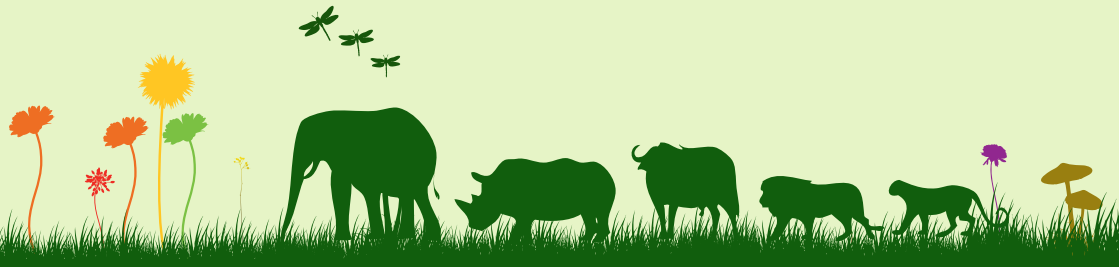
What is Biodiversity?

Come with us on a journey



forestry, fisheries & the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

2030 NDP

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.**

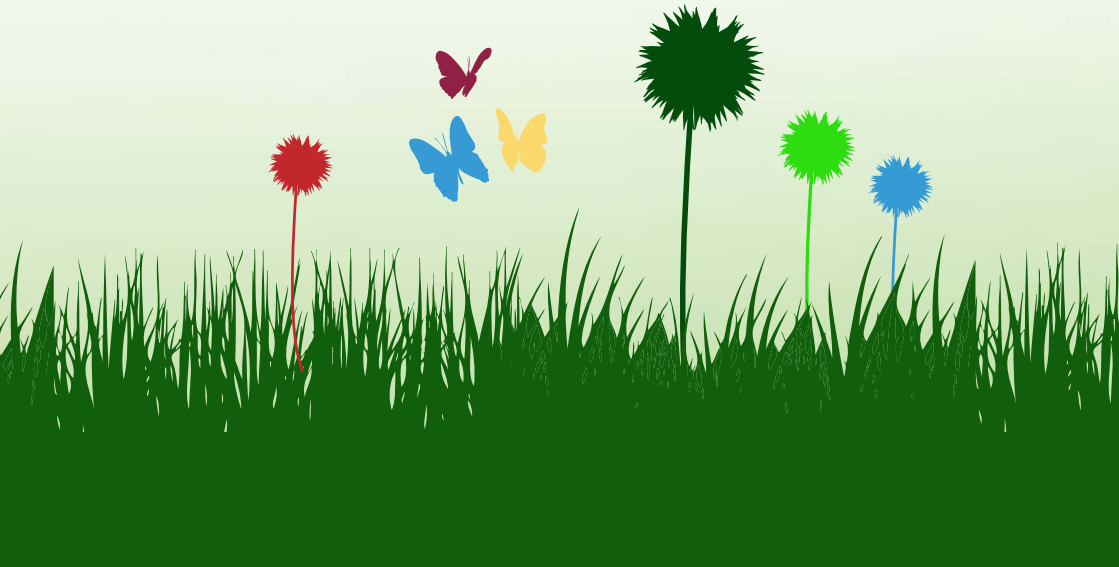
However, the word “Biodiversity” is relatively new, and is thought to have first been coined as a contraction of the term “biological diversity” in 1985 and then popularised by a of authors.

Biodiversity is the variety of life on Earth, it includes all organisms, species, and populations; the geneticvariation among these; and their complex assemblages ofcommunities 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 DESTRUCTION

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

ALTERATIONS IN ECOSYSTEM COMPOSITION

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.

INVASIVE ALIEN SPECIES

The introduction of exotic species that replace local and native species is cited as the second largest cause of biodi - versity 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.

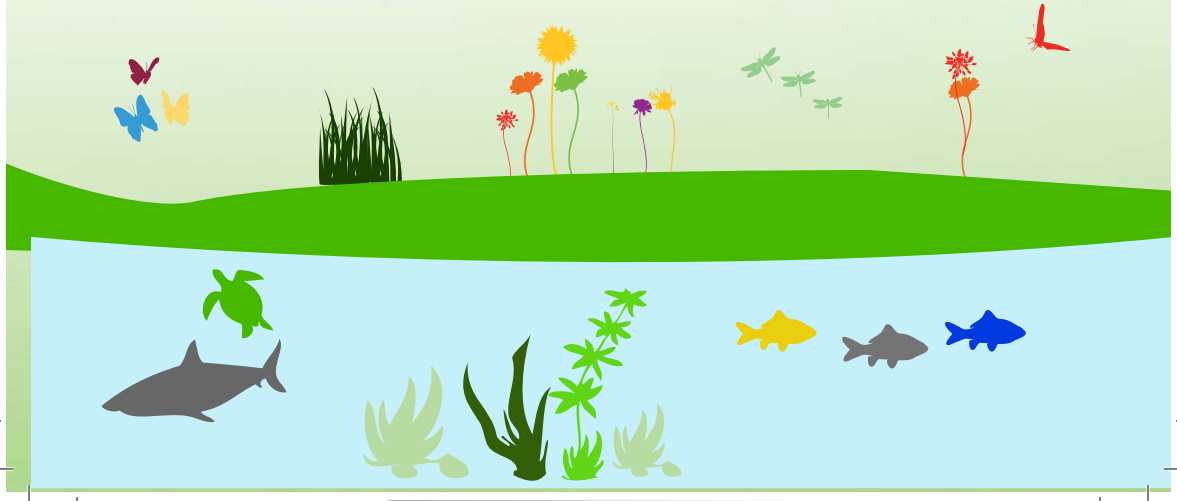
OVER-EXPLOITATION

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 CONTAMINATION

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

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 is 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 minutes[2].

