

# **BIODIVERSITY - I**

# Concept & Definitions

- **Biodiversity** - the abbreviated word for **Biological Diversity**
- The latter term came into prominence around mid-1980
  - Defined by Norse & McManus (1980)
- The former term – first used by Walter G. Rosen in 1985 in:
  - 'National Forum on Biodiversity' held at Washington DC in September 1986.
  - Its proceedings entitled ***Biodiversity*** introduced & popularized the notion of biodiversity
- Rio Summit or Earth Summit 1992 - The United Nations Conference on Environment and Development (UNCED) also substantially elevated the status of Biodiversity
- Originates from the Greek word BIOS = LIFE & Latin word DIVERSITAS = VARIETY or DIFFERENCE; BIODIVERSITY generally therefore means: **VARIETY OF LIFE**

# Concept & Definitions

- Considered an 'umbrella term' referring to organisms found within the living world, i.e., the number, variety and variability of living organisms.
- It may thus be assumed to be a synonym for:
  - 'Life on Earth', 'variety of life and its processes' (Keystone Center 1991),
  - 'condition of being different' (Gove *et al.* 1996)
  - what Darwin (1859) exclaimed as 'Life's endless forms'.
  - 'the essence of life' (Frankel 1970).
- In reality it is a very vast and complex concept & its ramifications extend deep into all spheres of human life and activity

# Concept & Definitions

- Complexity of this concept is reflected in the existence of numerous definitions – at least 14 definitions identified
- Two among these largely used, quoted and even officialised
- The first most-used definition - sponsored by the United Nations (UN) and included in the Convention on Biological Diversity (CBD) (UNEP 1992):
  - Biodiversity refers to: “The variability among living, *inter alia*, terrestrial, marine and other aquatic systems and the ecological complexes of which they are part, this includes diversity within species, between species and of ecosystems’.
- The second most-used definition - sponsored by the Global Biodiversity Strategy (WRI, IUCN, and UNEP 1992)
  - The totality of genes, species and ecosystems in a region’.

# Global Biodiversity at a glance

Table 1.1 Estimated numbers of described species, and possible global total.

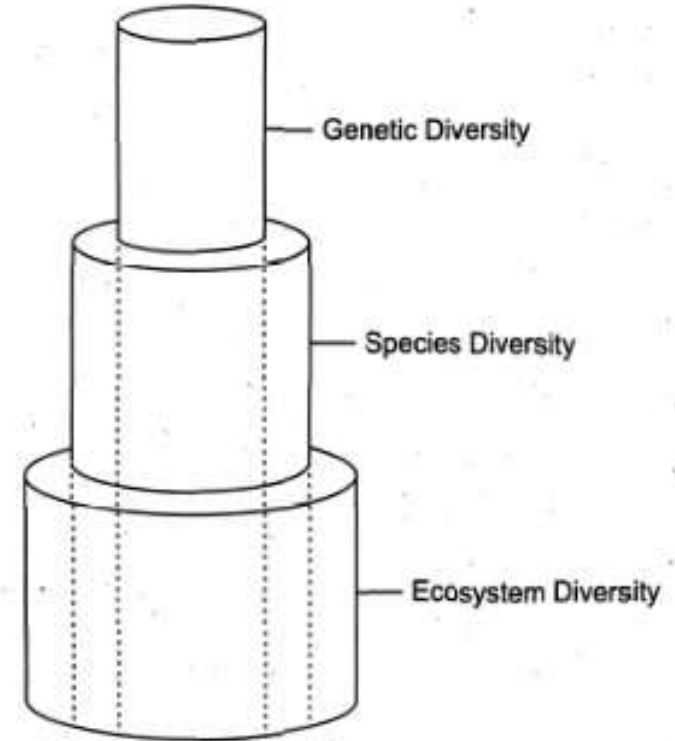
Kingdoms	Described species	Estimated total species
Bacteria	4 000	1 000 000
Protoctists (algae, protozoa, etc)	80 000	600 000
Animals	1 320 000	10 600 000
Fungi	70 000	1 500 000
Plants	270 000	300 000
TOTAL	1 744 000	ca.14 000 000

# Global Biodiversity at a glance

Group	Described Species	Estimated Total Species	% of Total described
<b>Bacteria</b>	3000	25 000 000	0.1
<b>Plants</b>			
algae	40 000	350 000	11
bryophytes	17 000	25 000	68
vascular plants	220 000	270 000	81
<b>Fungi &amp; lichens</b>	69 000	1 500 000	5
<b>Animals</b>			
nematodes	15 000	500 000	3
arthropods	80 000	6 000 000	13
fish	22 500	35 000	64
birds	9 040	9 100	99
mammals	4 000	4 020	>99

# Levels of Biodiversity

- Biological diversity includes 3 hierarchical **levels**:
  - (i) Genetic diversity
  - (ii) Species diversity
  - (iii) Ecosystem diversity.
- These levels are interrelated, yet distinct enough to be studied separately to understand the interconnections that support life on earth



**Fig. 1.1** The three hierarchical scales of biodiversity and their interrelationships (adapted from di Castri and Younès 1996)