

## BIODIVERSITY AND CONSERVATION

The important diversity at the levels of biological organization are-

I\_ Genetic Diversity - a single species might show high diversity at the genetic level over its distributional range. India has more than 50,000 genetically different strains of rice and 100 varieties of mango.

II\_ Species Diversity - diversity at species level for example, the Western Ghats have more amphibian species diversity than the Eastern Ghats.

III. Ecological Diversity - deserts, rain forests, mangroves, coral reefs, wetlands, estuaries and alpine meadows are types of ecological diversity.

- India has only 2.4% of land area of world but share 8.1% of global species & much. Our country is one of the 12 mega diversity countries of the world.

### Species-Area relationships

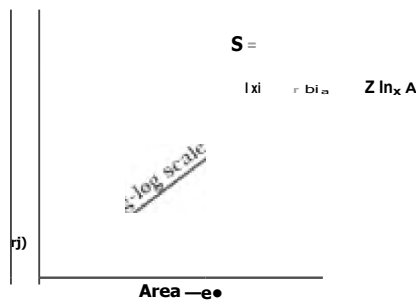
Alexander von Humboldt observed that species richness increases with increasing explored area. The relation between species richness and area for a wide variety of taxa turns out to be a rectangular hyperbola.

On logarithmic scale, the relationship is a straight line described by the equation

$$\log S = \log C + Z \log A.$$

Where, S = species, A = Area, Z = slope of the line, C = Y-intercept.

Ecologists have discovered that the value of Z lies in range of 0.1 to 0.2 regardless of taxonomic group of the region.



#### Loss of biodiversity

In general, loss of biodiversity in a region may lead to

- Decline in plant production
- Lowered resistance to environmental perturbations, drought, and flood
- Increased variability in ecosystem processes such as productivity, water use, and pest and disease cycles.

#### Causes of biodiversity losses

Faster rates of species extinctions are largely due to human activities. The four major causes are called 'The Evil Quartet'.

- Habitat loss and fragmentation
- Over-exploitation
- Alien species Invasions
- Co-extinction

#### How do we conserve Biodiversity?

There are two ways of conserving biodiversity-

**in situ (on site) conservation**- Conservationists have identified for maximum protection certain biodiversity hotspots with very high levels of species richness and high degree of endemism, species found in that region and not found anywhere else. There are 34 biodiversity hotspots in the world. These hotspots are also regions of accelerated habitat loss. India has 14 biosphere reserves, 90 national parks and 44 wildlife sanctuaries.

**Ex situ (off site) conservation**. In this method, threatened animals and plants are taken out from their natural habitat and placed in special settings when they are protected and bred. Zoological parks, Botanical Gardens and wildlife safari parks are used for this purpose.

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