environment.
- 4) Biotic communities differ in the numbers and kinds of species, the diversity of species, and the roles or ecological niches in the community.

- 5) The species in biotic communities form networks of relationships or symbioses, which may be either favourable or unfavourable for each species.
- 6) Different ecological communities have analogous components and may be similar in basic organization even though their constituent species are very different.
- 7) Biological interactions are usually multiple and cumulative. Rarely, if ever, do interactions occur singly or in isolation.
- 8) Human populations are subject to ecological principles, although we artificially dissociate ourselves from other living systems. All of our activities and even our advanced technologies are ultimately dependent on nature. (E.g. Anthropocene)

The Anthropocene Epoch is an unofficial unit of geologic time, used to describe the most recent period in Earth's history when human activity started to have a significant impact on the planet's climate and ecosystems

Ecosystems provide the central theoretical framework for ecology.

They can be analysed in terms of four basic components:

- 1) abiotic substances (water, oxygen, nitrogen, etc... when outside living organisms).
- 2) producers (green plants and bacteria)
autotrophic.
- 3) consumers (organisms that utilize organic materials manufactured by producers)
heterotrophic.
- 4) decomposers (bacteria and fungi) *saprophytic.*

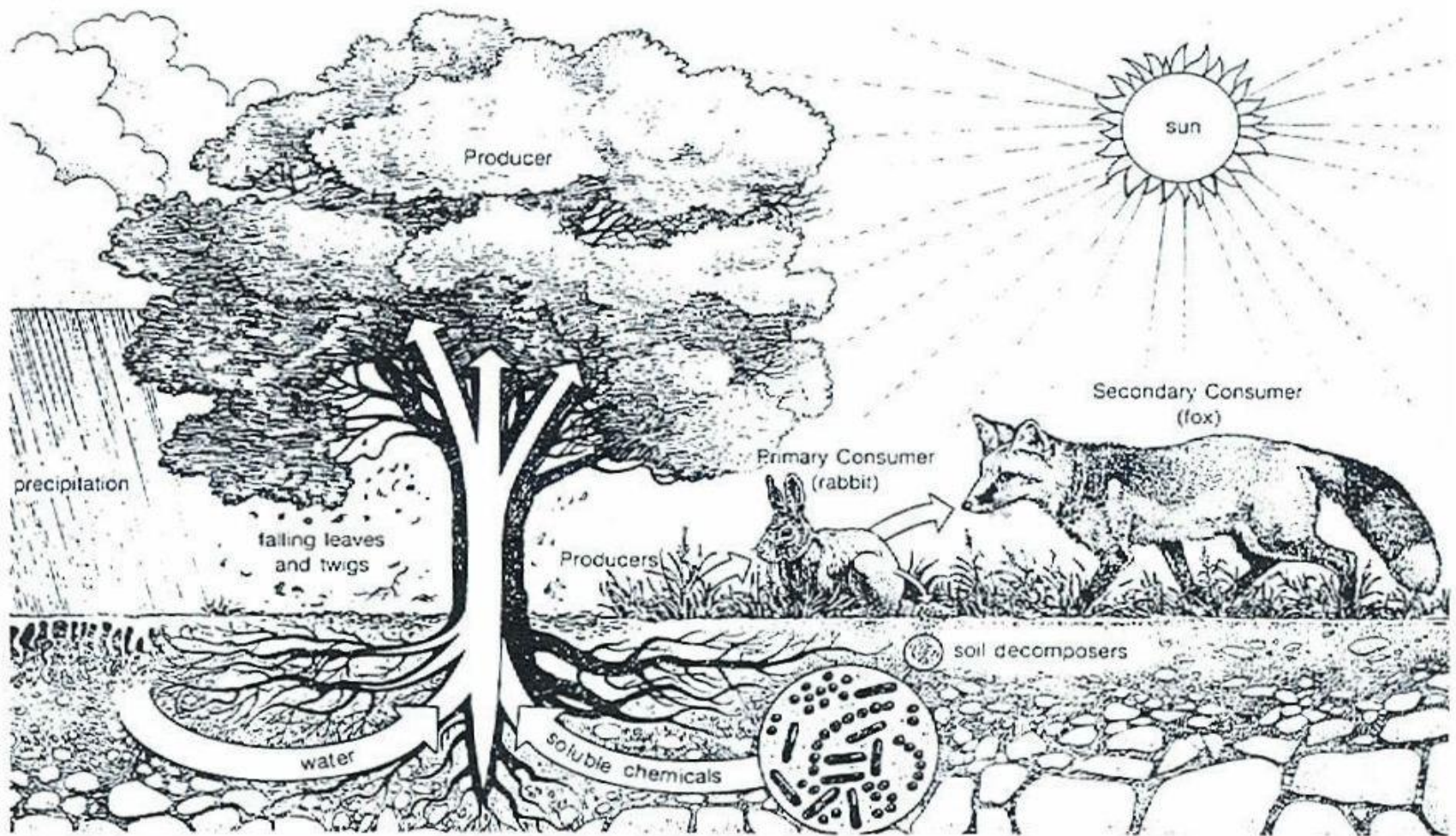
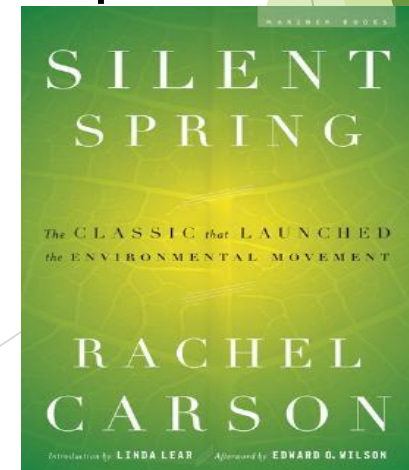


Figure 4.2 Diagrammatic representation of a familiar terrestrial ecosystem showing producers, consumers, and decomposers (from Miller, 1982).

