



PlanetAttivo

LESSON 1

BIODIVERSITY

When Prince Solo, the ruler of the planet Uno came to Earth, he was astonished by our environment. There were no forests like ours on his planet or so many different kinds of animals and plants. What amazed the young prince was precisely this variety of living beings that we call biodiversity. (Chapter I –A Missão de Sofia no Planeta Terra, Sophia's Mission on Planet Earth).

What does our nature look like?

Our nature is full of biodiversity.

There are so many different species of plants and animals on Earth that we still have a lot to discover. "We are burning a great library of knowledge without ever having opened the books" (Tunza, Biodiversity). It makes no sense to destroy what we do not even know! Because we do not know our entire environment yet, we can not understand its real value. In the future, we may need some species that we are now destroying.

Thousands of years ago, there were many more species of animals. Some species no longer exist and others are disappearing at a rate 1000 times greater than normal. In the past there were also times of destruction of the environment, like at the time of the dinosaurs, but now it is different because we are the cause.



In December 2006, after six weeks of research there were no dolphins to be found in the Yangtze River where they used to live. The Baiji or Yangtze dolphin was considered extinct because the few that may still exist are not sufficient to continue the species.

Baiji or Yangtze dolphin

What does biodiversity mean?

Well, it's easy to explain if we separate the word into two, like *bio* and *diversity*.

Bio comes from the Greek word for life. Diversity is the same as variety.

Biodiversity is life in its variety: the various species of animals, plants and living beings that exist on Earth.

Biodiversity can also refer to the genetic variety of the same species. This variety happens because each region of the Earth has its own particular climate and this affects all species that evolved in that region.

Ancient tracts of land that became separated from continents and were transformed into islands possess their own biodiversity. Madagascar is an example, a place full of biodiversity. This island has species that can only be found there and nowhere else in the world.

We humans belong to the same species, but our features are different: skin colour, eyes, height etc. The human species is just one of 30 million living species believed to exist on the planet.



Sifaka, de Madagascar

Biodiversity is the result of evolution of life on our planet over billions of years. The biodiversity of ecosystems exists within and across our planet.

What is an ecosystem?

Let's also separate the word to better understand the concept: **eco** and **system**.
Eco comes from the Greek and means *house*.

System also comes from the Greek and means "combine", "adjust", "to form a whole." So, we can say that *system* is a set of elements linked by harmony which forms in an organized whole.

In nature, an ecosystem is when multiple live elements such as animals, plants and bacteria interact in harmony with the elements of the environment: water, light, soil, wind.

The elements that have life, like animals, are called biotic and others such as water and soil, are called abiotic.

If we understand that the world is our home and system is a way of living in harmony, we will realize that to live well and in harmony, we need an ecosystem, a place (or houses) within our planet, home to species living in harmony with its environment.

We depend on biodiversity for food, drink and air. Forests exist because of the variety of creatures and plants that have evolved there. We need a diverse agriculture because if some pest or disease affects the corn, for example, we have other crops to feed us. Like us, animals depend on biodiversity and ecosystems to meet their needs.

There are different ecosystems in every place on Earth: deserts, forests, mountains, lakes and agricultural areas. The ecosystem of a desert is different from the forest or the ocean ecosystem, but they are all in the same home: planet Earth.

Living organisms in each ecosystem form a community and interact with one another and the environment around them, in different ways. When we destroy our environment, we are destroying biodiversity and ecosystems. We are destroying what took billions of years for nature to form.

The Convention on Biodiversity has set the rules to prevent the destruction of the environment.

Convention on Biodiversity

The Convention on Biological Diversity or Biodiversity is an international treaty between several nations that deals with the issue of biodiversity and which resulted in the signing of an agreement.

The Biodiversity Convention was the outcome of the Eco-92, a meeting of the United Nations (UN) Declaration on Environment and Development. It happened in Rio de Janeiro in 1992, and is also known as Rio-92.

The purpose of this meeting was to discuss how we can have development without harming the environment.

The Convention on Biodiversity has three main goals:

1. Conservation of biodiversity on the planet.
2. Use of the components of biodiversity without endangering their existence.
3. Share equally and fairly the benefits of biodiversity resources.

One hundred and eighty-nine countries have signed the Convention of Biodiversity, which means that almost all countries in the world agree that we should care about biodiversity and reap from its benefits without destroying it.

Where is the richest biodiversity?

The richest biodiversity is in tropical forests. Currently, researchers and environmental advocates are most concerned with forests. They occupy only a portion of the globe, but contain over half of the planet's biodiversity.

