



What is **Biodiversity**?

Come
with us
on
a journey.....



MANY SPECIES - ONE PLANET - ONE FUTURE
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From the **hot arid deserts of the Sahara**, through the **lush green rainforests of the Amazon**, to the **ocean depths and bright corals**, our natural world is a marvel of different landscapes, materials, colours and textures.

The land, air and seas of our planet are home to the tiniest insects and the largest animals, which make up a rich tapestry of **interconnecting and interdependent forces**.

This is life, this is **biodiversity**.

Biodiversity found on Earth today consists of many millions of distinct biological species, the product of **four billion years of evolution**.

However, the word “Biodiversity” is relatively new, and is thought to have first been coined as a contraction of the term “biological diversity” in 1985 and then popularised by a number of authors¹.

Biodiversity is the variety of life on Earth, it includes all organisms, species, and populations; the genetic variation among these; and their complex assemblages of communities and ecosystems.

It also refers to the interrelatedness of genes, species, and ecosystems and in turn, their interactions with the environment.

Three levels of biodiversity are commonly discussed — **genetic, species and ecosystem diversity**.

1. **Genetic diversity** is all the different genes contained in all the living species, including individual plants, animals, fungi, and microorganisms.
2. **Species diversity** is all the different species, as well as the differences within and between different species.
3. **Ecosystem diversity** is all the different habitats, biological communities and ecological processes, as well as variation within individual ecosystems.





What are the main causes of biodiversity loss?

There are many threats to our natural world, which include:

HABITAT LOSS AND

This is one of the greatest threats to biodiversity. Habitat loss is directly linked to human induced pressures on land.

DESTRUCTION

IN ECOSYSTEM COMPOSITION



ALTERATIONS

Assemblages of species and their interactions with their ecosystems is critical for not only saving the species, but also for their successful future evolution. In the event of alterations, either within species groups, or within the environment, entire ecosystems can begin to change. Alterations to ecosystems are a critical factor contributing to species and habitat loss.

ALIEN SPECIES

The introduction of exotic species that replace local and native species is cited as the second largest cause of biodiversity loss. Alien invasive species replace, and often result in the extinction of native species. The annual economic damage caused by invasive plant and animal species is estimated to be in the region of US\$ 1.4 trillion.

INVASIVE

OVER-EXPLOITATION

Over-hunting, over-fishing or over-collecting of a species can quickly lead to its decline. Changing consumption patterns of humans is often cited as the key reason for this unsustainable exploitation of natural resources.

POLLUTION AND

Biological systems respond slowly to changes in their surrounding environment. Pollution and contamination cause irreversible damage to species.

CONTAMINATION



GLOBAL CLIMATE CHANGE

Both climate variability and climate change cause biodiversity loss. Species and populations may be lost permanently, if they are not provided with enough time to adapt to changing climatic conditions.





What's happening?

Fast isn't always good. Species are becoming extinct at the fastest rate known in geological history, and most of these extinctions are tied to human activity.

Some conservation organizations estimate species are heading towards extinction at a rate of about one every 20 minutes².

One figure frequently cited is that **the rapid loss of species** we are seeing today is estimated to be between **1,000 and 10,000 times higher** than the natural extinction rate.

Experts calculate that **between 0.01 and 0.1 per cent of all species will continue to become extinct each year, if we carry on with business as usual.**

That may not sound like very much, but consider that if there are 100 million species on Earth as some estimates suggest, then between **10,000 and 100,000 species are becoming extinct each year.**

Looking at recent assessments we know that more than one third of species assessed in a 2009 major international biodiversity study, are threatened with extinction.

Of the **47,677 species** in the International Union for Conservation of Nature (IUCN) Red List of Threatened Species of 2009, **17,291 are deemed to be at serious risk**³.

The list reveals that 21 per cent of all known mammals, 30 per cent of all known amphibians, 12 per cent of all known birds, 28 per cent of reptiles, 37 per cent of freshwater fishes, 70 per cent of plants and 35 per cent of invertebrates assessed so far, are under threat.

