

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

Ecological diversity Biomes, Bioregions, Landscapes, Ecosystems, Habitats, Niches, Population

Organismal diversity Kingdom, Phyla, Families, Genera, Species, Subspecies, Population, Individual

Genetic diversity 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

Full taxonomic diversity Names are meant to represent their **decent**. Understanding about species.

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

Genetic Subspecies of Tiger

Genetic tests 2004 Identified 6 subspecies of tigers (and 3 extinct)

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.

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

