



Kyrgyz Economic University

M. Ryskulbekov

Shaazadan Tiumonbaev



Open Class

Lecture 1

Topic: Ecology. Introduction



What is Ecology?

- **Ecology** is the scientific study of the **interactions** between **organisms** and **their environment**.
- It is the science that seeks to describe and explain the **relationship** between **living organisms** and **their environment**.



What is Ecology? (Cont...)

- Ecology is describing the relationships between living organisms and their environment.
- Ecology comes from the Greek words
- Oîkos= House
- -λογία, -logia= Study of Life
- Study of the “house/environment” in which we live.



Factors of Ecology

- There are two factors that Ecology studies:
 - **The Abiotic Factors** (non-living components) are those inert factors of the ecosystem, such as light, temperature, chemical products, water, and the atmosphere.
 - **Biotic Factors** (living organisms) are all the living beings in an environment.

Ecology is study of interactions between

■ non-living components in the environment...

- light
- water
- wind
- nutrients in soil
- heat
- solar radiation
- atmosphere, etc.



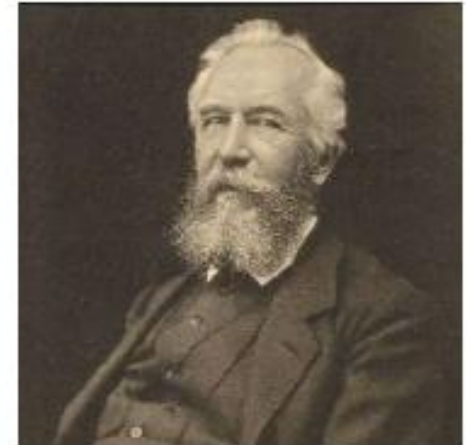
AND...

■ Living organisms...

- Plants
- Animals
- microorganisms in soil, etc.

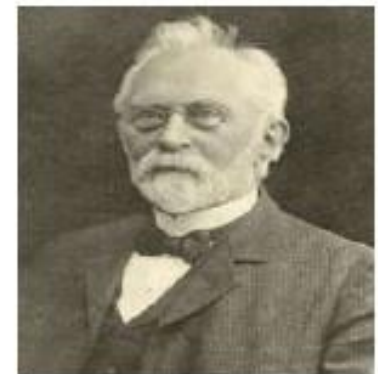


- **Ernst Haeckel**, a German zoologist coined the term Ecology in 1866.



- After that....

- Danish botanist, **Eugenius Warming** elaborate the idea of Ecology.






Classification of Ecology

- Ecology is a broad discipline comprising many sub-disciplines. Under this system the subjects studies:
 - **Ecophysiology** examines how the physiological functions of organisms influence the way they interact with the environment, both biotic and abiotic.
 - **Behavioral ecology** examines the roles of behavior in enabling an animal to adapt to its environment.



Classification of Ecology (cont...)

- **Population ecology** studies the dynamics of populations of a single species.
 - **Community ecology** (or synecology) focuses on the interactions between species within an ecological community.
 - **Ecosystem ecology** studies the flows of energy and matter through the biotic and abiotic components of ecosystems.
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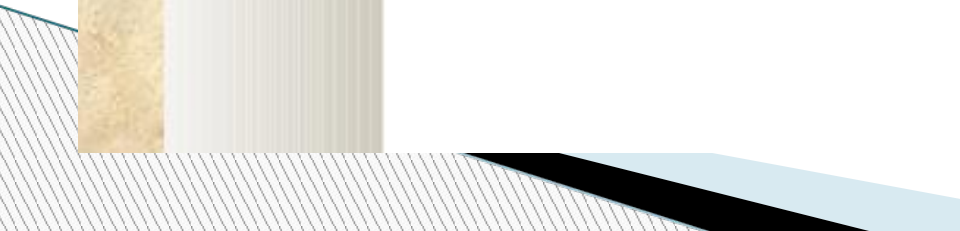


Classification of Ecology (cont...)

- **Systems ecology** is an interdisciplinary field focusing on the study, development, and organization of ecological systems from a holistic perspective
- **Landscape ecology** examines processes and relationship in a spatially explicit manner, often across multiple ecosystems or very large geographic areas.




Classification of Ecology (cont...)