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.

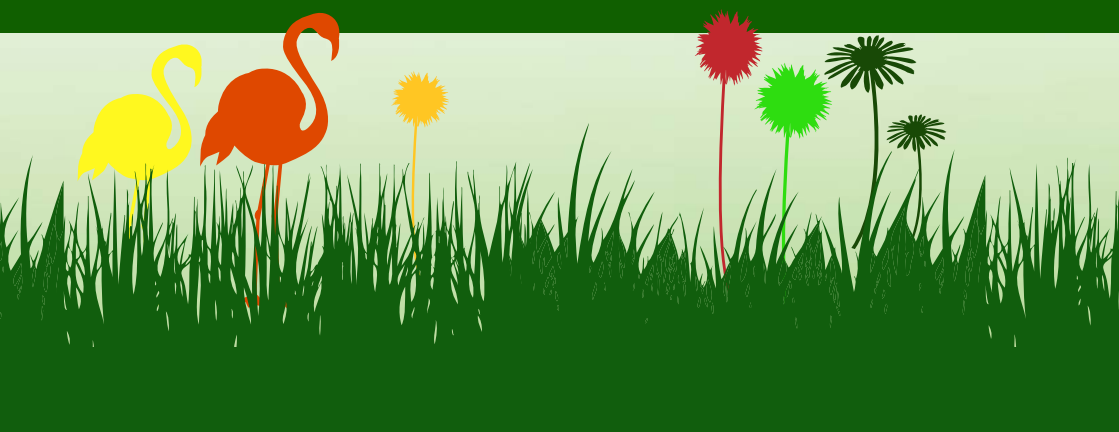
Of the **47,677** species in the International Union for Conservation of Nature (IUCN) Red List of Threatened Species of 2009, **17,291** are **deemed to be at serious risk[3].**

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.

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

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

3.http://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:

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 -efficientce conomy able to meet multiple challenges,vand deliver multiple opportunities for thevtwenty-first century.

2. **Promoting** an increase in the number, size,cand connectivity of protected areas, bothcon 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 and 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.

There is a recipe we can follow

1

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

2

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

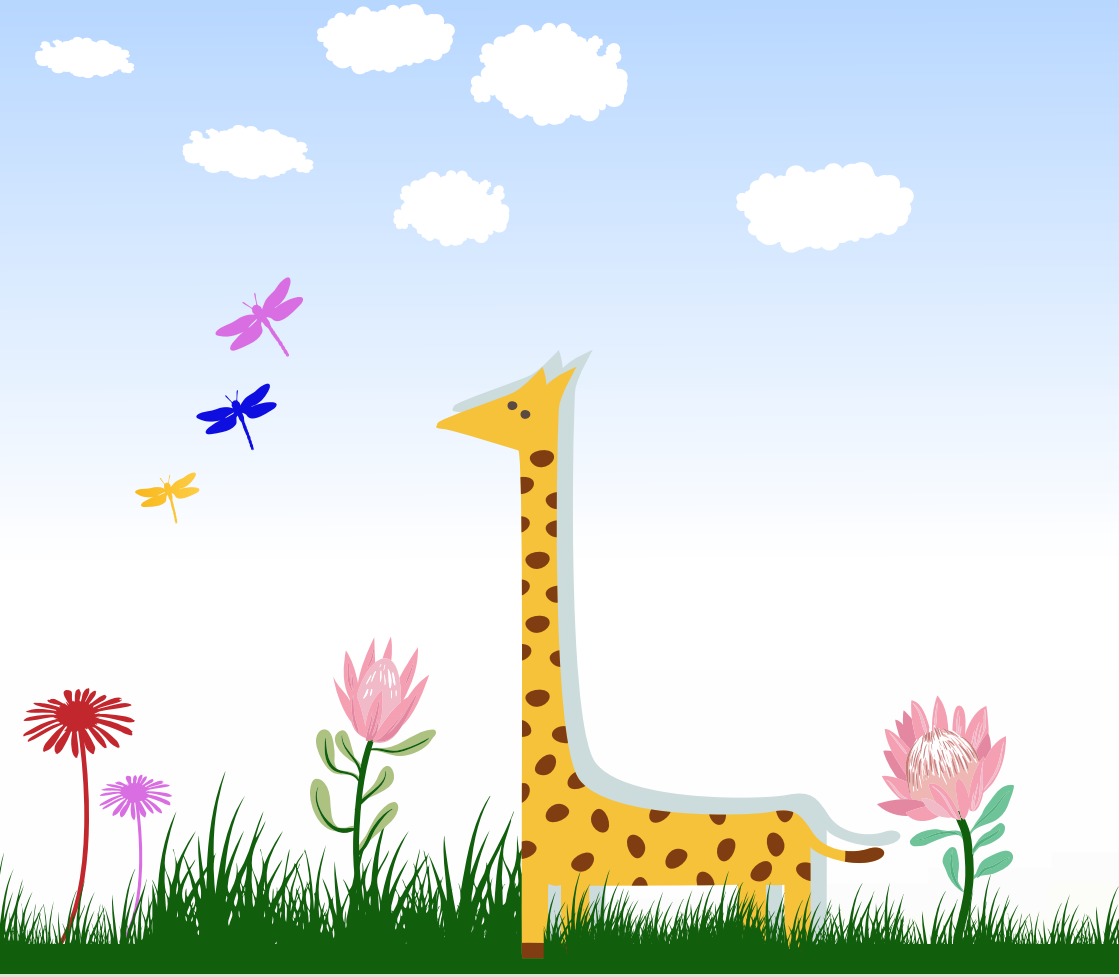
3

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

4

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.



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