The New Environmentalism of the 1960s

Environmentalism is a movement that arose in response to global environmental crises

- ▶ Prior to the 1960s, environmentalism focused on preservation of wilderness and conservation of resources.
↳ an area in which few people live that is not used for farming and is more or less in its natural state
- ▶ The environmental movement flourished in the 1960s in the midst of the Civil Rights, Peace and Women's movements.
- ▶ Rachel Carson's *Silent Spring* brought to public attention the dangers of environmental pollution to public health, such as the use of DDT, and sparked the beginning of modern environmentalism.



The New Environmentalism of the 1960s

- ▶ As people became more aware of environmental issues, such as air and water pollution, radiation, pesticide poisoning and other problems, they demanded the federal government to take more responsibility.
- ▶ Public concern for the environment became clear during the *Earth Day* demonstrations of 1970.

The New Environmentalism

- In response to the environmental movement, several laws emerged to regulate environmental pollution and protect natural resources.
- Some of the most important laws that determine how the Mississippi River is managed are:
 - ▶ The National Environmental Policy Act (NEPA) of 1969
 - ▶ The Federal Water Pollution Control Act (FWPCA), 1972
 - ▶ Upper Mississippi River Management Act (UMRMA) of 1986

The resurgence in 1960's

1. Increase in scientific understanding
 - Research, publications
2. Increase in pressure group membership
 - Greenpeace, Amnesty, WWF
3. Increased signs of damage
 - Satellite images, flooding, oil spills, acid rain
4. Increased desire to find solutions
 - Media attention and public interest on rise

1970's

- ▶ First Earth Day 1970
- ▶ Greenpeace 1971
- ▶ Polluter Pays Principle 'OECD' 1971
- ▶ UN Conference on Human Development, 1972
- ▶ Worldwatch Institute 1975

1970's Limit's to Growth Debate

Club of Rome Report in 1972, came to two main conclusions:

- (i) If the present trends in growth of population, industrialisation, pollution, food production and resource depletion continued unchanged, the limits to growth on this planet would be reached within the next 100 years.
- (ii) (ii) It is possible to alter these growth trends and to establish a condition of ecological and economic stability that is sustainable for the future. (Meadows et al, 1989).

Ecological Disasters

- ▶ The 1978 Amoco Cadiz oil spill off the coast of Brittany
- ▶ The 1979 Three Mile Island Nuclear accident occurs in Pennsylvania
- ▶ The 1984 Bhopal Gas Tragedy in India (Union Carbide toxic chemical leak 10,000 dead 300,000 injured)

1980's

- ▶ Climate Change

- ▶ 1985 ' global warming predicted'
 - ▶ 1988 IPCC established

- ▶ Ozone Depletion

- ▶ 1985 Ozone Hole Discovered
 - ▶ 1987 Montreal Protocol adopted

Sustainable Development

► 1980 World Conservation Strategy

“Humanity’s relationship with the biosphere (the thin covering of the planet that contains and sustains life) will continue to deteriorate until a new international order is achieved, a new environmental ethic is adopted, human populations stabilised, and sustainable modes of development become the rule rather than the exception For development to be sustainable it must take account of social and ecological factors, as well as economic ones; of the living and non-living resource base; and of the long term as well as short term advantages and disadvantages of alternative actions.” (IUCN, 1980, Section1)

► 1987 World Commission on Environment and Development

- Equates sustainable development with progress that “meets the needs of the present without compromising the ability of future generations to meet their own needs.” (p.43, *Our Common Future*)

Cont.

In May 1999 the UK's Sustainable Development Strategy was published and defined sustainable development in terms of four objectives:

1. Social progress which recognises the needs of everyone.
2. Effective protection of the environment.
3. Prudent use of natural resources.
4. Maintenance of high & stable levels of economic growth & employment.

At the moment the richest 1/5th of the population Receives 82.7% of total world income - whereas the poorest 1/5th receives only 1.4%

Some Growing Concerns

- ▶ Ecological injustice
- ▶ Growing unequal distribution of resources
- ▶ Environmental racism
- ▶ Colonization of indigenous people's land and resources (a new form of colonialism)

Earth Summit 1992

5 agreements were introduced

1. The Framework Convention on Climate Change
2. The Convention on Biodiversity
3. Agenda 21
4. The Rio Declaration
5. The Forest Principles

Summary

- ▶ 1960's birth of new consciousness, movement, groups
- ▶ 1970's tense battle ground between economists and environmental movement
- ▶ 1980's Introduction of sustainable development
- ▶ 1990's Realising SD
- ▶ 2000's ?