

Biodiversity as a concept

≈ The variety of life

- US Congress Office of Technology Assessment definition perhaps the most widely used:
“the variety and variability among living organisms & the ecological complexes in which they occur...” (OTA, 1987)
- An abstract concept
- Enormous breadth of such a concept
 - essentially the whole complexity of life!
 - danger of equating biodiversity with the whole of biology
- Limits to the concept
 - Entities (most definitions focus explicitly on this)
 - Processes (most definitions implicitly embrace this)
 - functions that entities perform
 - inclusion of ecosystems as a component of biodiversity

Biodiversity as a concept

Three categories are common in relation to the ‘variety of life’ concept:

- Genetic diversity
 - some of it within species
- Species/taxonomic diversity (‘organismal’ diversity)
 - e.g. species richness
- Ecosystem diversity (‘ecological’ diversity)
 - habitat diversity, etc.

Whatever the scheme, emphasis is usually on a hierarchical perspective of biological phenomena

Biodiversity as a social/political construct

- Close historical relationship between biodiversity & concerns over environmental destruction...
 - reflects origin of term
 - 1986 forum on ‘BioDiversity’ - coined by E.O. Wilson
- Many people/societies regard biodiversity as a good & important thing, *per se*, with value
 - Bowman (*Biodiversity Letters* 1: 163): biodiversity as a synonym for nature conservation
 - not always a neutral, scientific concept
- For conservation, not just quantity, but **quality**

Biodiversity as a measurable entity

- Context: enormous increase in interest in biodiversity
- Very desirable to be able to measure it
- Important distinction between two ideas:
 - biodiversity can be quantified
 - different facets/dimensions of biodiversity can be quantified
- The choice of biodiversity measure depends on the use to which it will be put
 - e.g. the question being asked

Viewpoints

- Biodiversity as a concept
- Biodiversity as a social/political construct
- Biodiversity as a measurable entity

Inconsistent or inadequate definitions due in part to this range of viewpoints

- usage in the media, political and legal contexts

But the interdisciplinary nature of the subject has led to work on questions of general importance that are too often ignored by specialist fields

What is biodiversity?

- Gaston (1996) - Biodiversity is a point at which:
 - many traditional fields of study meet (academic)
 - concerns over species, habitats & ecosystems meet
 - biological, economic and socially-driven motivations merge
 - humans commit to on-going programmes of destruction, or enlightened programmes of preservation
- Much confusion about what biodiversity is
 - in part because many people assume that everyone shares the same intuitive definition
 - also because there are many different viewpoints about biodiversity

Why is biodiversity important?

- Much fuzzy talk about the value of biodiversity
 - Kunin & Lawton (1996)*: the arguments for conservation reduce to 3 basic points
1. Some species are threatened, which are valuable to us (sometimes causal)
 2. Some species could be of great value to us, but we don't know it yet
 3. The diversity of life on earth is intrinsically valuable, and interesting

*Ch.11 of Gaston (ed.)(1996)