

DIVISIONS OF BIODIVERSITY

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DIVISIONS OF BIODIVERSITY

- Species diversity
- Genetic diversity
- Community diversity

SPECIES DIVERSITY

Morphological definition of species

- A group of individuals that is morphologically, physiologically or biochemically distinct from other groups in some important characteristics.

Ex: Differences in DNA sequences and other molecular markers.

- Morphological definition of species is the most common used by taxonomists.
- Taxonomy is the science of classifying living things.
- Taxonomist help conservation biologists identify species or groups that may be evolutionarily unique or particularly worthy of conservation efforts.

BIOLOGICAL DEFINITION OF SPECIES

- A group of individuals that can potentially breed among themselves in the wild and that do not breed with individuals of other groups.
- **Hybrid:** Individuals of related but distinct species may occasionally mate and produce hybrid.
- Hybrid species sometimes better suited to their environment than parent species and they can go on to form new species.

Ex: Hybrid grouper seed produce from the eggs of tiger grouper, *E. fuscoguttatus* and sperm of Giant grouper *E. lanceolatus*.

PHYLETIC EVOLUTION

- In the process of evolution, populations often genetically adapt to changes in their environment.

ADAPTIVE RADIATION

- Local population adapted genetically to the environments of particular unoccupied islands, mountains and isolated valleys and subsequent speciation is known as adaptive radiation.

ALPHA DIVERSITY

- The number of species in a certain community is described as alpha diversity.

Ex: 100 ha forest in Wisconsin has fewer tree species than a 100ha patch of the Amazon rain forest → Amazon rain forest is greater.

GAMMA DIVERSITY

- Number of species in a large region or on a continent.

Ex: Kenya with 1000 species of forest birds, has a higher gamma diversity than Britain, which has only 200 species.

BETA DIVERSITY

- Links alpha and gamma diversity. It represents rate of change of species composition along an environmental or geographical gradient.

Ex: If each lake in a region contained different fish species.

GENETIC DIVERSITY

- Individuals within a population usually are genetically different from one another.
- Genetic variation arises because individuals have slightly different forms of their genes, the units of the chromosomes that code for specific proteins.

COMMUNITY DIVERSITY

- Biological community is defined as the species that occupy a particular locality and the interactions among those species.
- A biological community together with its associated physical environment is termed an ecosystem.

Ex: Kelp forest, Southern bull kelp (*Durvillaea antarctica*) and giant kelp (*Macrocystis pyrifera*) provide food and shelter for an ocean fish and shell fish. Inhibit erosion, reduces the impact of waves and currents. Because of value, kelp forests have disappearing over the last centuries at Alaska, British Columbia, Pacific north west of US.