**What is Biodiversity?**

Biological diversity, or the shorter "biodiversity," (bio-di-ver-si-ty) simply means the diversity, or variety, of plants and animals and other living things in a particular area or region. For instance, the species that inhabit Los Angeles are different from those in San Francisco, and desert plants and animals have different characteristics and needs than those in the mountains, even though some of the same species can be found in all of those areas.   
  
Biodiversity also means the number, or abundance of different species living within a particular region. Scientists sometimes refer to the biodiversity of an ecosystem, a natural area made up of a community of plants, animals, and other living things in a particular physical and chemical environment.   
  
In practice, "biodiversity" suggests sustaining the diversity of species in each ecosystem as we plan human activities that affect the use of the land and natural resources.   
  
**Why is biodiversity important?**  
Everything that lives in an ecosystem is part of the web of life, including humans. Each species of vegetation and each creature has a place on the earth and plays a vital role in the circle of life. Plant, animal, and insect species interact and depend upon one another for what each offers, such as food, shelter, oxygen, and soil enrichment.   
  
Maintaining a wide diversity of species in each ecosystem is necessary to preserve the web of life that sustains all living things. In his 1992 best-seller, "The Diversity of Life," famed Harvard University biologist Edward O. Wilson -- known as the "father of biodiversity," -- said, "It is reckless to suppose that biodiversity can be diminished indefinitely without threatening humanity itself."

**Concepts and Values of Biodiversity**

Definition: Biological diversity has no single standard definition. One definition holds that biological diversity is a measure of the relative diversity among organisms present in different ecosystems. Diversity in this definition includes diversity within species and among species, and comparative diversity among ecosystems.

Another definition, simpler and clearer, but more challenging, is the *totality of genes, species, and ecosystems of a region*. An advantage of this definition is that it seems to describe most instances of its use, and one possibly unified view of the traditional three levels at which biodiversity has been identified:

* [genetic diversity](http://en.wikipedia.org/wiki/Genetic_diversity) - diversity of [genes](http://en.wikipedia.org/wiki/Gene) within a species. There is a genetic variability among the populations and the individuals of the same species
* [species diversity](http://en.wikipedia.org/wiki/Species_diversity) - diversity among [species](http://en.wikipedia.org/wiki/Species)
* [ecosystem diversity](http://en.wikipedia.org/wiki/Ecosystem_diversity) - diversity at a higher level of organization, the [ecosystem](http://en.wikipedia.org/wiki/Ecosystem) (richness in the different processes to which the genes ultimately contribute)

## Benefits of biodiversity

Biodiversity has contributed in many ways to the development of human culture, and, in turn, human communities have played a major role in shaping the diversity of nature at the genetic, species, and ecological levels.

There are three main reasons commonly cited in the literature for the benefits of biodiversity.

### Ecological role of biodiversity

All species provide some kind of function to an ecosystem. They can capture and store energy, produce organic material, decompose organic material, help to cycle water and nutrients throughout the ecosystem, control erosion or pests, fix atmospheric gases, or help regulate climate.

### Economic role of biodiversity

For all humans, biodiversity is first a [*resource*](http://en.wikipedia.org/wiki/Natural_resource) for daily life. One important part of biodiversity is 'crop diversity', which is also called [agrobiodiversity](http://en.wikipedia.org/wiki/Agrobiodiversity).

Most people see biodiversity as a reservoir of resources to be drawn upon for the manufacture of food, pharmaceutical, and cosmetic products. This concept of biological resources management probably explains most fears of resources disappearance related to the erosion of the biodiversity. However, it is also the origin of new conflicts dealing with rules of division and appropriation of natural resources.

Some of the important economic commodities that biodiversity supplies to humankind are:

* [food](http://en.wikipedia.org/wiki/Food) : crops, livestock, forestry, and fish; (see also [local food](http://en.wikipedia.org/wiki/Local_food))
* [medication](http://en.wikipedia.org/wiki/Medication). Wild plant species have been used for medicinal purposes since before the beginning of recorded history. For example, [quinine](http://en.wikipedia.org/wiki/Quinine) comes from the [cinchona](http://en.wikipedia.org/wiki/Cinchona) tree (used to treat [malaria](http://en.wikipedia.org/wiki/Malaria)), [digitalis](http://en.wikipedia.org/wiki/Digitalis) from the [foxglove](http://en.wikipedia.org/wiki/Foxglove) plant (chronic heart trouble), and [morphine](http://en.wikipedia.org/wiki/Morphine) from the [poppy](http://en.wikipedia.org/wiki/Poppy) plant (pain relief). According to the [National Cancer Institute](http://en.wikipedia.org/wiki/National_Cancer_Institute), over 70 % of the promising anti-cancer drugs come from plants in the [tropical rainforests](http://en.wikipedia.org/wiki/Tropical_rainforest).
* [industry](http://en.wikipedia.org/wiki/Industry) : for example, [fibers](http://en.wikipedia.org/wiki/Fiber) for [clothing](http://en.wikipedia.org/wiki/Cloth), [wood](http://en.wikipedia.org/wiki/Wood) for [shelter](http://en.wikipedia.org/wiki/Shelter) and warmth.
* [tourism](http://en.wikipedia.org/wiki/Tourism) and [recreation](http://en.wikipedia.org/wiki/Recreation) : biodiversity is a source of economical wealth for many areas, such as many [parks](http://en.wikipedia.org/wiki/Park) and [forests](http://en.wikipedia.org/wiki/Forest), where wild nature and animals are a source of beauty and joy for many people. [Ecotourism](http://en.wikipedia.org/wiki/Ecotourism), in particular, is a growing outdoor recreational activity.

### Ethical role of biodiversity

Finally, biodiversity has an [ethical](http://en.wikipedia.org/wiki/Environmental_ethics) role if humans consider that other species have an intrinsic right to exist. Ecophilosophies such as [deep ecology](http://en.wikipedia.org/wiki/Deep_ecology) assert that a recognition of this intrinsic right makes it morally wrong to voluntarily cause extinction. The level of biodiversity is a good indicator of the state of our relationships with other living species. Biodiversity is also part of many cultures' spiritual heritage (see [indigenous people](http://en.wikipedia.org/wiki/Indigenous_people) and [cultural diversity](http://en.wikipedia.org/wiki/Cultural_diversity)).

### Scientific role of biodiversity

This is a fourth benefit separate from the three main ones. Biodiversity is important because each species can give scientists some clue as to how life evolved and will continue to evolve on Earth. In addition, biodiversity helps scientists understand how life functions and the role of each species in sustaining ecosystems.