

GE 2211 Environmental Science and Engineering

Unit – II

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# Biodiversity

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- introduction to biodiversity – definition: genetic, species and ecosystem diversity

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# Introduction

- **Biodiversity** is the variation of life forms within a given ecosystem, biome, or for the entire Earth.
- Biodiversity is often used as a measure of the health of biological systems.
- The biodiversity found on Earth today consists of many millions of distinct biological species, which is the product of nearly 3.5 billion years of evolution
- Biodiversity is a portmanteau word, from biology and diversity, originating from and used interchangeably with "biological diversity."
- The number of species that are known and described, range between 1.7-1.8 million. The maintenance of a high level of biodiversity is important for the stability of ecosystems

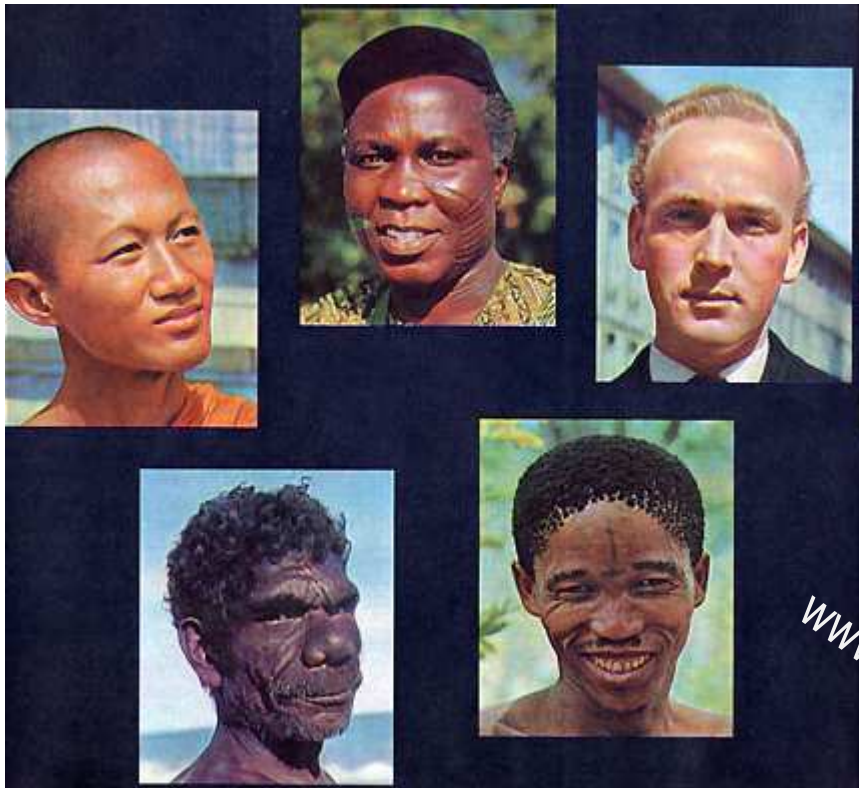
# Types of Biodiversity

- Biodiversity can be classified into three types:
  - Genetic diversity
  - Species diversity
  - Ecosystem diversity

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# Genetic Diversity

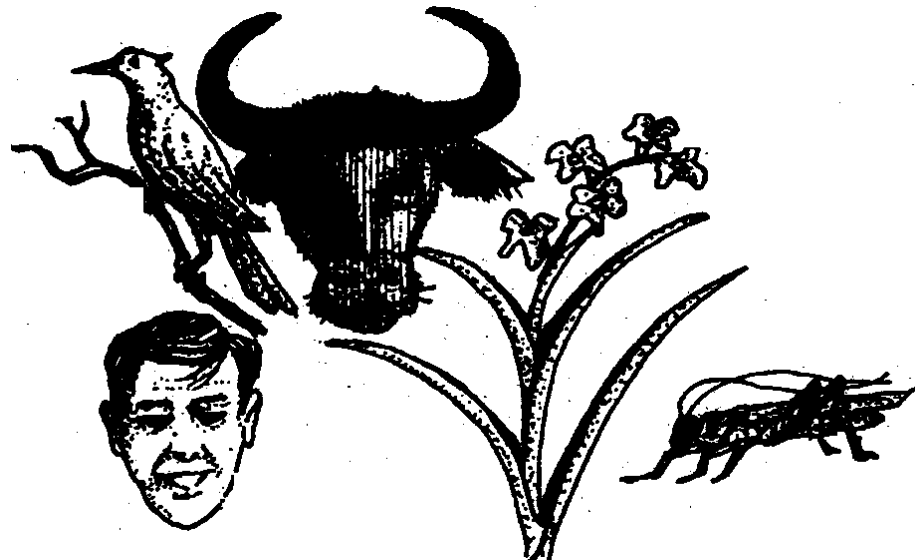
- Genetic diversity is concerned with the variation in genes within a particular species.
- Many billion individuals are produced through sexual reproduction. Each differs from the other in the genetic information contained in its genes.
- For example humans of Indian and African origin are different, also the difference between north-Indians and south-Indians.