¹Nematology: advances and perspectives, Volume 1 By Z. X. Chen, S. Y. Chen, Donald Ward Dickson p439

²Conservation International http://www.conservation.org/act/get_involved/Pages/stoptheclock.aspx

³http://cms.iucn.org/about/work/programmes/species/red_list/about_the_red_list/





Why does it matter?

Biodiversity conservation provides substantial benefits to meet immediate human needs, such as **clean, consistent water flows**, protection from floods and storms and a stable climate.

The loss of biodiversity is dangerous and its consequences are immediate:



Fewer opportunities for livelihoods, for better health, education, and a better life

Fewer fish in the sea, means
Less food for our survival

A lack of clean water

A lack of forest resources such as food, or plants for medicine

In the long term, it also means less income for communities, which are often already amongst the poorest on Earth



Cultural diversity and biodiversity are intimately related to each other. If we lose one, we risk losing the other.

The **diversity of societies, cultures and languages** that has developed throughout human history is intimately related to biodiversity and its use.





What are the solutions?

There are a number of initiatives aimed at **enhancing sustainable development and promoting beneficial conservation of biodiversity** in countries around the world.

These include:

1. The **“Green Economy Initiative”** has been defined as one which will accelerate the transition to a low-carbon, resource-efficient economy able to meet multiple challenges, and deliver multiple opportunities for the twenty-first century.
2. **Promoting** an increase in the number, size, and connectivity of protected areas, both on land and at sea.
3. Increasing **focus on the implementation** of Multilateral Environmental Agreements related to biodiversity such as:
 -  The Convention on Biological Diversity (CBD)
 -  The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
 -  The Convention on Migratory Species (CMS)
 -  The Ramsar Convention on Wetlands
 -  The World Heritage Convention
4. Increasing **“Communication, Education and Public Awareness” (CEPA) programmes** related to biodiversity with an aim to relate biodiversity to people and their livelihoods.
5. Identifying and creating **opportunities for rural enterprises** based on biodiversity such as eco-tourism, bio-prospecting to benefit local communities, the environment, species and their habitats.
6. Encouraging **development** that is sustainable and based on biodiversity by drawing attention to regions that might otherwise be developed in an unsustainable way.
7. Providing important **economic and social benefits** that provide local communities and incentives for habitat protection.
8. Identification of **options** for sharing the benefits of conservation and sustainable use with local communities and stakeholders.



Why 2010 matters?

The year 2010 has long been seen as an **end goal**, a time when we could look back and say, **yes, we've done it** — that biodiversity, life on Earth, is no longer threatened.

In 2002, Governments set 2010 as a deadline to **achieve a significant reduction** in the rate of loss of biodiversity for reducing poverty.

All assessments of progress indicate that **we are far from reaching this goal**.

The year 2010 is **critical** because it is **time to reflect** about what needs to be done if we are to change this trend.

Although the 2010 goal has not been met, it does not mean the future is necessarily bleak.

This year is a time to look at **past achievements** and **build upon them** using experience, intelligence and foresight.

It requires a **new paradigm shift** in the way we address environmental issues.

It means **bridging** the gap between science and policymakers in governments around the world.

It means **linking** livelihoods, **combating** poverty, and **planning** development and **new infrastructure** sensitively.





There is a recipe we can follow



Relate biodiversity to everyone's daily needs so that the **ownership** for saving biodiversity is spread and everyone feels responsible for stopping loss.

Ensure **science, policy and politics** play an equal role in decision making.

Economics make a great case to argue for conservation action. But such arguments should be **translated** into national and local actions to **realize the potential** of biodiversity.

Revalue our choices and life-styles to provide space for the species that inhabit this Earth

Have no doubt. This is relevant to us all.

The **2010 International Year of Biodiversity** is a unique opportunity to understand the vital role that biodiversity plays in sustaining life on Earth and to stop this loss.



The question is, will we?

The answer is an obvious **"yes"** if we come together for collective action.

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