



story

Life on Earth—The Importance of Biodiversity

What is Biodiversity and Why Is It Threatened?

April 20, 2009—Biodiversity is the variety of life on Earth. This includes all plants, animals and their habitats. As you can imagine, the Earth's biodiversity is mind-bogglingly vast. According to the USA's National Science Foundation (*nsf.gov*), 1.75 million species of organisms have been discovered and described, but scientists estimate that tens of millions are yet to be discovered.

Unfortunately, many plant and animal species on Earth are facing severe threats to their survival and are disappearing at alarming rates.

While extinction is a natural process (generally, a species will last for an average of 2–10 million years), species and ecosystems today are threatened with destruction at a rate rarely seen in history. This is mainly a result of human actions. The five biggest threats to biodiversity are:

Invasive alien species (IAS). Invasive alien species are those which are not native to an area. They can arrive there via trade, transport, travel or tourism, which have all increased hugely in recent years because of globalization. These species are harmful to native biodiversity in a number of ways, for example, as competitors, predators, parasites, or by spreading disease. IAS may also cause economic or environmental damage, or adversely affect human health. They are one of the greatest threats to biodiversity.

Climate change. Climate change is predicted to play a major role in biodiversity loss. Incidents such as fires, floods and insect plagues are expected to become more frequent. Marine life, too will be by factors including rises in sea temperatures and increased acid levels in oceans, as the concentration of dissolved atmospheric carbon dioxide grows. Climate change will also greatly impact polar ecosystems, with effects such as thawing frost, decreased snow cover and losses from ice sheets.

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Nutrient loading/pollution. Although nitrogen, phosphorus, and sulfur occur naturally in the environment, their levels are increasing because of human activity, reaching concentrations that are putting species at risk. The increase stems from agricultural, industrial, and urban activities. According to the Environmental Literacy Council (www.enviroliteracy.org): "Pollutants in the air, water, and soil can influence organisms in many different ways, from altering the rate of plant growth to changing reproduction patterns to, in certain extreme situations, leading to extinction. Excess pollutants can also leave a species weakened, susceptible to other drivers of biodiversity loss such as habitat change or competition from invasive species. These elements make nutrient loading a complicated driver of biodiversity, especially within aquatic ecosystems where plants and marine organisms are disproportionately affected."

Habitat change. Human activity has taken a heavy toll on the Earth's biodiversity, through habitat destruction, degradation, and unsustainable management. For example, thousands of years of human activity have reduced forest coverage from around 50% to 30% of total land area, and deforestation continues at an alarmingly high rate. Below are some alarming facts from the Millennium Ecosystem Assessment (millenniumassessment.org):

- Almost 70% of Mediterranean forests, woodlands and scrub were lost by 1990
- In the Caribbean, average hard coral cover has declined from about 50% to 10% in the last three decades
- Some 35% of mangroves have been lost in the last two decades
- In the Arctic the average annual sea ice extent has declined by about 8% in the past 30 years, with a loss of 15% to 20% in summer sea ice extent over the same period

Over-hunting and overexploitation. This is a serious threat to many species, such as marine fish and invertebrates, trees, and animals that are hunted for meat. Humanity has always relied on nature for survival, and exploitation of species for food, clothing, and shelter has, in the past, always been sustainable. Unfortunately, today many species are hunted, trapped or killed above their rate of replacement.

LEARN MORE

World Bank Biodiversity

www.worldbank.org/biodiversity
Biodiversity has an important role in poverty reduction and the World Bank funds many biodiversity-related projects worldwide.

World Bank Tiger Initiative

www.worldbank.org/tigers
Within a century, wild tiger numbers dropped from more than 100,000 to about 4,000 tigers. The Global Tiger Initiative is looking for ways to save them.

National Geographic

animals.nationalgeographic.com
Info and photos on animals galore.

Conservation International

www.conservation.org
Get the facts on biodiversity around the world.

World Wildlife Federation Endangered Species

www.worldwildlife.org/species/
Who is endangered, and how can they be protected?

The Nature Conservancy

www.nature.org
Learn more about ecosystem conservation.

ARKive

www.arkive.org
A great resource of facts and photos of the world's species.

State of the World's Forests 2009

www.fao.org/docrep/011/i0350e/i0350e00.htm
This FAO report examines the issues impacting forests, and what the future looks like for the Earth's forests.

IT'S A FACT

Little Things that Kill

www.cbd.int/idb/2009/logo/
The International Day for Biological Diversity will be on May 22, 2009. This year, it focuses on Invasive Alien Species, starring the Asian Long-horned Beetle. These tiny troublemakers pose a threat to 71 billion trees.

Why Should We protect the Earth's Biodiversity?

Most of us believe that all life has a right to exist. But speaking more selfishly for humans, biodiversity is the foundation on which human life depends. Plants and animals provide food and medicine, rivers provide precious drinking water, and trees absorb greenhouse gases and clean the air we breathe. In addition, ecosystems such as forests and wetlands play a huge role in preventing floods and landslides. The world's poorest rely most on ecosystems for their daily needs, and will be worst affected by biodiversity loss.

According to UNDP: "Poverty and biodiversity are intimately linked. The poor, especially in rural areas, depend on biodiversity for food, fuel, shelter, medicines and livelihoods. Biodiversity also provides the critical 'ecosystem services' on which development depends, including air and water purification, soil conservation, disease control, and reduced vulnerability to natural disasters such as floods, droughts and landslides. Biodiversity loss exacerbates poverty, and likewise, poverty is a major threat to biodiversity."

Conservation

The international community has recognized biodiversity's important role in supporting human life, which led to the 1992 founding of the Convention on Biological Diversity, a legally binding global treaty. The CPD (www.cbd.int) has made this commitment:

To achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on Earth.

The target has been endorsed by the United Nations General Assembly and was also incorporated as a new target under the Millennium Development Goals (youthink.worldbank.org/issues/mdgs/).

On an individual level, there is a lot one can do to help protect life for all on Earth. Check out tips from the Global Action for Biodiversity (www.countdown2010net/?id=38).