- **Evolutionary ecology** studies ecology in a way that explicitly considers the evolutionary histories of species and their interactions.
 - **Political ecology** connects politics and economy to problems of environmental control and ecological change.
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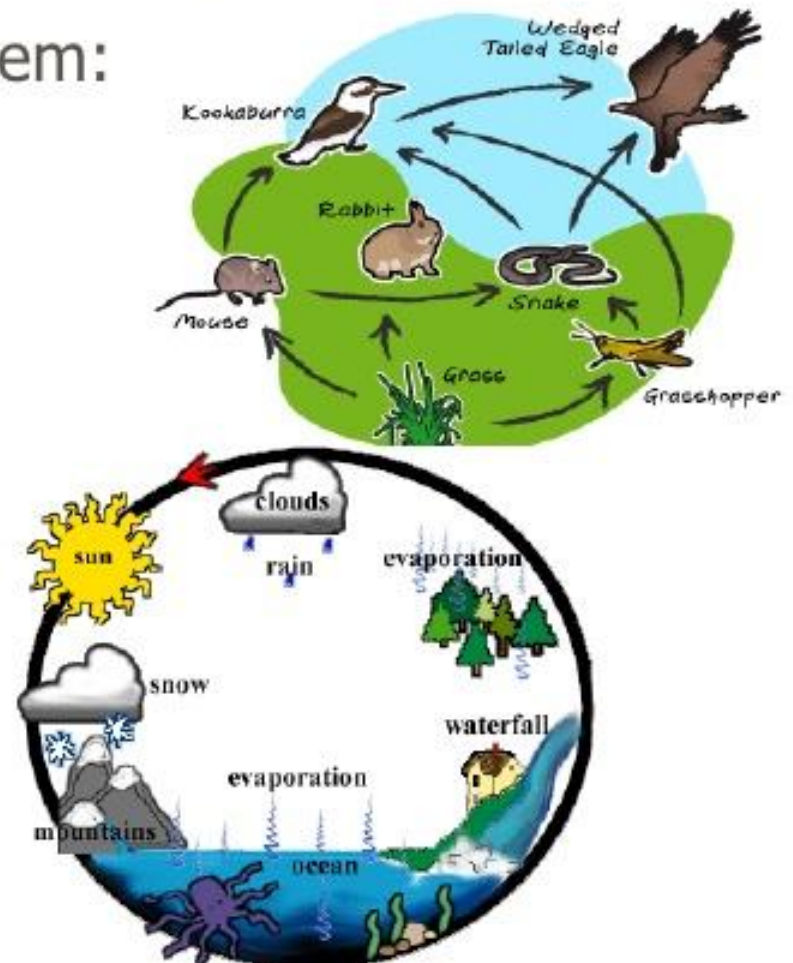
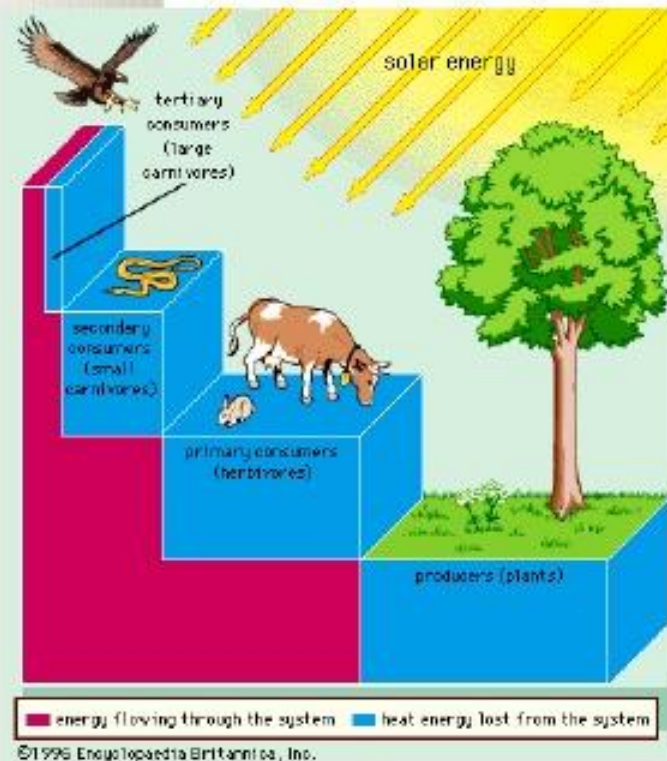


Ecosystem

- Ecosystem is a **dynamic complex** of plant, animal and micro-organism communities and their non-living environment, interacting as a **functional unit**.
 - Every element of the environment have their own ecosystem.
 - A dynamic ecosystem makes the balance of nature.
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Ecosystem (cont...)

