Biodiversity

Its measurement and metaphysics

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Abstract

Biodiversity is a concept that plays a key role in both scientific theories such as the species-area law and conservation politics. Currently, however, little agreement exists on how biodiversity should be defined, let alone measured. This has led to suggestions that biodiversity is not a metaphysically robust concept, with major implications for its usefulness in formulating scientific theories and making conservation decisions.

A general discussion of biodiversity is presented, highlighting its application both in scientific and conservation contexts, its relationship with environmental ethics, and existing approaches to its measurement. To overcome the limitations of existing biodiversity concepts, a new concept of *biocomplexity* is proposed. This concept equates the biodiversity of any biological system with its *effective complexity*. Biocomplexity is shown to be the only feasible measure of biodiversity that captures the essential features desired of a general biodiversity concept. In particular, it is a well-defined, measurable and strongly intrinsic property of any biological system. Finally, the practical application of biocomplexity is discussed.