# Species Diversity

- It refers to the variety of living organisms on earth.
- Species differ from one another markedly in their genetic makeup and do not interbreed in nature.
- Closely related species however have much of their hereditary material in common.
- For example, humans and chimpanzees have about 98.4% of the same genes.

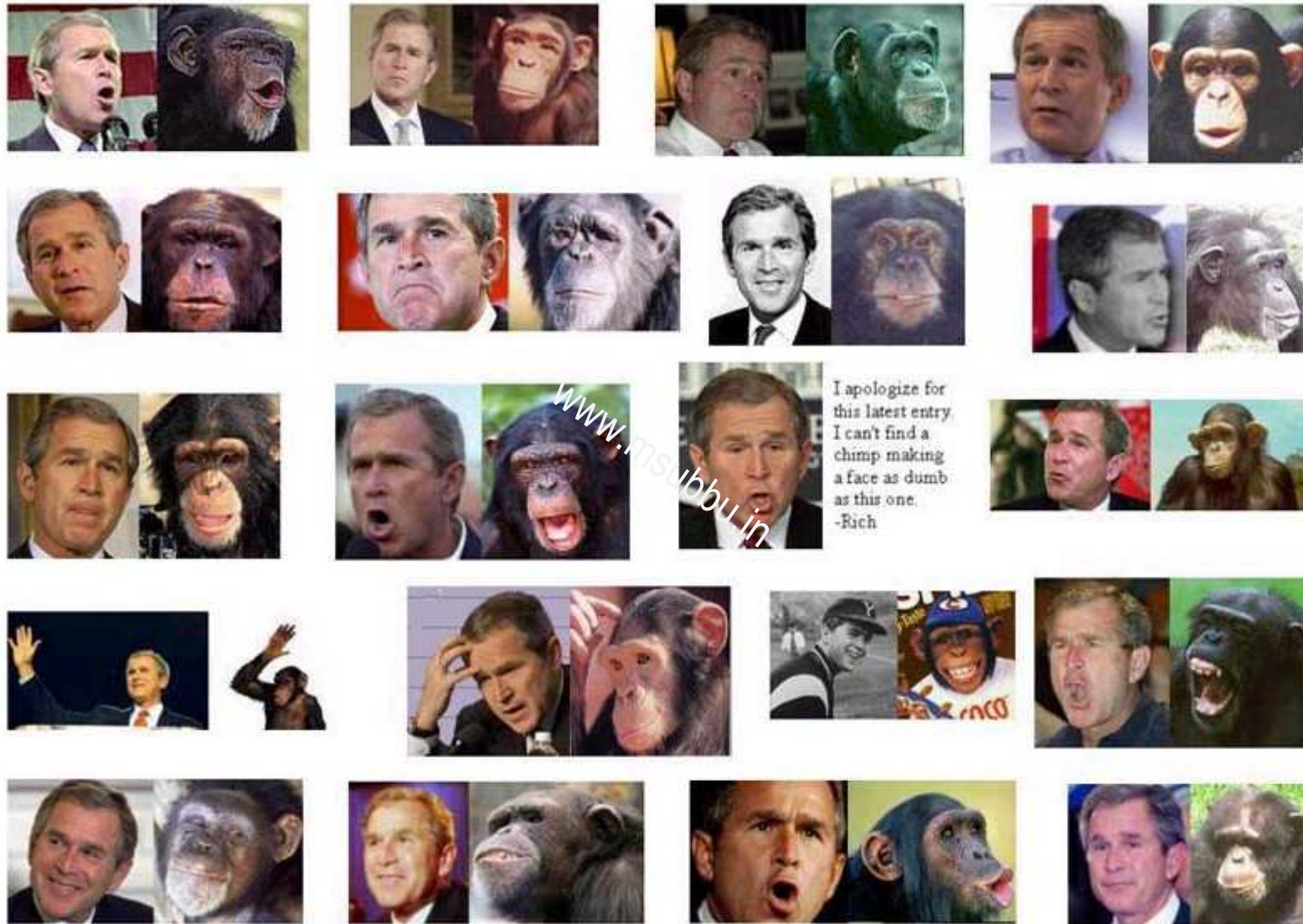




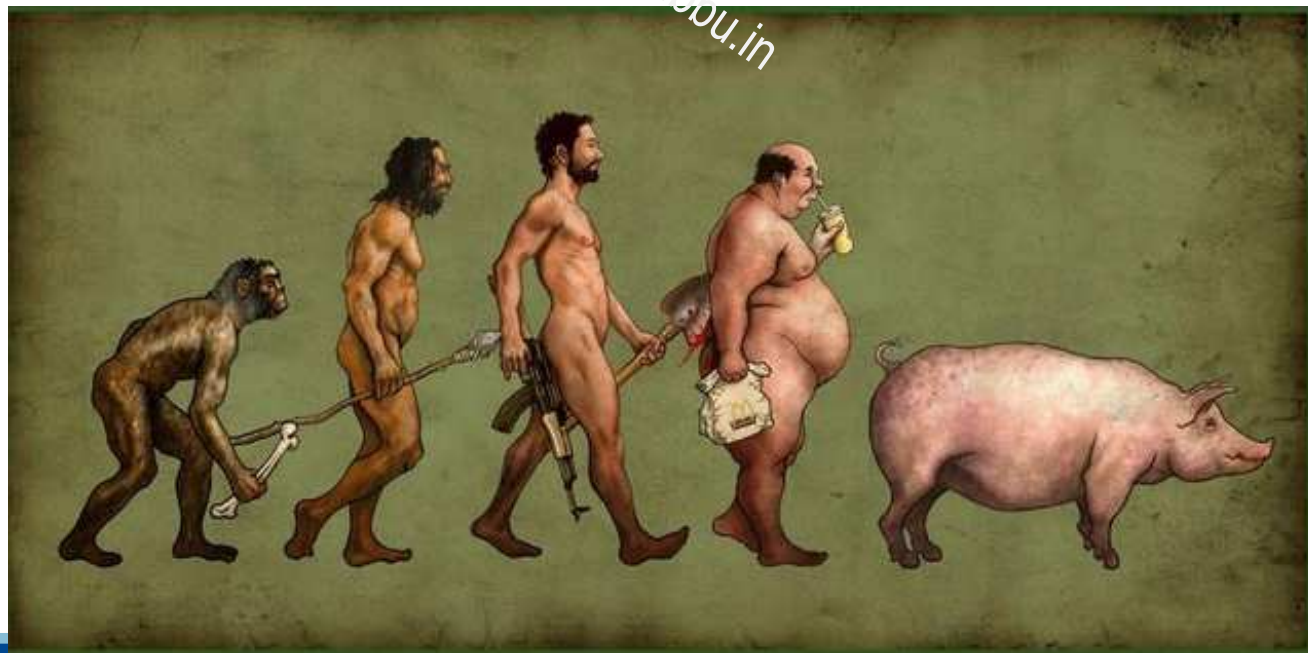
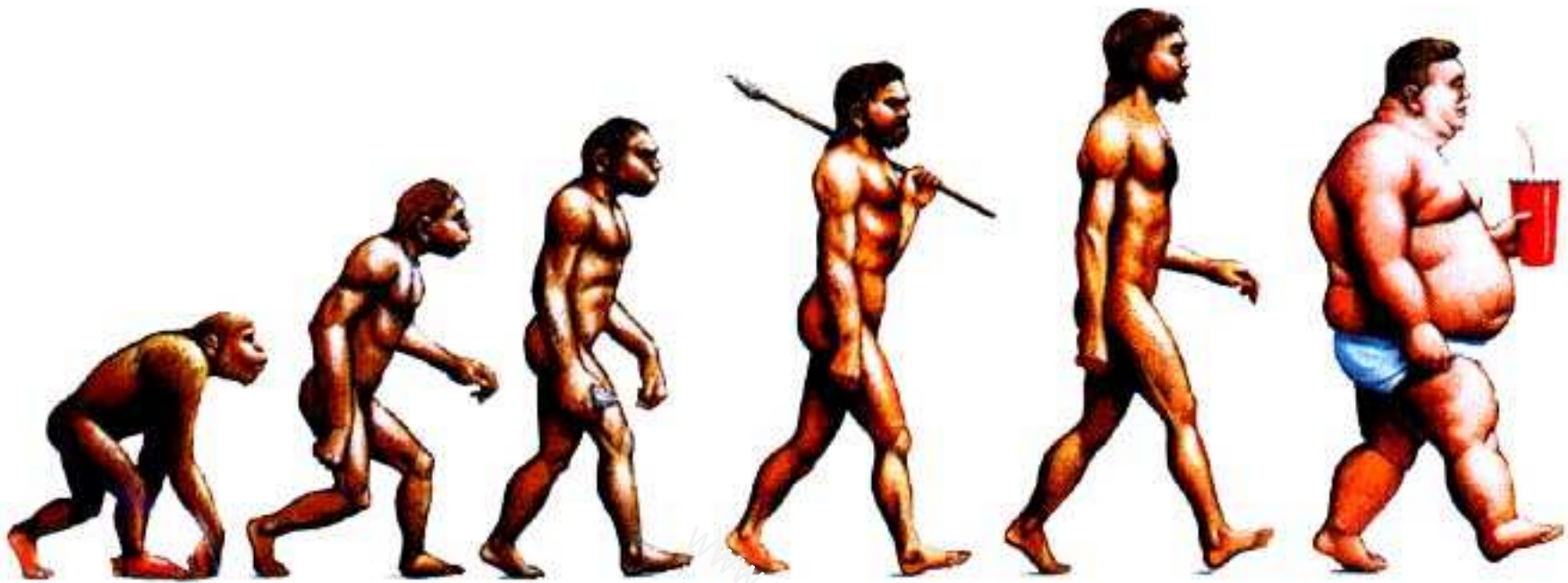
species diversity of fungi