Though rich in biodiversity, tropical forests can be destroyed easily. The soil is very rich, but when the forest is cut down and has to be replanted, the seeds have difficulty in germinating. The recovery of tropical forests is a task that requires much effort, time and money. The recovery of a forest can take centuries!

Forests are being destroyed so fast that if deforestation continues we will never know the thousands of species that could be very useful for mankind.

In Brazil today there is only one small piece of the Atlantic Rain Forest: only 1%. Everything else has been destroyed.

There are also other endangered ecosystems on the planet such as coral reefs and mangroves.

Numbers of Biodiversity

Some figures may give an idea of the planet's biodiversity:

- There are about 13 million species in the world, according to most scientists.
- About 40% of the global economy is based on biological products and processes.

• Brazil is the country that has the greatest biodiversity: 55,000 species of plants, 1573 species of birds and 394 species of mammals.

- Only 1,750,000 species have been identified.
- We only know the value of 1% of the species for mankind.
- A quarter of plants and animals may disappear.
- Between 1970 and 2003 the index measuring biodiversity fell 30%, according to the World

Wildlife Foundation (WWF).

We are destroying the environment and natural ecosystems like never before in human history. If we do not do something to improve this situation, half of the species could be extinct by 2050.

Why are we losing biodiversity?

We are losing biodiversity because we have destroyed the places where it existed, for example, forests. In the forests there are species with which we can make medicinal remedies. The drugs can save lives and that is why we must save the forests.

Even worse is that some areas of the world that have the highest diversity are also the most threatened.. According to the United Nations Environment Programme (UNEP), there are four regions of the world where 75% of threatened species of mammals, birds and amphibians live. But most dramatic of all: these sites occupy only 2.3% of the land surface and they could well become extinct very quickly.

In the Amazon, the world's largest forest, the deforestation occurs because of farming and logging. We need food and wood, but we must deal with this issue wisely. We can not let forests disappear because we depend on them to survive. Otherwise our problems will be greatly increased.

If we destroy the forests, the people living downstream can have their homes flooded. Forest vegetation is what holds rainwater and if we chop down the trees, the rainwater will run and cause floods. The world will also suffer: the trees hold the balance of the climate and they remove CO² from the atmosphere - the gas that causes global warming.

Global warming is a problem for biodiversity. It brings raise of temperatures and sea levels, change in the amount of rainfall and increase in extreme weather conditions such as storms, floods and droughts.

All this changes the biodiversity that has always existed in nature.

What can we do?

What we can and must do is to preserve all the species around us. As we still do not even know their full value, all species should be treated equally. Each species is unique and has its own value, like every human being is different. Even identical twins have differences.

The greatest biodiversity is found in places that suffer with faster devastation: the rainforests. We still know very little of these forests and we need many more scientists to discover what's in them, and we need time too.

To get started we can begin to determine the biodiversity that surrounds us: in the school yard, in the garden of our house, in the condominium, in our building and in our apartment.

We can search the Internet sites where biodiversity is greatest: the *hot spots* - and we can share the information with friends. The more you talk about it, the more you will know about it.

We should value the parks and areas where the environment and biodiversity are preserved. Go and visit them and take someone who is unfamiliar with these places. It is easier to understand the biodiversity when we are in touch with nature.

A Message for Young People

Ahmed Djoghlaif is the Executive Secretary of the Convention on Biological Diversity and has a message for young people:

"The Convention on Biological Diversity is about life on Earth and you are the continuity of life. By protecting the biodiversity of the planet, you will protect your future and preserve life on Earth. You can not just be observers of an important issue about your own future and the future of our planet.

Indeed you have a tremendous potential to make things change, you are the leaders of tomorrow and the major stakeholders in implementing the Convention that protects biodiversity. The Biodiversity Convention is for you: your passport to a healthy environment in the future.

I call upon you to join us so that our goals will be put into practice in the day-to-day reality of our global world. The battle to protect the Earth is yours and we are honoured to be by your side in the coming years, as partners and loyal allies. **Let us unite our strength to win this battle - we can not take the risk of losing it and every human being on planet Earth will be a winner."**

ACTIVITIES FOR LESSON 1

1. Photographing and cataloguing species in school and at home. Make a class album with photos, names and places of origin of species.
2. Visit a place where biodiversity is preserved, a park like Jardim Botânico (Botanical Garden) or Tijuca Forest in Rio de Janeiro ,and others.

Before printing, think about your responsibility to preserve the environment and prevent deforestation of forests. Print only what is necessary. The choice is yours. The planet belongs to everyone!

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