

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
Bacteria	3000	25 000 000	0.1
Plants			
algae	40 000	350 000	11
bryophytes	17 000	25 000	68
vascular plants	220 000	270 000	81
Fungi & lichens	69 000	1 500 000	5
Animals			
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

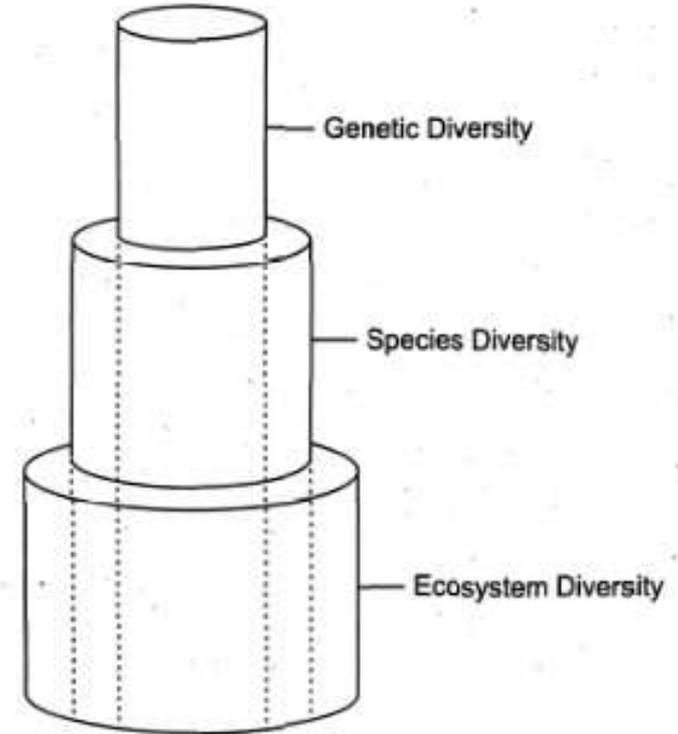


Fig. 1.1 The three hierarchical scales of biodiversity and their interrelationships (adapted from di Castri and Younès 1996)