

Why Plant Conservation is Important-----BGCI

This page describes what biodiversity is, how it is being affected by humans, and why we should care! If you have comments about the work of botanic gardens to save plants, [please contact us](#).

Biodiversity is Being Lost at an Unprecedented Rate

Humankind has affected our planet in many ways. In the past few centuries the changes in society and the increasing pace of development mean that the scale of these impacts have catastrophically grown. There are now many threats to the natural resources of our planet. These include habitat loss and degradation, invasive aliens, over-exploitation of resources, and even climate change.

[Find out more about the major threats to plants.](#)

"Biodiversity" is the full complexity and variety of life, at all scales, from genetic diversity, up to species and even ecosystem diversity. So, we use the term "biodiversity conservation" to refer to attempts to conserve and any parts of this natural diversity. Plant diversity is a major part of total biodiversity - just think of the richness of tropical rain forests - it forms the basis of all food webs, and underpins the functioning of all ecosystems. So, plant conservation is an essential component of efforts for biodiversity conservation. As plants are at risk of extinction, in all parts of the world, their conservation is a priority.

Species extinction (where a species ceases to exist) is a normal process. However, normally species evolve just about as fast other species go extinct, as part of the normal process of natural selection (on average, a species persists for about 10 million years). In the past occasional catastrophic events such as asteroid impacts, have caused 'extinction crises', where millions of species become extinct in a relatively short period of time. The impacts of humankind upon the world's natural resources mean that we are now in a 'sixth extinction crisis'. According to the IUCN, 784 extinctions have been recorded since the year 1500 (the arbitrary date selected to define "modern" extinctions), with many more likely to have gone unnoticed. Most of these modern extinctions can be attributed directly or indirectly to human effects. Thousands more species are threatened in every region of the world.

[The IUCN red list documents threatened and extinct species](#) (external link)

Biodiversity Loss Matters

Human kind has many major problems to tackle, so it can be hard to see why we should care about thousands of species are going extinct. The origins of conservation were rooted in a general concern to protect nature because of its intrinsic and aesthetic values. However, although this is still important, in recent decades it has become apparent that we should conserve the natural world for reasons of enlightened self interest, for the continued survival and well-being of human-kind. It has been estimated that the benefits of conserving nature outweigh the costs by 100:1 - some of the key aspects are listed below.

- **Direct values** It is easy to understand that plant diversity provides us with all types of goods that we can use and sell, from clothing to materials shelter. For example, a few years ago a study in the US it has been estimated that the market for natural products was worth US\$87 billion per year. There are several categories of direct use values, which include food, timber, paper, cosmetics and personal care products, biotechnology and pharmaceuticals, traditional medicine, genetics (e.g. for crop breeding), pest control, and recreation (for example, the Mirid bug *Cyrtorhinus mundulus* saved Hawaiian sugar cane from leafhoppers). Natural resources can also have specific cultural/spiritual values (for example, Bowhead whales are a key feature of eskimo life and culture).
- **Indirect use values (Ecosystem Services)** Natural resources provide services that our well-being depends on. Unfortunately, because these services are not obvious and valued by conventional economics, we can take them for granted and may not even be aware of them. For example, one study estimated that the ability of tropical rain forests to mop up carbon dioxide is worth over US\$46 billion per year. Other ecosystem services include nutrient cycling, climate & hydrological cycle regulation, pollination and trophic regulation. It is difficult to put a figure on any one of these services but in 1997 a group of authors writing in Nature attempted just that, and came up with a figure of \$33 trillion (twice the global GNP)! [See Constanza *et al.*, 1997. The value of the world's

ecosystem services and natural capital, *Nature*, vol. 387: 253.] Unfortunately, degrading ecosystems and removing species lessens the ability of ecosystems to provide these services.

- **Option of use values** Option values are the value of biodiversity for future use. This is difficult to quantify - it involves assumptions about future human economies, future needs and future societies' discount rates. To explain this, consider that the Rosy Periwinkle is the source of alkaloids vinblastine and vincristine that are used to treat Hodgkins disease and acute lymphoma. In addition to the unquantifiable value of the lives saved, these drugs are estimated to be worth US\$180 million per year to economy. If the Rosy Periwinkle had become extinct before we discovered its amazing properties, we could not know what we were missing, and the drugs would not be available to help disease sufferers!
- **Existence value** "How much would you pay to ensure the continued existence of something you may never see?" Answering this question will take you some way towards understanding your attitude to the importance of existence values! They are quite common - for example, many of us feel strongly about conserving tropical rainforests, even though we may never see one, and certainly never gain direct benefit from them. Economists try to quantify this value for different species by asking people how much they would pay to conserve, for example, the hump backed whale (apparently, in the US the answer is US\$45).
- **Intrinsic value** If you believe life has a value independent of its use to us, then you natural resources have 'intrinsic values'. This is sometimes (but not necessarily) informed by a religious or spiritual standpoint. This viewpoint means, at the very least, that we should not make gratuitous or irreversible changes to ecosystems.

What Happens Next?

What happens next is up to all of us. We all influence whether plants are sustainably used and conserved for future generations. Plants are relevant and vital to all of us and we should all be aware that plants across the world are endangered with many facing extinction, and support efforts that tackle this problem. Plant diversity is especially important because it underpins the functioning of all ecosystems, as well as providing us with many direct benefits. BGCI believes that botanic gardens have a key role to play in ensuring that we conserve plant diversity for the benefit of all.

[Click here to consider how we can try to conserve plant diversity.](#)

[Click here to consider the key role of botanic gardens in the conservation of plant diversity](#)

This page is only a brief introduction to a huge subject. You are very welcome to contact us for more information and references for further reading, at info@bgci.org, or using the [feedback form](#).