

What is biodiversity and ecosystem functioning?

Biodiversity is a term used to describe the variety of life on our planet. It includes all plants, animals, and microbes, ranging from genetic diversity within populations, to species diversity, to the diversity of communities across landscapes.

Ecosystem functioning is a term used to describe the collection of ecological processes that control the fluxes of energy, nutrients, and organic matter through an environment. These fluxes are typically regulated by living organisms that capture food, grow, reproduce, and then become fluxes themselves as they are eaten by other organisms. Examples of ecosystem functions include *primary production* (the process by which plants capture energy from the sun and use that energy to convert matter into new biological tissue), *decomposition* (the process by which organic wastes like dead plants and animals are broken-down and recycled), and *nutrient cycling* (the process by which biologically important nutrients are captured, released, and then recaptured by organisms).

Why care? The ecological processes that collectively describe how an ecosystem "functions" are the same processes that regulate most of the services that ecosystems provide to humanity. These services include the production of crops and fisheries, control of disease and agricultural pest species, and the purification of air and drinking water. In the modern era, the variety of species that perform these processes is being greatly reduced by the human population which, as a result of explosive growth, has created a variety of environmental problems that reduce biodiversity. **If ecosystem functioning does indeed depend on biodiversity, and diversity continues to decline at current rates, then the ecological processes we depend on as a society could be compromised.** Scientists have not yet reached consensus on whether biodiversity and ecosystem functioning are intimately linked, but if they are, then society has a vested interest in this topic!