■ Example of Ecosystem:





Status of Ecology

- Past Status

- Calm and Quite
- Human don't disturb the nature
- Ecosystem had been going on its natural cycle



Status of Ecology (cont...)

- Present Status
 - Population increasing
 - Negative Effect
 - Ecological Crisis

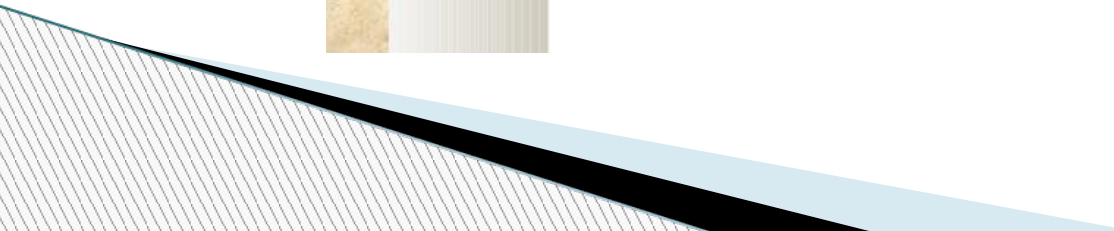


Ecological Crisis

- The main causes of Ecological Crisis are:
 - Over Population
 - Environment Pollution
 - Deforestation

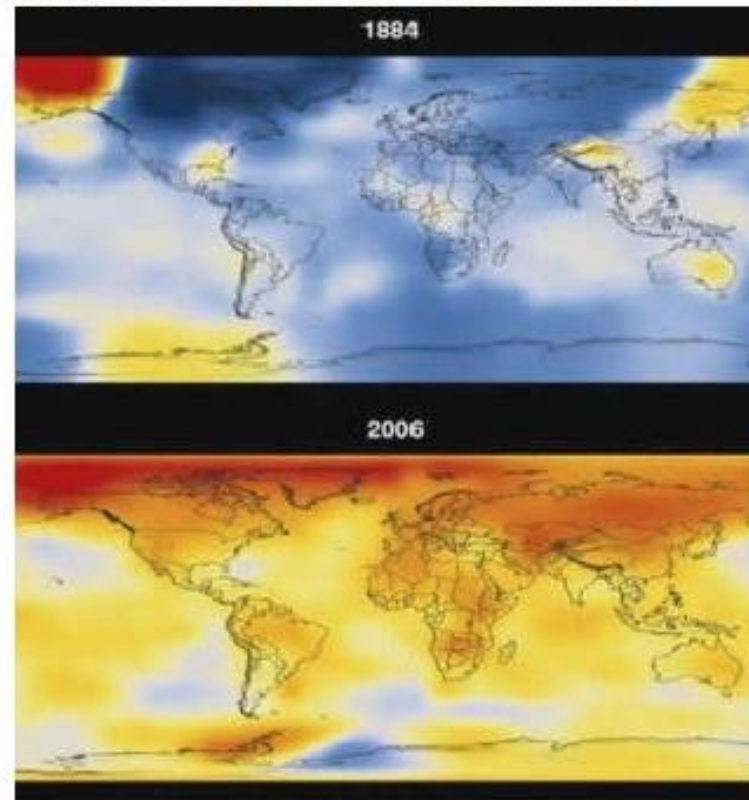


Ecological Crisis

- Major Ecological Crisis which are facing the World:
 - Greenhouse Effect
 - Global Warming
 - Climate Changes
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Global Warming

- Global warming is an increase in the average temperature of the earth's atmosphere.



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Climate Changes

- Climate change means a long-term significant change in the “average weather” that a given region experiences. Average weather may include average temperature, precipitation and wind patterns.
- It causes natural disasters.

Deforestation

- **Deforestation** is the logging or burning of trees in forested areas.





Conclusion

- Ecosystem is a natural cycle.
 - Ecosystem makes the balance of nature.
 - Human beings are an integral part of ecological systems and depend on nature for survival and quality of life.
 - Save Nature, survive ecosystem, safe ourselves.
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