

What is Biodiversity?

Biodiversity is a term used to describe the enormous **variety** of life on Earth. It can be used more specifically to refer to all of the species in one **region** or **ecosystem**. Biodiversity refers to every **living** thing, including plants, bacteria, animals, and humans.

Biodiversity components

<i>Ecological diversity</i>	Biomes, Bioregions, Landscapes, Ecosystems, Habitats, Niches, Population
<i>Organismal diversity</i>	Kingdom, Phyla, Families, Genera, Species, Subspecies, Population, Individual
<i>Genetic diversity</i>	Population, Individual, Chromosome, Genes, Nucleotides

Convention of Biodiversity

Convention on Biodiversity link	www.cbd.int
Set up in 1988 by United Nations Environment Programme (UNEP)	Have a group of experts and scientists
Need to share costs between developed and developing countries	
It represents a dramatic step forward in the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from the use of genetic resources.	
1992- 1993 received 168 signatures committing to change	

Ecological diversity

The variation in both terrestrial and aquatic ecosystems.	Looking at
Ecological diversity can also take into account the variation in the complexity of a biological community , including the number of different niches , the number of and other ecological processes.	diversity at a broader scale

Ecological diversity (cont)

The approach we **now** use to look at conserving diversity

Can be difficult to distinguish between different Bimoes	Wetland, Moors, Chalk Grassland
Has a wide range of different species	Can be within a very small area

Organismal diversity

About the number and types of different **individual species** out there.

Classification of species into groups	Linked to lineage
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Full taxonomic diversity	Names are meant to represent their descent . Understanding about species.
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Genus name change

Example of a Tomato plants name change and how using lineage can get confusing

1753: *Linnaeus- Solanum lycopersicum*

1768: *Miller- Lycopersicon esculentum*

1881: *Karst- Lycopersicon lycopersicum*

1974: *Nicolson- Lycopersicon lycopersicum*

1983: *Lycopersicon esculentum* (Miller)

2001: Peralta & Spooner- Genetics put it in the *Solanum* genus

Ongoing conflict with the name- including in the literature

Genetic Diversity

What makes a species the species it is?	How does one individual differ from another?
Can be a different number of Chromosomes	This is why Donkeys and Horses can't always mate

Benefits of genetic diversity

Different varieties of wheat:

> Environmental preferences

> Seasonal preferences (winter)

> Heat and drought tolerance

> Yield

> Resistance to disease or pests

> Protein content

Utilise wild and alternative varieties	Genetic breeding and/or Genetic Modification
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Genetic Subspecies of Tiger

Genetic tests 2004	Identified 6 subspecies of tigers (and 3 extinct)
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Geographic isolation and morphological characteristics

Bengal tiger, Amur tiger, South China tiger, Sumatran tiger, Indochinese tiger, and Malayan tiger

Split around 100,000 years ago	natural selection to adapt to different habitats.
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Very little gene flow between subspecies

Conservation can be hard

Can't save every species	Need to prioritise
Different threats	Some might be threatened by land use other by poaching. Need to focus on one problem rather than multiple

If focusing on one Subspecies you don't have to travel as much as if you looked at the whole species	Which is the most beneficial to save
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