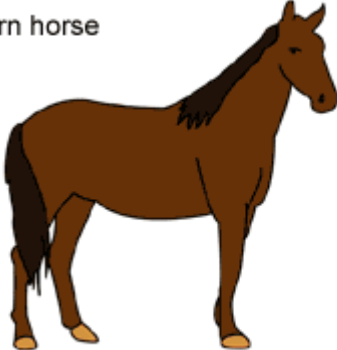

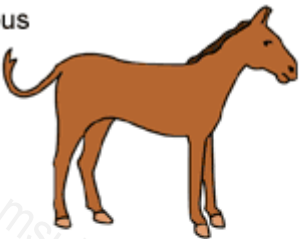

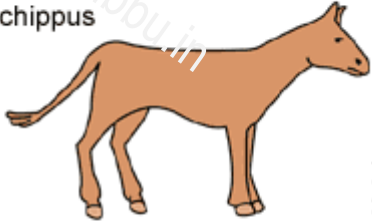

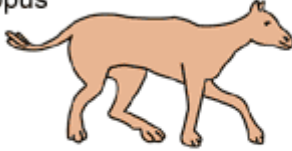








Just for fun! (sorry if it is hurting anyone)



1 million years ago	 <p>modern horse</p>  <p>Height: 1.6 m</p>
10 million years ago	 <p>Pliohippus</p>  <p>Height: 1.0 m</p>
30 million years ago	 <p>Merychippus</p>  <p>Height: 1.0 m</p>
40 million years ago	 <p>Mesohippus</p>  <p>Height: 0.6 m</p>
60 million years ago	 <p>Eohippus</p>  <p>Height: 0.4 m</p>

# Ecosystem Diversity

- This refers to the variety of habitats.
- A habitat is the sum total of the climate, vegetation and geography of a region. There are several kinds of habitats around the world. Change in climatic conditions is accompanied by a change in the vegetation as well.
- Each species is adapted to a particular kind of environment. When the environment kept on changing, species best adapted to that environment become predominant. Hence the diversity of species in the ecosystem is influenced by the ecosystem itself.
- Genetic diversity starts from the Geographical change within an ecosystem.



